

### **Description of *Candidatus Acidilobus demadiforma* sp. nov.**

*Candidatus Acidilobus demadiforma* (NL. fem. n. *demadiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Acidilobus* sp003431325. The type genome for the species is the GenBank assembly RS\_GCF\_003431325.1. The GC content of the type genome is 57.78 % and the genome length is 1.54 Mbp.

### **Description of *Candidatus Acidilobus funivitica* sp. nov.**

*Candidatus Acidilobus funivitica* (NL. fem. n. *funivitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Acidilobus* sp002496425. The type genome for the species is the GenBank assembly GCA\_002496425.1. The GC content of the type genome is 56.19 % and the genome length is 1.15 Mbp.

### **Description of *Candidatus Acidilobus hexamisca* sp. nov.**

*Candidatus Acidilobus hexamisca* (NL. fem. n. *hexamisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Acidilobus* sp000495735. The type genome for the species is the GenBank assembly GCA\_000495695.1. The GC content of the type genome is 59.39 % and the genome length is 1.43 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Cistern Spring (CIS\_19); temperature 78C; pH 4.4".

### **Description of *Candidatus Aciduliprofundum tomacitudo* sp. nov.**

*Candidatus Aciduliprofundum tomacitudo* (NL. fem. n. *tomacitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Aciduliprofundum* sp000327505. The type genome for the species is the GenBank assembly RS\_GCF\_000327505.1. The GC content of the type genome is 44.13 % and the genome length is 1.44 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "not provided; submitted under MGS 2.1".

#### **Description of *Candidatus Altarchaeum cicilivita* sp. nov.**

*Candidatus Altarchaeum cicilivita* (NL. fem. n. *cicilivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Altarchaeum sp002841105*. The type genome for the species is the GenBank assembly GCA\_002841105.1. The GC content of the type genome is 33.07 % and the genome length is 2.01 Mbp.

#### **Description of *Candidatus Altarchaeum foricifica* sp. nov.**

*Candidatus Altarchaeum foricifica* (NL. fem. n. *foricifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Altarchaeum sp002083985*. The type genome for the species is the GenBank assembly GCA\_002083985.1. The GC content of the type genome is 31.83 % and the genome length is 1.45 Mbp.

#### **Description of *Candidatus Archaeoglobus bipinivita* sp. nov.**

*Candidatus Archaeoglobus bipinivita* (NL. fem. n. *bipinivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Archaeoglobus sp002507545*. The type genome for the species is the GenBank assembly GCA\_002507315.1. The GC content of the type genome is 44.3 % and the genome length is 2.18 Mbp.

#### **Description of *Candidatus Archaeoglobus bucolisca* sp. nov.**

*Candidatus Archaeoglobus bucolisca* (NL. fem. n. *bucolisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Archaeoglobus\_A sp002011215*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002011215.1. The GC content of the type genome is 39.49 % and the genome length is 2.7 Mbp.

#### **Description of *Candidatus Archaeoglobus cilicilega* sp. nov.**

*Candidatus Archaeoglobus cilicilega* (NL. fem. n. *cilicilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Archaeoglobus\_A sp002010195*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002010155.1. The GC content of the type genome is 42.32 % and the genome length is 2.35 Mbp.

#### **Description of *Candidatus Archaeoglobus cobalivita* sp. nov.**

*Candidatus Archaeoglobus cobalivita* (NL. fem. n. *cobalivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Archaeoglobus\_A sp003662985*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003662985.1. The GC content of the type genome is 41.64 % and the genome length is 2.15 Mbp.

#### **Description of *Candidatus Archaeoglobus paracentia* sp. nov.**

*Candidatus Archaeoglobus paracentia* (NL. fem. n. *paracentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Archaeoglobus\_A sp002494625*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_004367345.1. The GC content of the type genome is 41.11 % and the genome length is 2.05 Mbp.

#### **Description of *Candidatus Archaeoglobus sonipivita* sp. nov.**

*Candidatus Archaeoglobus sonipivita* (NL. fem. n. *sonipivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Archaeoglobus\_A sp002011235*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the

genus. The type genome for the species is the GenBank assembly GCA\_002011235.1. The GC content of the type genome is 40.46 % and the genome length is 2.36 Mbp.

**Description of *Candidatus Archaeoglobus decenigena* sp. nov.**

*Candidatus Archaeoglobus decenigena* (NL. fem. n. *decenigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Archaeoglobus\_B sp003663025*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003663025.1. The GC content of the type genome is 42.2 % and the genome length is 1.87 Mbp.

**Description of *Candidatus Archaeoglobus catabitura* sp. nov.**

*Candidatus Archaeoglobus catabitura* (NL. fem. n. *catabitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Archaeoglobus\_C sp003978865*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003978865.1. The GC content of the type genome is 39.16 % and the genome length is 1.11 Mbp.

**Description of *Candidatus Archaeoglobus solipax* sp. nov.**

*Candidatus Archaeoglobus solipax* (NL. fem. n. *solipax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Archaeoglobus\_C sp003663055*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003663055.1. The GC content of the type genome is 43.88 % and the genome length is 1.45 Mbp.

**Description of *Candidatus Baditarcha caravimonas* sp. nov.**

*Candidatus Baditarcha caravimonas* (NL. fem. n. *caravimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *IMC4* sp001742785. The type genome for the species is the GenBank assembly GCA\_001742785.1. The GC content of the type genome is 48.48 % and the genome length is 1.39 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sulfidic groundwater".

#### **Description of *Candidatus* Baditarcha gen. nov.**

*Candidatus* Baditarcha (NL. fem. n. *Baditarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *IMC4*. The type species for the genus is *Candidatus* Baditarcha caravimonas .

According to the original version of GTDB R06-RS202, this genus belongs to the family *IMC4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Baditarchaceae.

#### **Description of *Candidatus* Baditarchaceae fam. nov.**

*Candidatus* Baditarchaceae (NL. fem. n. *Baditarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *IMC4*. The type genus for the taxon is *Candidatus* Baditarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *IMC4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Baditarchales.

#### **Description of *Candidatus* Baditarchales ord. nov.**

*Candidatus* Baditarchales (NL. fem. n. *Baditarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *IMC4*. The type genus for the taxon is *Candidatus* Baditarcha .

According to the GTDB R06-RS202, this order belongs to the class *Altarchaeia*.

#### **Description of *Candidatus* Baroparcha domabastra sp. nov.**

*Candidatus* Baroparcha domabastra (NL. fem. n. *domabastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BMS3B sp002897955*. The type genome for the species is the GenBank assembly GCA\_002897955.1. The GC content of the type genome is 40.07 % and the genome length is 1.74 Mbp.

#### **Description of *Candidatus Baroparcha* gen. nov.**

*Candidatus Baroparcha* (NL. fem. n. *Baroparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BMS3B*. The type species for the genus is *Candidatus Baroparcha domabastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *BMS3B*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Baroparchaceae*.

#### **Description of *Candidatus Baroparchaceae* fam. nov.**

*Candidatus Baroparchaceae* (NL. fem. n. *Baroparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *BMS3B*. The type genus for the taxon is *Candidatus Baroparcha*.

According to GTDB R06-RS202, this family belongs to the order *Hydrothermarchaeales*.

#### **Description of *Candidatus Baroparcha monocastra* sp. nov.**

*Candidatus Baroparcha monocastra* (NL. fem. n. *monocastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BMS3B sp003229935*. The type genome for the species is the GenBank assembly GCA\_003229935.1. The GC content of the type genome is 38.99 % and the genome length is 1.75 Mbp.

#### **Description of *Candidatus Benemarcha didacitudo* sp. nov.**

*Candidatus Benemarcha didacitudo* (NL. fem. n. *didacitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACCLJ01 sp011358535*. The type genome for the species is the

GenBank assembly GCA\_011358535.1. The GC content of the type genome is 42.13 % and the genome length is 0.88 Mbp.

**Description of *Candidatus Benemarcha* gen. nov.**

*Candidatus Benemarcha* (NL. fem. n. *Benemarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JACCLJ01*. The type species for the genus is *Candidatus Benemarcha didacitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Volubarchaceae*.

**Description of *Candidatus Benemarcha gabinedo* sp. nov.**

*Candidatus Benemarcha gabinedo* (NL. fem. n. *gabinedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACCLJ01 sp013425425*. The type genome for the species is the GenBank assembly GCA\_013425425.1. The GC content of the type genome is 51.42 % and the genome length is 0.97 Mbp.

**Description of *Candidatus Beneparcha volucivita* sp. nov.**

*Candidatus Beneparcha volucivita* (NL. fem. n. *volucivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PIYB01 sp003601835*. The type genome for the species is the GenBank assembly GCA\_003601835.1. The GC content of the type genome is 46.82 % and the genome length is 1.25 Mbp.

**Description of *Candidatus Beneparcha* gen. nov.**

*Candidatus Beneparcha* (NL. fem. n. *Beneparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PIYB01*. The type species for the genus is *Candidatus Beneparcha volucivita*.

According to the original version of GTDB R06-RS202, this genus belongs to the family

*B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Remularchaceae*.

**Description of *Candidatus Benevarcha nucifitrix* sp. nov.**

*Candidatus Benevarcha nucifitrix* (NL. fem. n. *nucifitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *XQ-INN-246 sp006543045*. The type genome for the species is the GenBank assembly RS\_GCF\_006543045.1. The GC content of the type genome is 62.1 % and the genome length is 4.52 Mbp.

**Description of *Candidatus Benevarcha* gen. nov.**

*Candidatus Benevarcha* (NL. fem. n. *Benevarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *XQ-INN-246*. The type species for the genus is *Candidatus Benevarcha nucifitrix*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Benifarcha binocousia* sp. nov.**

*Candidatus Benifarcha binocousia* (NL. fem. n. *binocousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B69-G16 sp003649235*. The type genome for the species is the GenBank assembly GCA\_003649235.1. The GC content of the type genome is 39.87 % and the genome length is 1.81 Mbp.

**Description of *Candidatus Benifarcha* gen. nov.**

*Candidatus Benifarcha* (NL. fem. n. *Benifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B69-G16*. The type species for the genus is *Candidatus Benifarcha binocousia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B69-G16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to



the family *Candidatus Benifarchaceae*.

**Description of *Candidatus Benifarchaceae* fam. nov.**

*Candidatus Benifarchaceae* (NL. fem. n. *Benifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B69-G16*. The type genus for the taxon is *Candidatus Benifarcha*.

According to GTDB R06-RS202, this family belongs to the order *Thermofilales*.

**Description of *Candidatus Benivarcha cerucatio* sp. nov.**

*Candidatus Benivarcha cerucatio* (NL. fem. n. *cerucatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *LKUD01 sp001412355*. The type genome for the species is the GenBank assembly GCA\_001412355.1. The GC content of the type genome is 56.59 % and the genome length is 2.09 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "methanogenic consortium capable of long-chain paraffin degradation (SDB culture) enriched from contaminated sediments of San Diego Bay; California; degrades n-alkanes from C25 to C50".

**Description of *Candidatus Benivarcha* gen. nov.**

*Candidatus Benivarcha* (NL. fem. n. *Benivarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *LKUD01*. The type species for the genus is *Candidatus Benivarcha cerucatio*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Benivarcha direpitude* sp. nov.**

*Candidatus Benivarcha direpitude* (NL. fem. n. *direpitude* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *LKUD01 sp013415665*. The type genome for the species is the GenBank assembly GCA\_013415665.1. The GC content of the type genome is 60.62 %

and the genome length is 1.71 Mbp.

**Description of *Candidatus Betacarcha paralitudo* sp. nov.**

*Candidatus Betacarcha paralitudo* (NL. fem. n. *paralitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKGA01 sp007117735*. The type genome for the species is the GenBank assembly GCA\_007117735.1. The GC content of the type genome is 35.4 % and the genome length is 0.69 Mbp.

**Description of *Candidatus Betacarcha* gen. nov.**

*Candidatus Betacarcha* (NL. fem. n. *Betacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SKGA01*. The type species for the genus is *Candidatus Betacarcha paralitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SKGA01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Betacarchaceae*.

**Description of *Candidatus Betacarchaceae* fam. nov.**

*Candidatus Betacarchaceae* (NL. fem. n. *Betacarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SKGA01*. The type genus for the taxon is *Candidatus Betacarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

**Description of *Candidatus Bicalarcha capuessa* sp. nov.**

*Candidatus Bicalarcha capuessa* (NL. fem. n. *capuessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-07 sp003601605*. The type genome for the species is the GenBank assembly GCA\_003601605.1. The GC content of the type genome is 40.83 % and the genome length is 1.09 Mbp.

### **Description of *Candidatus Bicalarcha* gen. nov.**

*Candidatus Bicalarcha* (NL. fem. n. *Bicalarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-07*. The type species for the genus is *Candidatus Bicalarcha capuessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

### **Description of *Candidatus Bicalarcha cerofitura* sp. nov.**

*Candidatus Bicalarcha cerofitura* (NL. fem. n. *cerofitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-07 sp002010975*. The type genome for the species is the GenBank assembly GCA\_002010975.1. The GC content of the type genome is 38.74 % and the genome length is 0.91 Mbp.

### **Description of *Candidatus Bicaparcha loraritica* sp. nov.**

*Candidatus Bicaparcha loraritica* (NL. fem. n. *loraritica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-217-1 sp002254745*. The type genome for the species is the GenBank assembly GCA\_002254745.1. The GC content of the type genome is 37.23 % and the genome length is 0.81 Mbp.

### **Description of *Candidatus Bicaparcha* gen. nov.**

*Candidatus Bicaparcha* (NL. fem. n. *Bicaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-217-1*. The type species for the genus is *Candidatus Bicaparcha loraritica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4484-217-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Bicaparchaceae*.

### **Description of *Candidatus* Bicaparchaceae fam. nov.**

*Candidatus* Bicaparchaceae (NL. fem. n. *Bicaparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-217-1*. The type genus for the taxon is *Candidatus* Bicaparcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-217-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Bicaparchales.

### **Description of *Candidatus* Bicaparchales ord. nov.**

*Candidatus* Bicaparchales (NL. fem. n. *Bicaparchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-217-1*. The type genus for the taxon is *Candidatus* Bicaparcha .

According to the GTDB R06-RS202, this order belongs to the class *Thermoproteia*.

### **Description of *Candidatus* Bicinarcha siminigena sp. nov.**

*Candidatus* Bicinarcha siminigena (NL. fem. n. *siminigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B12-G17 sp003661905*. The type genome for the species is the GenBank assembly GCA\_003661905.1. The GC content of the type genome is 35.93 % and the genome length is 1.4 Mbp.

### **Description of *Candidatus* Bicinarcha gen. nov.**

*Candidatus* Bicinarcha (NL. fem. n. *Bicinarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B12-G17*. The type species for the genus is *Candidatus* Bicinarcha siminigena .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus* Biciparcha detotivita sp. nov.**

*Candidatus* Biciparcha detotivita (NL. fem. n. *detotivita* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2688925 sp002688925*. The type genome for the species is the GenBank assembly GCA\_002688925.1. The GC content of the type genome is 34.55 % and the genome length is 0.86 Mbp.

#### **Description of *Candidatus Biciparcha* gen. nov.**

*Candidatus Biciparcha* (NL. fem. n. *Biciparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2688925*. The type species for the genus is *Candidatus Biciparcha detotivita*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Dehonarchaceae*.

#### **Description of *Candidatus Bicodarcha pocilicella* sp. nov.**

*Candidatus Bicodarcha pocilicella* (NL. fem. n. *pocilicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAXVZ01 sp013335235*. The type genome for the species is the GenBank assembly GCA\_013335235.1. The GC content of the type genome is 44.37 % and the genome length is 1.64 Mbp.

#### **Description of *Candidatus Bicodarcha* gen. nov.**

*Candidatus Bicodarcha* (NL. fem. n. *Bicodarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAAXVZ01*. The type species for the genus is *Candidatus Bicodarcha pocilicella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAAXVZ01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Bicodarchaceae*.

#### **Description of *Candidatus Bicodarchaceae* fam. nov.**

*Candidatus* Bicodarchaceae (NL. fem. n. *Bicodarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAAXVZ01*. The type genus for the taxon is *Candidatus* Bicodarcha .

According to GTDB R06-RS202, this family belongs to the order *Woeseearchaeales*.

#### **Description of *Candidatus* Bicorarcha decinastra sp. nov.**

*Candidatus* Bicorarcha decinastra (NL. fem. n. *decinastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIKBN01 sp903825675*. The type genome for the species is the GenBank assembly GCA\_903825675.1. The GC content of the type genome is 38.89 % and the genome length is 0.9 Mbp.

#### **Description of *Candidatus* Bicorarcha gen. nov.**

*Candidatus* Bicorarcha (NL. fem. n. *Bicorarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIKBN01*. The type species for the genus is *Candidatus* Bicorarcha decinastra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR5*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pericarchaceae.

#### **Description of *Candidatus* Bicubarcha refocicella sp. nov.**

*Candidatus* Bicubarcha refocicella (NL. fem. n. *refocicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABWCK01 sp013360305*. The type genome for the species is the GenBank assembly GCA\_013360305.1. The GC content of the type genome is 39.04 % and the genome length is 0.82 Mbp.

#### **Description of *Candidatus* Bicubarcha gen. nov.**

*Candidatus* Bicubarcha (NL. fem. n. *Bicubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JABWCK01*. The type species for the genus is *Candidatus Bifararcha refocicella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10210*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Relenarchaceae*.

### **Description of *Candidatus Bifararcha metabitoga* sp. nov.**

*Candidatus Bifararcha metabitoga* (NL. fem. n. *metabitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-52 sp003660905*. The type genome for the species is the GenBank assembly GCA\_003660905.1. The GC content of the type genome is 36.36 % and the genome length is 0.83 Mbp.

### **Description of *Candidatus Bifararcha* gen. nov.**

*Candidatus Bifararcha* (NL. fem. n. *Bifararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-52*. The type species for the genus is *Candidatus Bifararcha metabitoga*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4484-52*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Bifararchaceae*.

### **Description of *Candidatus Bifararchaceae* fam. nov.**

*Candidatus Bifararchaceae* (NL. fem. n. *Bifararchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-52*. The type genus for the taxon is *Candidatus Bifararcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-52*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Bifararchales*.

### **Description of *Candidatus Bifararchales* ord. nov.**

*Candidatus* Bifararchales (NL. fem. n. *Bifararchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-52*. The type genus for the taxon is *Candidatus* Bifararcha .

According to the original version of GTDB R06-RS202, this family belongs to the class *EX4484-52*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus* Bifararchae.

### **Description of *Candidatus* Bifararchae class. nov.**

*Candidatus* Bifararchae (NL. fem. n. *c\_\_Bifararchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-52*. The type genus for the taxon is *Candidatus* Bifararcha .

According to the original version of GTDB R06-RS202, this family belongs to the phylum *EX4484-52*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the phylum *Candidatus* Bifararchota.

### **Description of *Candidatus* Bifararchota phyl. nov.**

*Candidatus* Bifararchota (NL. fem. n. *Bifararchota* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-52*. The type genus for the taxon is *Candidatus* Bifararcha .

According to GTDB R06-RS202, this phylum belongs to the domain *Archaea* .

### **Description of *Candidatus* Bifararcha ranunimonas sp. nov.**

*Candidatus* Bifararcha ranunimonas (NL. fem. n. *ranunimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-52 sp002254415*. The type genome for the species is the GenBank assembly GCA\_002254415.1. The GC content of the type genome is 27.95 % and the genome length is 0.61 Mbp.

### **Description of *Candidatus* Bifisarcha televivita sp. nov.**

*Candidatus* Bifisarcha televivita (NL. fem. n. *televivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in



apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMCB01 sp902384455*. The type genome for the species is the GenBank assembly GCA\_902384455.1. The GC content of the type genome is 50.5 % and the genome length is 2.41 Mbp.

#### **Description of *Candidatus Bifisarcha* gen. nov.**

*Candidatus Bifisarcha* (NL. fem. n. *Bifisarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMCB01*. The type species for the genus is *Candidatus Bifisarcha televivita* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *SCGC-AAA252-II5*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Catobarchaceae*.

#### **Description of *Candidatus Bigemarcha cerebago* sp. nov.**

*Candidatus Bigemarcha cerebago* (NL. fem. n. *cerebago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKXI01 sp007129135*. The type genome for the species is the GenBank assembly GCA\_007131485.1. The GC content of the type genome is 68.08 % and the genome length is 2.56 Mbp.

#### **Description of *Candidatus Bigemarcha* gen. nov.**

*Candidatus Bigemarcha* (NL. fem. n. *Bigemarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SKXI01*. The type species for the genus is *Candidatus Bigemarcha cerebago* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Bigemarcha peripibula* sp. nov.**

*Candidatus Bigemarcha peripibula* (NL. fem. n. *peripibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKX101 sp007128515*. The type genome for the species is the GenBank assembly GCA\_007128515.1. The GC content of the type genome is 67.45 % and the genome length is 2.47 Mbp.

**Description of *Candidatus Bimetarcha demogatica* sp. nov.**

*Candidatus Bimetarcha demogatica* (NL. fem. n. *demogatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J096 sp003694965*. The type genome for the species is the GenBank assembly GCA\_003694965.1. The GC content of the type genome is 43.7 % and the genome length is 0.64 Mbp.

**Description of *Candidatus Bimetarcha* gen. nov.**

*Candidatus Bimetarcha* (NL. fem. n. *Bimetarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J096*. The type species for the genus is *Candidatus Bimetarcha demogatica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *J096*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Bimetarchaceae*.

**Description of *Candidatus Bimetarchaceae* fam. nov.**

*Candidatus Bimetarchaceae* (NL. fem. n. *Bimetarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *J096*. The type genus for the taxon is *Candidatus Bimetarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Volubarchales*.

**Description of *Candidatus Bimetarcha dimadatio* sp. nov.**

*Candidatus Bimetarcha dimadatio* (NL. fem. n. *dimadatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTMT01 sp011355205*. The type genome for the species is the GenBank assembly GCA\_011355205.1. The GC content of the type genome is 46.36 % and the genome length is 1.61 Mbp.

**Description of *Candidatus Bimotarcha* gen. nov.**

*Candidatus Bimotarcha* (NL. fem. n. *Bimotarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTMT01*. The type species for the genus is *Candidatus Bimotarcha dimadatio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *RBG-13-38-9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Rurigarchaceae*.

**Description of *Candidatus Binocarcha cohonifica* sp. nov.**

*Candidatus Binocarcha cohonifica* (NL. fem. n. *cohonifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B78-G9 sp003650975*. The type genome for the species is the GenBank assembly GCA\_003650975.1. The GC content of the type genome is 50.04 % and the genome length is 1.56 Mbp.

**Description of *Candidatus Binocarcha* gen. nov.**

*Candidatus Binocarcha* (NL. fem. n. *Binocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B78-G9*. The type species for the genus is *Candidatus Binocarcha cohonifica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JdFR-43*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pimenarchaceae*.

**Description of *Candidatus Bipararcha domicicula* sp. nov.**

*Candidatus Bipararcha domicicula* (NL. fem. n. *domicicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JDFR-14 sp002011085*. The type genome for the species is the GenBank assembly GCA\_002011085.1. The GC content of the type genome is 41.96 % and the genome length is 1.64 Mbp.

#### **Description of *Candidatus Bipararcha* gen. nov.**

*Candidatus Bipararcha* (NL. fem. n. *Bipararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JDFR-14*. The type species for the genus is *Candidatus Bipararcha domicicula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JDFR-13*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Semunarchaceae*.

#### **Description of *Candidatus Bipatarcha rosaritio* sp. nov.**

*Candidatus Bipatarcha rosaritio* (NL. fem. n. *rosaritio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA489 sp002505585*. The type genome for the species is the GenBank assembly GCA\_002506165.1. The GC content of the type genome is 33.03 % and the genome length is 0.77 Mbp.

#### **Description of *Candidatus Bipatarcha* gen. nov.**

*Candidatus Bipatarcha* (NL. fem. n. *Bipatarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA489*. The type species for the genus is *Candidatus Bipatarcha rosaritio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA489*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Bipatarchaceae*.

#### **Description of *Candidatus Bipatarchaceae* fam. nov.**

*Candidatus Bipatarchaceae* (NL. fem. n. *Bipatarchaceae* a name created from the name

of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA489*. The type genus for the taxon is *Candidatus Bipatarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Lanifarchales*.

#### **Description of *Candidatus Bipenarcha laculousia* sp. nov.**

*Candidatus Bipenarcha laculousia* (NL. fem. n. *laculousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMEV01 sp902385255*. The type genome for the species is the GenBank assembly GCA\_902385255.1. The GC content of the type genome is 36.53 % and the genome length is 1.16 Mbp.

#### **Description of *Candidatus Bipenarcha* gen. nov.**

*Candidatus Bipenarcha* (NL. fem. n. *Bipenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMEV01*. The type species for the genus is *Candidatus Bipenarcha laculousia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG07-land*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pomifarchaceae*.

#### **Description of *Candidatus Bipinarcha depicicula* sp. nov.**

*Candidatus Bipinarcha depicicula* (NL. fem. n. *depicicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TEKIR-8 sp008080765*. The type genome for the species is the GenBank assembly GCA\_008080765.1. The GC content of the type genome is 33.19 % and the genome length is 3.92 Mbp.

#### **Description of *Candidatus Bipinarcha* gen. nov.**

*Candidatus Bipinarcha* (NL. fem. n. *Bipinarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *TEKIR-8*. The type species for the genus is *Candidatus Bipinarcha depicicula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SOKP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Hirudarchaceae*.

#### **Description of *Candidatus Bipinarcha lavabilenta* sp. nov.**

*Candidatus Bipinarcha lavabilenta* (NL. fem. n. *lavabilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TEKIR-8 sp004524365*. The type genome for the species is the GenBank assembly GCA\_004524365.1. The GC content of the type genome is 31.01 % and the genome length is 1.89 Mbp.

#### **Description of *Candidatus Bipinarcha lenimisca* sp. nov.**

*Candidatus Bipinarcha lenimisca* (NL. fem. n. *lenimisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TEKIR-8 sp008080735*. The type genome for the species is the GenBank assembly GCA\_008080735.1. The GC content of the type genome is 33.6 % and the genome length is 4.15 Mbp.

#### **Description of *Candidatus Bisacarcha papilessa* sp. nov.**

*Candidatus Bisacarcha papilessa* (NL. fem. n. *papilessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BA-13 sp005888675*. The type genome for the species is the GenBank assembly GCA\_005888675.1. The GC content of the type genome is 50.69 % and the genome length is 1.86 Mbp.

#### **Description of *Candidatus Bisacarcha* gen. nov.**

*Candidatus Bisacarcha* (NL. fem. n. *Bisacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BA-13*. The type species for the genus is *Candidatus Bisacarcha papilessa* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *40CM-2-53-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nimirarchaceae*.

#### **Description of *Candidatus Bisacarcha risibitoga* sp. nov.**

*Candidatus Bisacarcha risibitoga* (NL. fem. n. *risibitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BA-13 sp005888695*. The type genome for the species is the GenBank assembly GCA\_005888695.1. The GC content of the type genome is 50.79 % and the genome length is 2.08 Mbp.

#### **Description of *Candidatus Bisularcha cucurousia* sp. nov.**

*Candidatus Bisularcha cucurousia* (NL. fem. n. *cucurousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RumEn-M2 sp002502965*. The type genome for the species is the GenBank assembly GCA\_002502965.1. The GC content of the type genome is 54.26 % and the genome length is 1.24 Mbp.

#### **Description of *Candidatus Bisularcha* gen. nov.**

*Candidatus Bisularcha* (NL. fem. n. *Bisularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *RumEn-M2*. The type species for the genus is *Candidatus Bisularcha cucurousia* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Bisularcha laculatio* sp. nov.**

*Candidatus Bisularcha laculatio* (NL. fem. n. *laculatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RumEn-M2 sp001421175*. The type genome for the species is the GenBank assembly GCA\_002505245.1. The GC content of the type genome is 55.15 % and the genome length is 1.18 Mbp.

**Description of *Candidatus Bisularcha pavicigena* sp. nov.**

*Candidatus Bisularcha pavicigena* (NL. fem. n. *pavicigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RumEn-M2 sp012522645*. The type genome for the species is the GenBank assembly GCA\_012522645.1. The GC content of the type genome is 54.5 % and the genome length is 1.34 Mbp.

**Description of *Candidatus Bisularcha recumatio* sp. nov.**

*Candidatus Bisularcha recumatio* (NL. fem. n. *recumatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RumEn-M2 sp002506255*. The type genome for the species is the GenBank assembly GCA\_002506255.1. The GC content of the type genome is 53.09 % and the genome length is 0.82 Mbp.

**Description of *Candidatus Biverarcha cenobilega* sp. nov.**

*Candidatus Biverarcha cenobilega* (NL. fem. n. *cenobilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG10238-14 sp002789635*. The type genome for the species is the GenBank assembly GCA\_002782805.1. The GC content of the type genome is 37.28 % and the genome length is 0.82 Mbp.

**Description of *Candidatus Biverarcha* gen. nov.**

*Candidatus Biverarcha* (NL. fem. n. *Biverarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CG10238-14*. The type species for the genus is *Candidatus Biverarcha cenobilega*.



According to the original version of GTDB R06-RS202, this genus belongs to the family *CG10238-14*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Biverarchaceae*.

**Description of *Candidatus Biverarchaceae* fam. nov.**

*Candidatus Biverarchaceae* (NL. fem. n. *Biverarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CG10238-14*. The type genus for the taxon is *Candidatus Biverarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *CG10238-14*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Biverarchales*.

**Description of *Candidatus Biverarchales* ord. nov.**

*Candidatus Biverarchales* (NL. fem. n. *Biverarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CG10238-14*. The type genus for the taxon is *Candidatus Biverarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Aenigmataarchaeia*.

**Description of *Candidatus Bonifarcha cimelitudo* sp. nov.**

*Candidatus Bonifarcha cimelitudo* (NL. fem. n. *cimelitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QS-4-69-31 sp003021655*. The type genome for the species is the GenBank assembly GCA\_003021655.1. The GC content of the type genome is 69.03 % and the genome length is 2.74 Mbp.

**Description of *Candidatus Bonifarcha* gen. nov.**

*Candidatus Bonifarcha* (NL. fem. n. *Bonifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QS-4-69-31*. The type species for the genus is *Candidatus Bonifarcha cimelitudo*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Bonitarcha conubax* sp. nov.**

*Candidatus Bonitarcha conubax* (NL. fem. n. *conubax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA11716 sp9638u*. The type genome for the species is the GenBank assembly GCA\_013329175.1. The GC content of the type genome is 48.36 % and the genome length is 1.56 Mbp.

### **Description of *Candidatus Bonitarcha* gen. nov.**

*Candidatus Bonitarcha* (NL. fem. n. *Bonitarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA11716*. The type species for the genus is *Candidatus Bonitarcha conubax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA11716*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Bonitarchaceae*.

### **Description of *Candidatus Bonitarchaceae* fam. nov.**

*Candidatus Bonitarchaceae* (NL. fem. n. *Bonitarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA11716*. The type genus for the taxon is *Candidatus Bonitarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

### **Description of *Candidatus Bovicarcha depicimonas* sp. nov.**

*Candidatus Bovicarcha depicimonas* (NL. fem. n. *depicimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-205 sp002255045*. The type genome for the species is the GenBank assembly GCA\_011042415.1. The GC content of the type genome is 42.52 % and the genome length is 0.88 Mbp.

### **Description of *Candidatus Bovicarcha* gen. nov.**

*Candidatus* Bovicarcha (NL. fem. n. *Bovicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-205*. The type species for the genus is *Candidatus* Bovicarcha depicimonas .

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4484-205*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Bovicarchaceae.

#### **Description of *Candidatus* Bovicarchaceae fam. nov.**

*Candidatus* Bovicarchaceae (NL. fem. n. *Bovicarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-205*. The type genus for the taxon is *Candidatus* Bovicarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-205*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Bovicarchales.

#### **Description of *Candidatus* Bovicarchales ord. nov.**

*Candidatus* Bovicarchales (NL. fem. n. *Bovicarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-205*. The type genus for the taxon is *Candidatus* Bovicarcha .

According to the original version of GTDB R06-RS202, this family belongs to the class *EX4484-205*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus* Bovicarchae.

#### **Description of *Candidatus* Bovicarchae class. nov.**

*Candidatus* Bovicarchae (NL. fem. n. *c\_\_Bovicarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-205*. The type genus for the taxon is *Candidatus* Bovicarcha .

According to GTDB R06-RS202, this class belongs to the phylum *Thermoproteota*.

#### **Description of *Candidatus* Bucelarcha redacitudo sp. nov.**

*Candidatus* Bucelarcha redacitudo (NL. fem. n. *redacitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PCYB01 sp002762845*. The type genome for the species is the GenBank assembly GCA\_002762845.1. The GC content of the type genome is 35.94 % and the genome length is 0.86 Mbp.

#### **Description of *Candidatus* Bucelarcha gen. nov.**

*Candidatus* Bucelarcha (NL. fem. n. *Bucelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PCYB01*. The type species for the genus is *Candidatus* Bucelarcha redacitudo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Tirocarchaceae.

#### **Description of *Candidatus* Bugilarcha homulitrix sp. nov.**

*Candidatus* Bugilarcha homulitrix (NL. fem. n. *homulitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTFW01 sp011363025*. The type genome for the species is the GenBank assembly GCA\_011363025.1. The GC content of the type genome is 44.86 % and the genome length is 1.8 Mbp.

#### **Description of *Candidatus* Bugilarcha gen. nov.**

*Candidatus* Bugilarcha (NL. fem. n. *Bugilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTFW01*. The type species for the genus is *Candidatus* Bugilarcha homulitrix .

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTFW01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Bugilarchaceae.

### **Description of *Candidatus* Bugilarchaceae fam. nov.**

*Candidatus* Bugilarchaceae (NL. fem. n. *Bugilarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTFW01*. The type genus for the taxon is *Candidatus* Bugilarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA184*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Dimidarchales.

### **Description of *Candidatus* Bulaparcha hemiditudo sp. nov.**

*Candidatus* Bulaparcha hemiditudo (NL. fem. n. *hemiditudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA186 sp002494765*. The type genome for the species is the GenBank assembly GCA\_002494765.1. The GC content of the type genome is 48.18 % and the genome length is 1.62 Mbp.

### **Description of *Candidatus* Bulaparcha gen. nov.**

*Candidatus* Bulaparcha (NL. fem. n. *Bulaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA186*. The type species for the genus is *Candidatus* Bulaparcha hemiditudo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA186*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Bulaparchaceae.

### **Description of *Candidatus* Bulaparchaceae fam. nov.**

*Candidatus* Bulaparchaceae (NL. fem. n. *Bulaparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA186*. The type genus for the taxon is *Candidatus* Bulaparcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA186*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Bulaparchales.

### **Description of *Candidatus* Bulaparchales ord. nov.**

*Candidatus* Bulaparchales (NL. fem. n. *Bulaparchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA186*. The type genus for the taxon is *Candidatus* Bulaparcha .

According to the original version of GTDB R06-RS202, this family belongs to the class *UBA186*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus* Bulaparchae.

### **Description of *Candidatus* Bulaparchae class. nov.**

*Candidatus* Bulaparchae (NL. fem. n. *c\_\_Bulaparchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA186*. The type genus for the taxon is *Candidatus* Bulaparcha .

According to GTDB R06-RS202, this class belongs to the phylum *Thermoplasmatota*.

### **Description of *Candidatus* Butubarcha taxilivita sp. nov.**

*Candidatus* Butubarcha taxilivita (NL. fem. n. *taxilivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADDH01 sp013154035*. The type genome for the species is the GenBank assembly GCA\_013154035.1. The GC content of the type genome is 52.31 % and the genome length is 1.01 Mbp.

### **Description of *Candidatus* Butubarcha gen. nov.**

*Candidatus* Butubarcha (NL. fem. n. *Butubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADDH01*. The type species for the genus is *Candidatus* Butubarcha taxilivita .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAADDC01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Capilarchaceae.

### **Description of *Candidatus* Buxanarcha mahemigena sp. nov.**

*Candidatus* Buxanarcha mahemigena (NL. fem. n. *mahemigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HR1 sp002926195*. The type genome for the species is the GenBank assembly GCA\_013374495.1. The GC content of the type genome is 38.81 % and the genome length is 2.45 Mbp.

#### **Description of *Candidatus* Buxanarcha gen. nov.**

*Candidatus* Buxanarcha (NL. fem. n. *Buxanarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *HR1*. The type species for the genus is *Candidatus* Buxanarcha mahemigena .

According to the original version of GTDB R06-RS202, this genus belongs to the family *HR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Buxanarchaceae.

#### **Description of *Candidatus* Buxanarchaceae fam. nov.**

*Candidatus* Buxanarchaceae (NL. fem. n. *Buxanarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *HR1*. The type genus for the taxon is *Candidatus* Buxanarcha .

According to GTDB R06-RS202, this family belongs to the order *Methanosarcinales*.

#### **Description of *Candidatus* Buxifarcha coticitura sp. nov.**

*Candidatus* Buxifarcha coticitura (NL. fem. n. *coticitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QEXZ01 sp013180605*. The type genome for the species is the GenBank assembly GCA\_013180605.1. The GC content of the type genome is 42.66 % and the genome length is 2.34 Mbp.

#### **Description of *Candidatus* Buxifarcha gen. nov.**

*Candidatus* Buxifarcha (NL. fem. n. *Buxifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QEXZ01*. The type species for the genus is *Candidatus Buxifarcha coticitura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ANME-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Loriparchaceae*.

#### **Description of *Candidatus Buxifarcha cululentia* sp. nov.**

*Candidatus Buxifarcha cululentia* (NL. fem. n. *cululentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QEXZ01 sp003160755*. The type genome for the species is the GenBank assembly GCA\_003160755.1. The GC content of the type genome is 43.3 % and the genome length is 1.9 Mbp.

#### **Description of *Candidatus Buxifarcha funebibra* sp. nov.**

*Candidatus Buxifarcha funebibra* (NL. fem. n. *funebibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QEXZ01 sp003661125*. The type genome for the species is the GenBank assembly GCA\_003661125.1. The GC content of the type genome is 42.99 % and the genome length is 2.21 Mbp.

#### **Description of *Candidatus Buxifarcha repecitia* sp. nov.**

*Candidatus Buxifarcha repecitia* (NL. fem. n. *repecitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QEXZ01 sp003601795*. The type genome for the species is the GenBank assembly GCA\_003601795.1. The GC content of the type genome is 42.97 % and the genome length is 1.93 Mbp.

#### **Description of *Candidatus Cacalarcha peropibula* sp. nov.**

*Candidatus Cacalarcha peropibula* (NL. fem. n. *peropibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).



A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SpSt-9 sp011333035*. The type genome for the species is the GenBank assembly GCA\_011333035.1. The GC content of the type genome is 29.61 % and the genome length is 0.59 Mbp.

**Description of *Candidatus Cacalarcha* gen. nov.**

*Candidatus Cacalarcha* (NL. fem. n. *Cacalarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SpSt-9*. The type species for the genus is *Candidatus Cacalarcha peropibula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family EX4484-224. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cemenarchaceae*.

**Description of *Candidatus Cacomarcha decinibra* sp. nov.**

*Candidatus Cacomarcha decinibra* (NL. fem. n. *decinibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B14-G2 sp003661385*. The type genome for the species is the GenBank assembly GCA\_003661385.1. The GC content of the type genome is 52.83 % and the genome length is 1.74 Mbp.

**Description of *Candidatus Cacomarcha* gen. nov.**

*Candidatus Cacomarcha* (NL. fem. n. *Cacomarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B14-G2*. The type species for the genus is *Candidatus Cacomarcha decinibra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B14-G2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cacomarchaceae*.

**Description of *Candidatus Cacomarchaceae* fam. nov.**

*Candidatus Cacomarchaceae* (NL. fem. n. *Cacomarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B14-G2*. The type genus for the taxon is *Candidatus Cacoparcha*.

According to GTDB R06-RS202, this family belongs to the order *Korarchaeales*.

#### **Description of *Candidatus Cacoparcha fecunicella* sp. nov.**

*Candidatus Cacoparcha fecunicella* (NL. fem. n. *fecunicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKSH01 sp007118075*. The type genome for the species is the GenBank assembly GCA\_007118075.1. The GC content of the type genome is 57.78 % and the genome length is 1.83 Mbp.

#### **Description of *Candidatus Cacoparcha* gen. nov.**

*Candidatus Cacoparcha* (NL. fem. n. *Cacoparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SKSH01*. The type species for the genus is *Candidatus Cacoparcha fecunicella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SKSH01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cacoparchaceae*.

#### **Description of *Candidatus Cacoparchaceae* fam. nov.**

*Candidatus Cacoparchaceae* (NL. fem. n. *Cacoparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SKSH01*. The type genus for the taxon is *Candidatus Cacoparcha*.

According to GTDB R06-RS202, this family belongs to the order *Halobacteriales*.

#### **Description of *Candidatus Cacoparcha hiruditio* sp. nov.**

*Candidatus Cacoparcha hiruditio* (NL. fem. n. *hiruditio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *SKSH01 sp007118145*. The type genome for the species is the GenBank assembly GCA\_007125235.1. The GC content of the type genome is 57.67 % and the genome length is 2.12 Mbp.

#### **Description of *Candidatus Cadavarcha regigimonas* sp. nov.**

*Candidatus Cadavarcha regigimonas* (NL. fem. n. *regigimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BM511 sp002867475*. The type genome for the species is the GenBank assembly GCA\_002867475.1. The GC content of the type genome is 31.0 % and the genome length is 1.67 Mbp.

#### **Description of *Candidatus Cadavarcha* gen. nov.**

*Candidatus Cadavarcha* (NL. fem. n. *Cadavarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BM511*. The type species for the genus is *Candidatus Cadavarcha regigimonas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *BM511*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cadavarchaceae*.

#### **Description of *Candidatus Cadavarchaceae* fam. nov.**

*Candidatus Cadavarchaceae* (NL. fem. n. *Cadavarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *BM511*. The type genus for the taxon is *Candidatus Cadavarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Cadurarcha hexamicula* sp. nov.**

*Candidatus Cadurarcha hexamicula* (NL. fem. n. *hexamicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PXDW01 sp003564925*. The type genome for the species is the GenBank assembly GCA\_003564925.1. The GC content of the type genome is 31.99 %

and the genome length is 0.88 Mbp.

**Description of *Candidatus Cadurarcha* gen. nov.**

*Candidatus Cadurarcha* (NL. fem. n. *Cadurarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PXDW01*. The type species for the genus is *Candidatus Cadurarcha hexamicula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *PXDW01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cadurarchaceae*.

**Description of *Candidatus Cadurarchaceae* fam. nov.**

*Candidatus Cadurarchaceae* (NL. fem. n. *Cadurarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PXDW01*. The type genus for the taxon is *Candidatus Cadurarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

**Description of *Candidatus Caldisphaera defuniforma* sp. nov.**

*Candidatus Caldisphaera defuniforma* (NL. fem. n. *defuniforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Caldisphaera sp002506595*. The type genome for the species is the GenBank assembly GCA\_002506595.1. The GC content of the type genome is 29.62 % and the genome length is 1.47 Mbp.

**Description of *Candidatus Caldisphaera volucugo* sp. nov.**

*Candidatus Caldisphaera volucugo* (NL. fem. n. *volucugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Caldisphaera sp002877855*. The type genome for the species is the GenBank assembly GCA\_002877855.1. The GC content of the type genome is 30.99 % and the genome length is 0.94 Mbp.

### **Description of *Candidatus Caldivirga cisalitoga* sp. nov.**

*Candidatus Caldivirga cisalitoga* (NL. fem. n. *cisalitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Caldivirga sp001663375*. The type genome for the species is the GenBank assembly GCA\_011054495.1. The GC content of the type genome is 48.44 % and the genome length is 2.19 Mbp.

### **Description of *Candidatus Caldivirga lametimonas* sp. nov.**

*Candidatus Caldivirga lametimonas* (NL. fem. n. *lametimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Caldivirga sp002506515*. The type genome for the species is the GenBank assembly GCA\_002506515.1. The GC content of the type genome is 42.3 % and the genome length is 1.86 Mbp.

### **Description of *Candidatus Caliparcha divolentia* sp. nov.**

*Candidatus Caliparcha divolentia* (NL. fem. n. *divolentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10191 sp10036u*. The type genome for the species is the GenBank assembly GCA\_013331725.1. The GC content of the type genome is 42.85 % and the genome length is 0.87 Mbp.

### **Description of *Candidatus Caliparcha* gen. nov.**

*Candidatus Caliparcha* (NL. fem. n. *Caliparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10191*. The type species for the genus is *Candidatus Caliparcha divolentia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10191*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Caliparchaceae*.

### **Description of *Candidatus Caliparchaceae* fam. nov.**

*Candidatus* Caliparchaceae (NL. fem. n. *Caliparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10191*. The type genus for the taxon is *Candidatus* Caliparcha .

According to GTDB R06-RS202, this family belongs to the order *Iainarchaeales*.

#### **Description of *Candidatus* Camilarcha domabibra sp. nov.**

*Candidatus* Camilarcha domabibra (NL. fem. n. *domabibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIMOB01 sp903842985*. The type genome for the species is the GenBank assembly GCA\_903842985.1. The GC content of the type genome is 41.44 % and the genome length is 0.88 Mbp.

#### **Description of *Candidatus* Camilarcha gen. nov.**

*Candidatus* Camilarcha (NL. fem. n. *Camilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIMOB01*. The type species for the genus is *Candidatus* Camilarcha domabibra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *CAIVOO01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Timefarchaceae.

#### **Description of *Candidatus* Capabarcha caduriforma sp. nov.**

*Candidatus* Capabarcha caduriforma (NL. fem. n. *caduriforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CBA1134 sp003021785*. The type genome for the species is the GenBank assembly GCA\_003021785.1. The GC content of the type genome is 65.11 % and the genome length is 2.25 Mbp.

#### **Description of *Candidatus* Capabarcha gen. nov.**

*Candidatus* Capabarcha (NL. fem. n. *Capabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CBA1134*. The type species for the genus is *Candidatus Capabarcha caduriforma*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Capabarcha cicatifica* sp. nov.**

*Candidatus Capabarcha cicatifica* (NL. fem. n. *cicatifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CBA1134 sp003021175*. The type genome for the species is the GenBank assembly GCA\_003021175.1. The GC content of the type genome is 66.67 % and the genome length is 2.61 Mbp.

#### **Description of *Candidatus Capabarcha sacopetta* sp. nov.**

*Candidatus Capabarcha sacopetta* (NL. fem. n. *sacopetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CBA1134 sp003023185*. The type genome for the species is the GenBank assembly GCA\_003023185.1. The GC content of the type genome is 67.06 % and the genome length is 2.02 Mbp.

#### **Description of *Candidatus Capabarcha sifunousia* sp. nov.**

*Candidatus Capabarcha sifunousia* (NL. fem. n. *sifunousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CBA1134 sp001950595*. The type genome for the species is the GenBank assembly RS\_GCF\_001950595.1. The GC content of the type genome is 65.36 % and the genome length is 2.57 Mbp.

#### **Description of *Candidatus Capabarcha vagabatio* sp. nov.**

*Candidatus Capabarcha vagabatio* (NL. fem. n. *vagabatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *CBA1134 sp009184545*. The type genome for the species is the GenBank assembly RS\_GCF\_009184575.1. The GC content of the type genome is 64.73 % and the genome length is 2.42 Mbp.

#### **Description of *Candidatus Capilarcha cosigitia* sp. nov.**

*Candidatus Capilarcha cosigitia* (NL. fem. n. *cosigitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADDC01 sp013154145*. The type genome for the species is the GenBank assembly GCA\_013154145.1. The GC content of the type genome is 58.9 % and the genome length is 0.54 Mbp.

#### **Description of *Candidatus Capilarcha* gen. nov.**

*Candidatus Capilarcha* (NL. fem. n. *Capilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADDC01*. The type species for the genus is *Candidatus Capilarcha cosigitia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAADDC01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Capilarchaceae*.

#### **Description of *Candidatus Capilarchaceae* fam. nov.**

*Candidatus Capilarchaceae* (NL. fem. n. *Capilarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAADDC01*. The type genus for the taxon is *Candidatus Capilarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *JAADDC01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Capilarchales*.

#### **Description of *Candidatus Capilarchales* ord. nov.**

*Candidatus Capilarchales* (NL. fem. n. *Capilarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAADDC01*. The type genus for the taxon is *Candidatus Capilarcha*.



According to the GTDB R06-RS202, this order belongs to the class *Iainarchaeia*.

**Description of *Candidatus Capucarcha dehisimonia* sp. nov.**

*Candidatus Capucarcha dehisimonia* (NL. fem. n. *dehisimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SpSt-742 sp011335085*. The type genome for the species is the GenBank assembly GCA\_011335085.1. The GC content of the type genome is 33.17 % and the genome length is 0.4 Mbp.

**Description of *Candidatus Capucarcha* gen. nov.**

*Candidatus Capucarcha* (NL. fem. n. *Capucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SpSt-742*. The type species for the genus is *Candidatus Capucarcha dehisimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SCSR01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cucurarchaceae*.

**Description of *Candidatus Capudarcha pulegilega* sp. nov.**

*Candidatus Capudarcha pulegilega* (NL. fem. n. *pulegilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSAL01 sp011380095*. The type genome for the species is the GenBank assembly GCA\_011380095.1. The GC content of the type genome is 49.88 % and the genome length is 1.02 Mbp.

**Description of *Candidatus Capudarcha* gen. nov.**

*Candidatus Capudarcha* (NL. fem. n. *Capudarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSAL01*. The type species for the genus is *Candidatus Capudarcha pulegilega*.

According to the original version of GTDB R06-RS202, this genus belongs to the family

SCGC-AAA252-II5. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Catobarchaceae.

#### **Description of *Candidatus* Caravarcha benepentia sp. nov.**

*Candidatus* Caravarcha benepentia (NL. fem. n. *benepentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO8* sp003649565. The type genome for the species is the GenBank assembly GCA\_003649565.1. The GC content of the type genome is 42.23 % and the genome length is 1.33 Mbp.

#### **Description of *Candidatus* Caravarcha gen. nov.**

*Candidatus* Caravarcha (NL. fem. n. *Caravarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WYZ-LMO8*. The type species for the genus is *Candidatus* Caravarcha benepentia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *WYZ-LMO8*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Caravarchaceae.

#### **Description of *Candidatus* Caravarchaceae fam. nov.**

*Candidatus* Caravarchaceae (NL. fem. n. *Caravarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *WYZ-LMO8*. The type genus for the taxon is *Candidatus* Caravarcha .

According to GTDB R06-RS202, this family belongs to the order *Nezhaarchaeales*.

#### **Description of *Candidatus* Caravarcha catalitia sp. nov.**

*Candidatus* Caravarcha catalitia (NL. fem. n. *catalitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO8* sp011369545. The type genome for the species is the GenBank assembly GCA\_011369545.1. The GC content of the type genome is 51.21 %

and the genome length is 0.36 Mbp.

**Description of *Candidatus Caravarcha deciticella* sp. nov.**

*Candidatus Caravarcha deciticella* (NL. fem. n. *deciticella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO8 sp003650865*. The type genome for the species is the GenBank assembly GCA\_003650865.1. The GC content of the type genome is 51.44 % and the genome length is 1.25 Mbp.

**Description of *Candidatus Caravarcha derecifforma* sp. nov.**

*Candidatus Caravarcha derecifforma* (NL. fem. n. *derecifforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO8 sp004347965*. The type genome for the species is the GenBank assembly GCA\_011366535.1. The GC content of the type genome is 43.58 % and the genome length is 1.42 Mbp.

**Description of *Candidatus Caravarcha hegumimonia* sp. nov.**

*Candidatus Caravarcha hegumimonia* (NL. fem. n. *hegumimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO8 sp011605835*. The type genome for the species is the GenBank assembly GCA\_011605835.1. The GC content of the type genome is 54.5 % and the genome length is 1.03 Mbp.

**Description of *Candidatus Caravarcha pedificella* sp. nov.**

*Candidatus Caravarcha pedificella* (NL. fem. n. *pedificella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO8 sp011362155*. The type genome for the species is the GenBank assembly GCA\_011362155.1. The GC content of the type genome is 52.29 % and the genome length is 0.58 Mbp.

**Description of *Candidatus Carecarcha tenemilenta* sp. nov.**

*Candidatus* Carecarcha tenemilenta (NL. fem. n. *tenemilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Tc-Br11-E2g1 sp001564255*. The type genome for the species is the GenBank assembly GCA\_001564255.1. The GC content of the type genome is 64.49 % and the genome length is 2.16 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample Tc-Br; brine of Tanatar trona crystallizer".

#### **Description of *Candidatus* Carecarcha gen. nov.**

*Candidatus* Carecarcha (NL. fem. n. *Carecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *Tc-Br11-E2g1*. The type species for the genus is *Candidatus* Carecarcha tenemilenta .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Carucarcha conaretta sp. nov.**

*Candidatus* Carucarcha conaretta (NL. fem. n. *conaretta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABMQF01 sp013203345*. The type genome for the species is the GenBank assembly GCA\_013203345.1. The GC content of the type genome is 39.85 % and the genome length is 1.69 Mbp.

#### **Description of *Candidatus* Carucarcha gen. nov.**

*Candidatus* Carucarcha (NL. fem. n. *Carucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JABMQF01*. The type species for the genus is *Candidatus* Carucarcha conaretta .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA11576*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Decularchaceae.

### **Description of *Candidatus Carunarcha luxuribra* sp. nov.**

*Candidatus Carunarcha luxuribra* (NL. fem. n. *luxuribra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RDOG01 sp011365055*. The type genome for the species is the GenBank assembly GCA\_011365055.1. The GC content of the type genome is 30.06 % and the genome length is 4.68 Mbp.

### **Description of *Candidatus Carunarcha* gen. nov.**

*Candidatus Carunarcha* (NL. fem. n. *Carunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *RDOG01*. The type species for the genus is *Candidatus Carunarcha luxuribra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *RDOG01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Carunarchaceae*.

### **Description of *Candidatus Carunarchaceae* fam. nov.**

*Candidatus Carunarchaceae* (NL. fem. n. *Carunarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *RDOG01*. The type genus for the taxon is *Candidatus Carunarcha*.

According to GTDB R06-RS202, this family belongs to the order *Helarchaeales*.

### **Description of *Candidatus Casabarcha detumivita* sp. nov.**

*Candidatus Casabarcha detumivita* (NL. fem. n. *detumivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2686855 sp002686855*. The type genome for the species is the GenBank assembly GCA\_002686855.1. The GC content of the type genome is 33.09 % and the genome length is 1.26 Mbp.

### **Description of *Candidatus Casabarcha* gen. nov.**

*Candidatus* Casabarcha (NL. fem. n. *Casabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2686855*. The type species for the genus is *Candidatus* Casabarcha detumivita .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Dehonarchaceae.

### **Description of *Candidatus* Caselarcha domigax sp. nov.**

*Candidatus* Caselarcha domigax (NL. fem. n. *domigax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRZP01 sp011373125*. The type genome for the species is the GenBank assembly *GCA\_011373125.1*. The GC content of the type genome is 52.13 % and the genome length is 1.09 Mbp.

### **Description of *Candidatus* Caselarcha gen. nov.**

*Candidatus* Caselarcha (NL. fem. n. *Caselarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRZP01*. The type species for the genus is *Candidatus* Caselarcha domigax .

According to the original version of GTDB R06-RS202, this genus belongs to the family *NBVN01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Redunarchaceae.

### **Description of *Candidatus* Caselarcha recumisca sp. nov.**

*Candidatus* Caselarcha recumisca (NL. fem. n. *recumisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRZP01 sp011375535*. The type genome for the species is the GenBank assembly *GCA\_011375535.1*. The GC content of the type genome is 54.63 % and the genome length is 1.82 Mbp.

### **Description of *Candidatus Casigarcha rubefigena* sp. nov.**

*Candidatus Casigarcha rubefigena* (NL. fem. n. *rubefigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-58 sp002254665*. The type genome for the species is the GenBank assembly GCA\_002254665.1. The GC content of the type genome is 34.43 % and the genome length is 1.43 Mbp.

### **Description of *Candidatus Casigarcha* gen. nov.**

*Candidatus Casigarcha* (NL. fem. n. *Casigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-58*. The type species for the genus is *Candidatus Casigarcha rubefigena*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Catabarcha malagitoga* sp. nov.**

*Candidatus Catabarcha malagitoga* (NL. fem. n. *malagitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8516 sp8516u*. The type genome for the species is the GenBank assembly GCA\_013330055.1. The GC content of the type genome is 35.89 % and the genome length is 1.18 Mbp.

### **Description of *Candidatus Catabarcha* gen. nov.**

*Candidatus Catabarcha* (NL. fem. n. *Catabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA8516*. The type species for the genus is *Candidatus Catabarcha malagitoga*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Catafarcha lavabifica* sp. nov.**

*Candidatus Catafarcha lavabifica* (NL. fem. n. *lavabifica* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIRCU01 sp903877165*. The type genome for the species is the GenBank assembly GCA\_903907105.1. The GC content of the type genome is 55.78 % and the genome length is 1.52 Mbp.

#### **Description of *Candidatus Catafarcha* gen. nov.**

*Candidatus Catafarcha* (NL. fem. n. *Catafarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIRCU01*. The type species for the genus is *Candidatus Catafarcha lavabifica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DHVEG-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pedifarchaceae*.

#### **Description of *Candidatus Catagarcha subabessa* sp. nov.**

*Candidatus Catagarcha subabessa* (NL. fem. n. *subabessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PEVX01 sp002780285*. The type genome for the species is the GenBank assembly GCA\_002780285.1. The GC content of the type genome is 35.25 % and the genome length is 0.57 Mbp.

#### **Description of *Candidatus Catagarcha* gen. nov.**

*Candidatus Catagarcha* (NL. fem. n. *Catagarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PEVX01*. The type species for the genus is *Candidatus Catagarcha subabessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *PEVX01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Catagarchaceae*.

#### **Description of *Candidatus Catagarchaceae* fam. nov.**



*Candidatus* Catagarchaceae (NL. fem. n. *Catagarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PEVX01*. The type genus for the taxon is *Candidatus* Catagarcha .

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

### **Description of *Candidatus* Cataparcha biverimonas sp. nov.**

*Candidatus* Cataparcha biverimonas (NL. fem. n. *biverimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CS1-C013 sp011773475*. The type genome for the species is the GenBank assembly GCA\_011773475.1. The GC content of the type genome is 31.22 % and the genome length is 1.01 Mbp.

### **Description of *Candidatus* Cataparcha gen. nov.**

*Candidatus* Cataparcha (NL. fem. n. *Cataparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CS1-C013*. The type species for the genus is *Candidatus* Cataparcha biverimonas .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus* Catecarcha lutulimonia sp. nov.**

*Candidatus* Catecarcha lutulimonia (NL. fem. n. *lutulimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA11855 sp11852u*. The type genome for the species is the GenBank assembly GCA\_013330975.1. The GC content of the type genome is 45.22 % and the genome length is 1.21 Mbp.

### **Description of *Candidatus* Catecarcha gen. nov.**

*Candidatus* Catecarcha (NL. fem. n. *Catecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA11855*. The type species for the genus is *Candidatus Categarcha lutulimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

#### **Description of *Candidatus Categarcha bimotiforma* sp. nov.**

*Candidatus Categarcha bimotiforma* (NL. fem. n. *bimotiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MP8T-1 sp003345545*. The type genome for the species is the GenBank assembly GCA\_003345545.1. The GC content of the type genome is 48.11 % and the genome length is 2.69 Mbp.

#### **Description of *Candidatus Categarcha* gen. nov.**

*Candidatus Categarcha* (NL. fem. n. *Categarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MP8T-1*. The type species for the genus is *Candidatus Categarcha bimotiforma*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Categarcha bucelitura* sp. nov.**

*Candidatus Categarcha bucelitura* (NL. fem. n. *bucelitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MP8T-1 sp004524565*. The type genome for the species is the GenBank assembly GCA\_004524565.1. The GC content of the type genome is 41.58 % and the genome length is 3.13 Mbp.

#### **Description of *Candidatus Categarcha catafilenta* sp. nov.**

*Candidatus Categarcha catafilenta* (NL. fem. n. *catafilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MP8T-1 sp004524595*. The type genome for the species is the GenBank assembly GCA\_004524595.1. The GC content of the type genome is 40.65 % and the genome length is 4.17 Mbp.

**Description of *Candidatus Categarcha cibicedo* sp. nov.**

*Candidatus Categarcha cibicedo* (NL. fem. n. *cibicedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MP8T-1 sp002825535*. The type genome for the species is the GenBank assembly GCA\_002825535.1. The GC content of the type genome is 41.55 % and the genome length is 4.39 Mbp.

**Description of *Candidatus Categarcha conamitudo* sp. nov.**

*Candidatus Categarcha conamitudo* (NL. fem. n. *conamitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MP8T-1 sp002825465*. The type genome for the species is the GenBank assembly GCA\_002825465.1. The GC content of the type genome is 41.62 % and the genome length is 3.51 Mbp.

**Description of *Candidatus Catilarcha bugiligena* sp. nov.**

*Candidatus Catilarcha bugiligena* (NL. fem. n. *bugiligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JGI-0000106-J15 sp000405685*. The type genome for the species is the GenBank assembly GCA\_000405685.1. The GC content of the type genome is 37.87 % and the genome length is 1.09 Mbp.

**Description of *Candidatus Catilarcha* gen. nov.**

*Candidatus Catilarcha* (NL. fem. n. *Catilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JGI-0000106-J15*. The type species for the genus is *Candidatus Catilarcha bugiligena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family

*NZ13-MGT*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Milifarchaceae*.

**Description of *Candidatus Catilarcha dececisca* sp. nov.**

*Candidatus Catilarcha dececisca* (NL. fem. n. *dececisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JGI-0000106-J15 sp011363825*. The type genome for the species is the GenBank assembly GCA\_011363825.1. The GC content of the type genome is 40.61 % and the genome length is 1.57 Mbp.

**Description of *Candidatus Catilarcha manibax* sp. nov.**

*Candidatus Catilarcha manibax* (NL. fem. n. *manibax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JGI-0000106-J15 sp011375845*. The type genome for the species is the GenBank assembly GCA\_011375845.1. The GC content of the type genome is 38.98 % and the genome length is 1.89 Mbp.

**Description of *Candidatus Catilarcha nugigicula* sp. nov.**

*Candidatus Catilarcha nugigicula* (NL. fem. n. *nugigicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JGI-0000106-J15 sp011364615*. The type genome for the species is the GenBank assembly GCA\_011364615.1. The GC content of the type genome is 37.38 % and the genome length is 1.33 Mbp.

**Description of *Candidatus Catilarcha resurilega* sp. nov.**

*Candidatus Catilarcha resurilega* (NL. fem. n. *resurilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JGI-0000106-J15 sp011337925*. The type genome for the species is the GenBank assembly GCA\_011337925.1. The GC content of the type genome is 37.76 % and the genome length is 1.71 Mbp.

### **Description of *Candidatus Catobarcha colopitas* sp. nov.**

*Candidatus Catobarcha colopitas* (NL. fem. n. *colopitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SCGC-AAA252-II5 sp000402775*. The type genome for the species is the GenBank assembly GCA\_000402775.1. The GC content of the type genome is 44.76 % and the genome length is 1.33 Mbp.

### **Description of *Candidatus Catobarcha* gen. nov.**

*Candidatus Catobarcha* (NL. fem. n. *Catobarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SCGC-AAA252-II5*. The type species for the genus is *Candidatus Catobarcha colopitas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SCGC-AAA252-II5*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Catobarchaceae*.

### **Description of *Candidatus Catobarchaceae* fam. nov.**

*Candidatus Catobarchaceae* (NL. fem. n. *Catobarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SCGC-AAA252-II5*. The type genus for the taxon is *Candidatus Catobarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *IMC4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Baditarchales*.

### **Description of *Candidatus Catocarcha terebessa* sp. nov.**

*Candidatus Catocarcha terebessa* (NL. fem. n. *terebessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSZD01 sp011364805*. The type genome for the species is the GenBank assembly GCA\_011366335.1. The GC content of the type genome is 41.21 % and the genome length is 1.13 Mbp.

### **Description of *Candidatus Catocarcha* gen. nov.**

*Candidatus Catocarcha* (NL. fem. n. *Catocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSZD01*. The type species for the genus is *Candidatus Catocarcha terebessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

### **Description of *Candidatus Celamarcha hexapiforma* sp. nov.**

*Candidatus Celamarcha hexapiforma* (NL. fem. n. *hexapiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PIYF01 sp003601875*. The type genome for the species is the GenBank assembly GCA\_003601875.1. The GC content of the type genome is 37.27 % and the genome length is 0.6 Mbp.

### **Description of *Candidatus Celamarcha* gen. nov.**

*Candidatus Celamarcha* (NL. fem. n. *Celamarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PIYF01*. The type species for the genus is *Candidatus Celamarcha hexapiforma*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

### **Description of *Candidatus Celumarcha bacifousia* sp. nov.**

*Candidatus Celumarcha bacifousia* (NL. fem. n. *bacifousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L3 sp002731395*. The type genome for the species is the GenBank assembly GCA\_002496245.1. The GC content of the type genome is 60.48 % and the genome length is 1.55 Mbp.

### **Description of *Candidatus Celumarcha* gen. nov.**

*Candidatus Celumarcha* (NL. fem. n. *Celumarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIa-L3*. The type species for the genus is *Candidatus Celumarcha bacifousia*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Celumarcha cenodetta* sp. nov.**

*Candidatus Celumarcha cenodetta* (NL. fem. n. *cenodetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L3 sp002723635*. The type genome for the species is the GenBank assembly GCA\_002507165.1. The GC content of the type genome is 60.25 % and the genome length is 1.73 Mbp.

### **Description of *Candidatus Celumarcha cilotessa* sp. nov.**

*Candidatus Celumarcha cilotessa* (NL. fem. n. *cilotessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L3 sp003602635*. The type genome for the species is the GenBank assembly GCA\_003602635.1. The GC content of the type genome is 61.89 % and the genome length is 1.7 Mbp.

### **Description of *Candidatus Celumarcha malivimonia* sp. nov.**

*Candidatus Celumarcha malivimonia* (NL. fem. n. *malivimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L3 sp002496845*. The type genome for the species is the GenBank assembly GCA\_002496845.1. The GC content of the type genome is 61.13 % and the genome length is 1.87 Mbp.

### **Description of *Candidatus Celumarcha nugacitio* sp. nov.**

*Candidatus Celumarcha nugacitio* (NL. fem. n. *nugacitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L3 sp11892u*. The type genome for the species is the GenBank assembly GCA\_003672765.1. The GC content of the type genome is 61.68 % and the genome length is 1.97 Mbp.

**Description of *Candidatus Celumarcha sonipicula* sp. nov.**

*Candidatus Celumarcha sonipicula* (NL. fem. n. *sonipicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L3 sp002722135*. The type genome for the species is the GenBank assembly GCA\_002497645.1. The GC content of the type genome is 62.7 % and the genome length is 1.89 Mbp.

**Description of *Candidatus Celumarcha turibessa* sp. nov.**

*Candidatus Celumarcha turibessa* (NL. fem. n. *turibessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L3 sp002694585*. The type genome for the species is the GenBank assembly GCA\_002694585.1. The GC content of the type genome is 62.58 % and the genome length is 1.71 Mbp.

**Description of *Candidatus Celumarcha veridibra* sp. nov.**

*Candidatus Celumarcha veridibra* (NL. fem. n. *veridibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L3 sp12206u*. The type genome for the species is the GenBank assembly GCA\_003672475.1. The GC content of the type genome is 60.97 % and the genome length is 1.55 Mbp.

**Description of *Candidatus Cemenarcha petulitia* sp. nov.**

*Candidatus Cemenarcha petulitia* (NL. fem. n. *petulitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this species is *EX4484-224 sp002254545*. The type genome for the species is the GenBank assembly GCA\_002254545.1. The GC content of the type genome is 27.75 % and the genome length is 0.49 Mbp.

#### **Description of *Candidatus Cemenarcha* gen. nov.**

*Candidatus Cemenarcha* (NL. fem. n. *Cemenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-224*. The type species for the genus is *Candidatus Cemenarcha petulitia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4484-224*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cemenarchaceae*.

#### **Description of *Candidatus Cemenarchaceae* fam. nov.**

*Candidatus Cemenarchaceae* (NL. fem. n. *Cemenarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-224*. The type genus for the taxon is *Candidatus Cemenarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *CG10238-14*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Biverarchales*.

#### **Description of *Candidatus Cenacarcha licenibra* sp. nov.**

*Candidatus Cenacarcha licenibra* (NL. fem. n. *licenibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QS-5-70-15 sp003022005*. The type genome for the species is the GenBank assembly GCA\_003022005.1. The GC content of the type genome is 70.42 % and the genome length is 3.21 Mbp.

#### **Description of *Candidatus Cenacarcha* gen. nov.**

*Candidatus Cenacarcha* (NL. fem. n. *Cenacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QS-5-70-15*. The type species for the genus is *Candidatus Cenacarcha*

licenibra .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus* Cenarchaeum cacomitio sp. nov.**

*Candidatus* Cenarchaeum cacomitio (NL. fem. n. *cacomitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Cenarchaeum sp003724275*. The type genome for the species is the GenBank assembly GCA\_003724175.1. The GC content of the type genome is 65.51 % and the genome length is 1.23 Mbp.

**Description of *Candidatus* Cenarchaeum depecessa sp. nov.**

*Candidatus* Cenarchaeum depecessa (NL. fem. n. *depecessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Cenarchaeum sp007570915*. The type genome for the species is the GenBank assembly GCA\_007570915.1. The GC content of the type genome is 69.14 % and the genome length is 1.32 Mbp.

**Description of *Candidatus* Cenobarcha valefedo sp. nov.**

*Candidatus* Cenobarcha valefedo (NL. fem. n. *valefedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-37 sp002010215*. The type genome for the species is the GenBank assembly GCA\_002010215.1. The GC content of the type genome is 44.81 % and the genome length is 1.97 Mbp.

**Description of *Candidatus* Cenobarcha gen. nov.**

*Candidatus* Cenobarcha (NL. fem. n. *Cenobarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-37*. The type species for the genus is *Candidatus* Cenobarcha valefedo .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Cenodarcha divolitio* sp. nov.**

*Candidatus Cenodarcha divolitio* (NL. fem. n. *divolitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTDX01 sp011338225*. The type genome for the species is the GenBank assembly GCA\_011338225.1. The GC content of the type genome is 32.71 % and the genome length is 1.48 Mbp.

### **Description of *Candidatus Cenodarcha* gen. nov.**

*Candidatus Cenodarcha* (NL. fem. n. *Cenodarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTDX01*. The type species for the genus is *Candidatus Cenodarcha divolitio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTDX01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cenodarchaceae*.

### **Description of *Candidatus Cenodarchaceae* fam. nov.**

*Candidatus Cenodarchaceae* (NL. fem. n. *Cenodarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTDX01*. The type genus for the taxon is *Candidatus Cenodarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *40CM-2-53-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Nimirarchales*.

### **Description of *Candidatus Cenodarcha hemidifica* sp. nov.**

*Candidatus Cenodarcha hemidifica* (NL. fem. n. *hemidifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTDX01 sp011369655*. The type genome for the species is the GenBank assembly GCA\_011369655.1. The GC content of the type genome is 30.81 % and the genome length is 1.4 Mbp.

### **Description of *Candidatus Cenotarcha recogitura* sp. nov.**

*Candidatus Cenotarcha recogitura* (NL. fem. n. *recogitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACEMX01 sp011773785*. The type genome for the species is the GenBank assembly GCA\_011771385.1. The GC content of the type genome is 34.77 % and the genome length is 1.37 Mbp.

### **Description of *Candidatus Cenotarcha* gen. nov.**

*Candidatus Cenotarcha* (NL. fem. n. *Cenotarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JACEMX01*. The type species for the genus is *Candidatus Cenotarcha recogitura*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Cenotarcha viripilega* sp. nov.**

*Candidatus Cenotarcha viripilega* (NL. fem. n. *viripilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACEMX01 sp013867335*. The type genome for the species is the GenBank assembly GCA\_013867335.1. The GC content of the type genome is 34.88 % and the genome length is 1.46 Mbp.

### **Description of *Candidatus Cepularcha gemebibula* sp. nov.**

*Candidatus Cepularcha gemebibula* (NL. fem. n. *gembibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2687815 sp002687815*. The type genome for the species is the GenBank assembly GCA\_002687815.1. The GC content of the type genome is 28.4 % and the genome length is 0.82 Mbp.

### **Description of *Candidatus Cepularcha* gen. nov.**

*Candidatus Cepularcha* (NL. fem. n. *Cepularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2687815*. The type species for the genus is *Candidatus Cepularcha gemebibula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-2687815*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cepularchaceae*.

#### **Description of *Candidatus Cepularchaceae* fam. nov.**

*Candidatus Cepularchaceae* (NL. fem. n. *Cepularchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GCA-2687815*. The type genus for the taxon is *Candidatus Cepularcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Lanifarchales*.

#### **Description of *Candidatus Cepurarcha fumacitia* sp. nov.**

*Candidatus Cepurarcha fumacitia* (NL. fem. n. *fumacitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PNOQ01 sp013824915*. The type genome for the species is the GenBank assembly GCA\_013824915.1. The GC content of the type genome is 29.96 % and the genome length is 0.83 Mbp.

#### **Description of *Candidatus Cepurarcha* gen. nov.**

*Candidatus Cepurarcha* (NL. fem. n. *Cepurarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PNOQ01*. The type species for the genus is *Candidatus Cepurarcha fumacitia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *PNOQ01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cepurarchaceae*.

#### **Description of *Candidatus Cepurarchaceae* fam. nov.**

*Candidatus* Cepurarchaceae (NL. fem. n. *Cepurarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PNOQ01*. The type genus for the taxon is *Candidatus* Cepurarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Lanifarchales.

### **Description of *Candidatus* Ceracarcha desepastra sp. nov.**

*Candidatus* Ceracarcha desepastra (NL. fem. n. *desepastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B31-G17 sp003649915*. The type genome for the species is the GenBank assembly GCA\_003649915.1. The GC content of the type genome is 43.96 % and the genome length is 1.29 Mbp.

### **Description of *Candidatus* Ceracarcha gen. nov.**

*Candidatus* Ceracarcha (NL. fem. n. *Ceracarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B31-G17*. The type species for the genus is *Candidatus* Ceracarcha desepastra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B31-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Ceracarchaceae.

### **Description of *Candidatus* Ceracarchaceae fam. nov.**

*Candidatus* Ceracarchaceae (NL. fem. n. *Ceracarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B31-G17*. The type genus for the taxon is *Candidatus* Ceracarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *B31-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Ceracarchales.

### **Description of *Candidatus Ceracarchales* ord. nov.**

*Candidatus Ceracarchales* (NL. fem. n. *Ceracarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B31-G17*. The type genus for the taxon is *Candidatus Ceracarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Thermoplasmata*.

### **Description of *Candidatus Cerararcha fetifimonia* sp. nov.**

*Candidatus Cerararcha fetifimonia* (NL. fem. n. *fetifimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B47-G6 sp003663585*. The type genome for the species is the GenBank assembly GCA\_003663585.1. The GC content of the type genome is 41.74 % and the genome length is 1.07 Mbp.

### **Description of *Candidatus Cerararcha* gen. nov.**

*Candidatus Cerararcha* (NL. fem. n. *Cerararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B47-G6*. The type species for the genus is *Candidatus Cerararcha fetifimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *47-G6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Gemebarchaceae*.

### **Description of *Candidatus Cerararchae* class. nov.**

*Candidatus Cerararchae* (NL. fem. n. *c\_\_Cerararchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B47-G6*. The type genus for the taxon is *Candidatus Cerararcha*.

According to GTDB R06-RS202, this class belongs to the phylum *Thermoplasmatota*.

### **Description of *Candidatus Cerararcha semapimonas* sp. nov.**

*Candidatus Cerararcha semapimonas* (NL. fem. n. *semapimonas* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B47-G6 sp003663565*. The type genome for the species is the GenBank assembly GCA\_003663565.1. The GC content of the type genome is 40.73 % and the genome length is 1.29 Mbp.

#### **Description of *Candidatus Cerebarcha betacilega* sp. nov.**

*Candidatus Cerebarcha betacilega* (NL. fem. n. *betacilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TA-21 sp014523495*. The type genome for the species is the GenBank assembly GCA\_014523495.1. The GC content of the type genome is 34.22 % and the genome length is 1.68 Mbp.

#### **Description of *Candidatus Cerebarcha* gen. nov.**

*Candidatus Cerebarcha* (NL. fem. n. *Cerebarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *TA-21*. The type species for the genus is *Candidatus Cerebarcha betacilega*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Cerebarcha cunabibula* sp. nov.**

*Candidatus Cerebarcha cunabibula* (NL. fem. n. *cunabibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TA-21 sp014523595*. The type genome for the species is the GenBank assembly GCA\_014523595.1. The GC content of the type genome is 35.37 % and the genome length is 1.2 Mbp.

#### **Description of *Candidatus Cerebarcha defasiforma* sp. nov.**

*Candidatus Cerebarcha defasiforma* (NL. fem. n. *defasiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy



Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TA-21 sp005877075*. The type genome for the species is the GenBank assembly GCA\_005877385.1. The GC content of the type genome is 34.31 % and the genome length is 2.17 Mbp.

**Description of *Candidatus Cerebarcha defositrix* sp. nov.**

*Candidatus Cerebarcha defositrix* (NL. fem. n. *defositrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TA-21 sp005877345*. The type genome for the species is the GenBank assembly GCA\_005877345.1. The GC content of the type genome is 35.06 % and the genome length is 2.2 Mbp.

**Description of *Candidatus Cerebarcha rutabisca* sp. nov.**

*Candidatus Cerebarcha rutabisca* (NL. fem. n. *rutabisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TA-21 sp014523525*. The type genome for the species is the GenBank assembly GCA\_014523525.1. The GC content of the type genome is 35.01 % and the genome length is 1.95 Mbp.

**Description of *Candidatus Cerevarcha ruricata* sp. nov.**

*Candidatus Cerevarcha ruricata* (NL. fem. n. *ruricata* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9989 sp9989u*. The type genome for the species is the GenBank assembly GCA\_013329045.1. The GC content of the type genome is 44.79 % and the genome length is 1.74 Mbp.

**Description of *Candidatus Cerevarcha* gen. nov.**

*Candidatus Cerevarcha* (NL. fem. n. *Cerevarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA9989*. The type species for the genus is *Candidatus Cerevarcha ruricata*.

According to the original version of GTDB R06-RS202, this genus belongs to the family

*UBA9989*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cerevarchaceae*.

**Description of *Candidatus Cerevarchaceae* fam. nov.**

*Candidatus Cerevarchaceae* (NL. fem. n. *Cerevarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA9989*. The type genus for the taxon is *Candidatus Cerevarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woeseearchaeales*.

**Description of *Candidatus Cerifarcha citocilega* sp. nov.**

*Candidatus Cerifarcha citocilega* (NL. fem. n. *citocilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Bog-38 sp003158275*. The type genome for the species is the GenBank assembly GCA\_003158275.1. The GC content of the type genome is 51.51 % and the genome length is 2.1 Mbp.

**Description of *Candidatus Cerifarcha* gen. nov.**

*Candidatus Cerifarcha* (NL. fem. n. *Cerifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *Bog-38*. The type species for the genus is *Candidatus Cerifarcha citocilega*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *Bog-38*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cerifarchaceae*.

**Description of *Candidatus Cerifarchaceae* fam. nov.**

*Candidatus Cerifarchaceae* (NL. fem. n. *Cerifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *Bog-38*. The type genus for the taxon is *Candidatus Cerifarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *Bog-38*. According to the renamed version of GTDB R06-RS202, this taxon belongs to

the order *Candidatus Cerifarchales*.

**Description of *Candidatus Cerifarchales* ord. nov.**

*Candidatus Cerifarchales* (NL. fem. n. *Cerifarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *Bog-38*. The type genus for the taxon is *Candidatus Cerifarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the class *Bog-38*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Cerifarchae*.

**Description of *Candidatus Cerifarchae* class. nov.**

*Candidatus Cerifarchae* (NL. fem. n. *c\_\_Cerifarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *Bog-38*. The type genus for the taxon is *Candidatus Cerifarcha*.

According to GTDB R06-RS202, this class belongs to the phylum *Halobacteriota*.

**Description of *Candidatus Cerifarcha cohoressa* sp. nov.**

*Candidatus Cerifarcha cohoressa* (NL. fem. n. *cohoressa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Bog-38 sp003162175*. The type genome for the species is the GenBank assembly GCA\_003171385.1. The GC content of the type genome is 52.28 % and the genome length is 1.72 Mbp.

**Description of *Candidatus Cerifarcha puruledo* sp. nov.**

*Candidatus Cerifarcha puruledo* (NL. fem. n. *puruledo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Bog-38 sp003170935*. The type genome for the species is the GenBank assembly GCA\_003141775.1. The GC content of the type genome is 47.82 % and the genome length is 1.19 Mbp.

### **Description of *Candidatus Cerifarcha visifax* sp. nov.**

*Candidatus Cerifarcha visifax* (NL. fem. n. *visifax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Bog-38 sp003139855*. The type genome for the species is the GenBank assembly GCA\_003163595.1. The GC content of the type genome is 52.04 % and the genome length is 1.45 Mbp.

### **Description of *Candidatus Cerimarcha delapigena* sp. nov.**

*Candidatus Cerimarcha delapigena* (NL. fem. n. *delapigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRYS01 sp011367275*. The type genome for the species is the GenBank assembly GCA\_011367275.1. The GC content of the type genome is 40.93 % and the genome length is 1.3 Mbp.

### **Description of *Candidatus Cerimarcha* gen. nov.**

*Candidatus Cerimarcha* (NL. fem. n. *Cerimarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRYS01*. The type species for the genus is *Candidatus Cerimarcha delapigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DRYS01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cerimarchaceae*.

### **Description of *Candidatus Cerimarchaceae* fam. nov.**

*Candidatus Cerimarchaceae* (NL. fem. n. *Cerimarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DRYS01*. The type genus for the taxon is *Candidatus Cerimarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *B24*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Refularchales*.

### **Description of *Candidatus Cerimarcha mutabax* sp. nov.**

*Candidatus Cerimarcha mutabax* (NL. fem. n. *mutabax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRYS01 sp011375775*. The type genome for the species is the GenBank assembly GCA\_011375775.1. The GC content of the type genome is 42.75 % and the genome length is 1.46 Mbp.

### **Description of *Candidatus Cerofarcha nubificella* sp. nov.**

*Candidatus Cerofarcha nubificella* (NL. fem. n. *nubificella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10536 sp10536u*. The type genome for the species is the GenBank assembly GCA\_013331375.1. The GC content of the type genome is 52.21 % and the genome length is 1.65 Mbp.

### **Description of *Candidatus Cerofarcha* gen. nov.**

*Candidatus Cerofarcha* (NL. fem. n. *Cerofarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10536*. The type species for the genus is *Candidatus Cerofarcha nubificella*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Ceromarcha benevimonía* sp. nov.**

*Candidatus Ceromarcha benevimonía* (NL. fem. n. *benevimonía* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAILMU01 sp013425375*. The type genome for the species is the GenBank assembly GCA\_013425375.1. The GC content of the type genome is 54.23 % and the genome length is 1.1 Mbp.

### **Description of *Candidatus Ceromarcha* gen. nov.**

*Candidatus Ceromarcha* (NL. fem. n. *Ceromarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAILMU01*. The type species for the genus is *Candidatus Ceromarcha benevimonina*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Volubarchaceae*.

#### **Description of *Candidatus Ceromarcha dehoniforma* sp. nov.**

*Candidatus Ceromarcha dehoniforma* (NL. fem. n. *dehoniforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAILMU01 sp903835325*. The type genome for the species is the GenBank assembly GCA\_903835325.1. The GC content of the type genome is 53.25 % and the genome length is 1.59 Mbp.

#### **Description of *Candidatus Ceromarcha luticitia* sp. nov.**

*Candidatus Ceromarcha luticitia* (NL. fem. n. *luticitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAILMU01 sp902386555*. The type genome for the species is the GenBank assembly GCA\_902386555.1. The GC content of the type genome is 40.05 % and the genome length is 1.27 Mbp.

#### **Description of *Candidatus Cerucarcha cenobax* sp. nov.**

*Candidatus Cerucarcha cenobax* (NL. fem. n. *cenobax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSLH01 sp011053435*. The type genome for the species is the GenBank assembly GCA\_011053435.1. The GC content of the type genome is 41.96 % and the genome length is 1.59 Mbp.

#### **Description of *Candidatus Cerucarcha* gen. nov.**

*Candidatus Cerucarcha* (NL. fem. n. *Cerucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSLH01*. The type species for the genus is *Candidatus Cerucarcha cenobax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

#### **Description of *Candidatus Cetararcha repepetta* sp. nov.**

*Candidatus Cetararcha repepetta* (NL. fem. n. *repepetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WJOV01 sp009618475*. The type genome for the species is the GenBank assembly GCA\_009618475.1. The GC content of the type genome is 43.24 % and the genome length is 1.09 Mbp.

#### **Description of *Candidatus Cetararcha* gen. nov.**

*Candidatus Cetararcha* (NL. fem. n. *Cetararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WJOV01*. The type species for the genus is *Candidatus Cetararcha repepetta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ANME-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Loriparchaceae*.

#### **Description of *Candidatus Cibararcha detecentia* sp. nov.**

*Candidatus Cibararcha detecentia* (NL. fem. n. *detecentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PIYA01 sp003662325*. The type genome for the species is the GenBank assembly GCA\_003662325.1. The GC content of the type genome is 43.6 % and the genome length is 1.07 Mbp.

#### **Description of *Candidatus Cibararcha* gen. nov.**

*Candidatus Cibararcha* (NL. fem. n. *Cibararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PIYA01*. The type species for the genus is *Candidatus Cibararcha detecentia* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

#### **Description of *Candidatus Cibararcha penicatio* sp. nov.**

*Candidatus Cibararcha penicatio* (NL. fem. n. *penicatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PIYA01 sp003601785*. The type genome for the species is the GenBank assembly GCA\_003601785.1. The GC content of the type genome is 43.46 % and the genome length is 0.82 Mbp.

#### **Description of *Candidatus Cibicarcha demogatio* sp. nov.**

*Candidatus Cibicarcha demogatio* (NL. fem. n. *demogatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWGL01 sp003554465*. The type genome for the species is the GenBank assembly GCA\_003554465.1. The GC content of the type genome is 38.02 % and the genome length is 0.86 Mbp.

#### **Description of *Candidatus Cibicarcha* gen. nov.**

*Candidatus Cibicarcha* (NL. fem. n. *Cibicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PWGL01*. The type species for the genus is *Candidatus Cibicarcha demogatio* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *PWGL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cibicarchaceae*.

#### **Description of *Candidatus Cibicarchaceae* fam. nov.**

*Candidatus Cibicarchaceae* (NL. fem. n. *Cibicarchaceae* a name created from the name



of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PWGL01*. The type genus for the taxon is *Candidatus* Cicararcha .

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

#### **Description of *Candidatus* Cicararcha decitimonas sp. nov.**

*Candidatus* Cicararcha decitimonas (NL. fem. n. *decitimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACAELO1 sp013388835*. The type genome for the species is the GenBank assembly GCA\_013388835.1. The GC content of the type genome is 54.18 % and the genome length is 3.01 Mbp.

#### **Description of *Candidatus* Cicararcha gen. nov.**

*Candidatus* Cicararcha (NL. fem. n. *Cicararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JACAELO1*. The type species for the genus is *Candidatus* Cicararcha decitimonas .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Cicatarcha holisax sp. nov.**

*Candidatus* Cicatarcha holisax (NL. fem. n. *holisax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10216 sp10216u*. The type genome for the species is the GenBank assembly GCA\_013331515.1. The GC content of the type genome is 50.41 % and the genome length is 1.0 Mbp.

#### **Description of *Candidatus* Cicatarcha gen. nov.**

*Candidatus* Cicatarcha (NL. fem. n. *Cicatarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this genus is *UBA10216*. The type species for the genus is *Candidatus Cicatarcha holisax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10216*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cicatarchaceae*.

#### **Description of *Candidatus Cicatarchaceae* fam. nov.**

*Candidatus Cicatarchaceae* (NL. fem. n. *Cicatarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10216*. The type genus for the taxon is *Candidatus Cicatarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Cicilarcha morigetta* sp. nov.**

*Candidatus Cicilarcha morigetta* (NL. fem. n. *morigetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-49-10 sp001784635*. The type genome for the species is the GenBank assembly GCA\_001784635.1. The GC content of the type genome is 47.62 % and the genome length is 0.92 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 16ft depth".

#### **Description of *Candidatus Cicilarcha* gen. nov.**

*Candidatus Cicilarcha* (NL. fem. n. *Cicilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *RBG-16-49-10*. The type species for the genus is *Candidatus Cicilarcha morigetta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG10238-14*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Biverarchaceae*.

#### **Description of *Candidatus Cilibarcha caravibra* sp. nov.**

*Candidatus Cilibarcha caravibra* (NL. fem. n. *caravibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *AWOC01 sp000494185*. The type genome for the species is the GenBank assembly GCA\_000402965.1. The GC content of the type genome is 54.8 % and the genome length is 0.7 Mbp.

#### **Description of *Candidatus Cilibarcha* gen. nov.**

*Candidatus* Cilibarcha (NL. fem. n. *Cilibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *AWOC01*. The type species for the genus is *Candidatus* Cilibarcha caravibra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *HR02*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Verecarchaceae.

#### **Description of *Candidatus Cilicarcha lavabax* sp. nov.**

*Candidatus* Cilicarcha lavabax (NL. fem. n. *lavabax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG08-08-20-14 sp002762705*. The type genome for the species is the GenBank assembly GCA\_002794135.1. The GC content of the type genome is 42.58 % and the genome length is 1.64 Mbp.

#### **Description of *Candidatus Cilicarcha* gen. nov.**

*Candidatus* Cilicarcha (NL. fem. n. *Cilicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CG08-08-20-14*. The type species for the genus is *Candidatus* Cilicarcha lavabax .

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG08-08-20-14*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Cilicarchaceae.

#### **Description of *Candidatus Cilicarchaceae* fam. nov.**

*Candidatus* Cilicarchaceae (NL. fem. n. *Cilicarchaceae* a name created from the name of

the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CG08-08-20-14*. The type genus for the taxon is *Candidatus Cilicarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Cilotarcha papilisca* sp. nov.**

*Candidatus Cilotarcha papilisca* (NL. fem. n. *papilisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10834 sp10834u*. The type genome for the species is the GenBank assembly GCA\_013331315.1. The GC content of the type genome is 60.34 % and the genome length is 1.71 Mbp.

#### **Description of *Candidatus Cilotarcha* gen. nov.**

*Candidatus Cilotarcha* (NL. fem. n. *Cilotarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10834*. The type species for the genus is *Candidatus Cilotarcha papilisca*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10834*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cilotarchaceae*.

#### **Description of *Candidatus Cilotarchaceae* fam. nov.**

*Candidatus Cilotarchaceae* (NL. fem. n. *Cilotarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10834*. The type genus for the taxon is *Candidatus Cilotarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA10834*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Cilotarchales*.

#### **Description of *Candidatus Cilotarchales* ord. nov.**

*Candidatus Cilotarchales* (NL. fem. n. *Cilotarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10834*. The type genus for the taxon is *Candidatus* Cilotarcha .

According to the GTDB R06-RS202, this order belongs to the class *Thermoplasmata*.

#### **Description of *Candidatus* Cimmelarcha dimadedo sp. nov.**

*Candidatus* Cimmelarcha dimadedo (NL. fem. n. *dimadedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CSSED10-269 sp003558235*. The type genome for the species is the GenBank assembly GCA\_003558235.1. The GC content of the type genome is 45.18 % and the genome length is 0.83 Mbp.

#### **Description of *Candidatus* Cimmelarcha gen. nov.**

*Candidatus* Cimmelarcha (NL. fem. n. *Cimmelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CSSED10-269*. The type species for the genus is *Candidatus* Cimmelarcha dimadedo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *BISed10-29*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Deforarchaceae.

#### **Description of *Candidatus* Ciminarcha depecivita sp. nov.**

*Candidatus* Ciminarcha depecivita (NL. fem. n. *depecivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DG-33 sp001515185*. The type genome for the species is the GenBank assembly GCA\_001515185.1. The GC content of the type genome is 50.48 % and the genome length is 0.79 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Methane-rich estuary sediments 52-54 cm".

#### **Description of *Candidatus* Ciminarcha gen. nov.**

*Candidatus* Ciminarcha (NL. fem. n. *Ciminarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DG-33*. The type species for the genus is *Candidatus Ciminarcha depecivita* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Ciminarcha minuricella* sp. nov.**

*Candidatus Ciminarcha minuricella* (NL. fem. n. *minuricella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DG-33 sp004375695*. The type genome for the species is the GenBank assembly GCA\_004375695.1. The GC content of the type genome is 51.78 % and the genome length is 0.63 Mbp.

#### **Description of *Candidatus Cimitarcha caruniforma* sp. nov.**

*Candidatus Cimitarcha caruniforma* (NL. fem. n. *caruniforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA202 sp002502685*. The type genome for the species is the GenBank assembly GCA\_002502685.1. The GC content of the type genome is 39.05 % and the genome length is 1.03 Mbp.

#### **Description of *Candidatus Cimitarcha* gen. nov.**

*Candidatus Cimitarcha* (NL. fem. n. *Cimitarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA202*. The type species for the genus is *Candidatus Cimitarcha caruniforma* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA202*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cimitarchaceae*.

#### **Description of *Candidatus Cimitarchaceae* fam. nov.**

*Candidatus Cimitarchaceae* (NL. fem. n. *Cimitarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this taxon is *UBA202*. The type genus for the taxon is *Candidatus Cimitarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA202*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Cimitarchales*.

### **Description of *Candidatus Cimitarchales* ord. nov.**

*Candidatus Cimitarchales* (NL. fem. n. *Cimitarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA202*. The type genus for the taxon is *Candidatus Cimitarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the class *E2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Visibarchae*.

### **Description of *Candidatus Cinefarcha homuletta* sp. nov.**

*Candidatus Cinefarcha homuletta* (NL. fem. n. *homuletta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTGI01 sp011362975*. The type genome for the species is the GenBank assembly GCA\_011362975.1. The GC content of the type genome is 43.77 % and the genome length is 0.93 Mbp.

### **Description of *Candidatus Cinefarcha* gen. nov.**

*Candidatus Cinefarcha* (NL. fem. n. *Cinefarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTGI01*. The type species for the genus is *Candidatus Cinefarcha homuletta* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *J096*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Bimetarchaceae*.

### **Description of *Candidatus Ciniparcha pavicientia* sp. nov.**

*Candidatus Ciniparcha pavicientia* (NL. fem. n. *pavicientia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA207 sp002503135*. The type genome for the species is the GenBank assembly GCA\_002503135.1. The GC content of the type genome is 54.55 % and the genome length is 1.29 Mbp.

#### **Description of *Candidatus Ciniparcha* gen. nov.**

*Candidatus Ciniparcha* (NL. fem. n. *Ciniparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA207*. The type species for the genus is *Candidatus Ciniparcha pavicentia*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Cisalarcha domipivita* sp. nov.**

*Candidatus Cisalarcha domipivita* (NL. fem. n. *domipivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA141 sp002495315*. The type genome for the species is the GenBank assembly GCA\_002495315.1. The GC content of the type genome is 45.96 % and the genome length is 1.69 Mbp.

#### **Description of *Candidatus Cisalarcha* gen. nov.**

*Candidatus Cisalarcha* (NL. fem. n. *Cisalarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA141*. The type species for the genus is *Candidatus Cisalarcha domipivita*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA141*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cisalarchaceae*.

#### **Description of *Candidatus Cisalarchaceae* fam. nov.**

*Candidatus Cisalarchaceae* (NL. fem. n. *Cisalarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this taxon is *UBA141*. The type genus for the taxon is *Candidatus* Cisalarcha .  
According to GTDB R06-RS202, this family belongs to the order *Nitrososphaerales*.

#### **Description of *Candidatus* Citiparcha giganousia sp. nov.**

*Candidatus* Citiparcha giganousia (NL. fem. n. *giganousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WOR-SM1-SCG* sp001723855. The type genome for the species is the GenBank assembly GCA\_001723855.1. The GC content of the type genome is 40.83 % and the genome length is 2.09 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Sulfate-methane transition zone estuary sediments 16-26 cm".

#### **Description of *Candidatus* Citiparcha gen. nov.**

*Candidatus* Citiparcha (NL. fem. n. *Citiparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WOR-SM1-SCG*. The type species for the genus is *Candidatus* Citiparcha giganousia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *WOR-SM1-SCG*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Citiparchaceae.

#### **Description of *Candidatus* Citiparchaceae fam. nov.**

*Candidatus* Citiparchaceae (NL. fem. n. *Citiparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *WOR-SM1-SCG*. The type genus for the taxon is *Candidatus* Citiparcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *IMC4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Baditarchales.

#### **Description of *Candidatus* Citiparcha vigenitoga sp. nov.**

*Candidatus* Citiparcha vigenitoga (NL. fem. n. *vigenitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WOR-SM1-SCG sp001723835*. The type genome for the species is the GenBank assembly GCA\_001723835.1. The GC content of the type genome is 39.76 % and the genome length is 3.19 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Methane-rich estuary sediments 52-54 cm".

**Description of *Candidatus Citivarcha fibicibra* sp. nov.**

*Candidatus Citivarcha fibicibra* (NL. fem. n. *fibicibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9642 sp12459u*. The type genome for the species is the GenBank assembly GCA\_013328975.1. The GC content of the type genome is 33.53 % and the genome length is 1.52 Mbp.

**Description of *Candidatus Citivarcha* gen. nov.**

*Candidatus Citivarcha* (NL. fem. n. *Citivarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA9642*. The type species for the genus is *Candidatus Citivarcha fibicibra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA9642*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Citivarchaceae*.

**Description of *Candidatus Citivarchaceae* fam. nov.**

*Candidatus Citivarchaceae* (NL. fem. n. *Citivarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA9642*. The type genus for the taxon is *Candidatus Citivarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woeseearchaeales*.

**Description of *Candidatus Citivarcha reforitrix* sp. nov.**

*Candidatus Citivarcha reforitrix* (NL. fem. n. *reforitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9642 sp011329125*. The type genome for the species is the GenBank assembly GCA\_011329125.1. The GC content of the type genome is 31.07 % and the genome length is 0.88 Mbp.

**Description of *Candidatus Citocarcha novilitica* sp. nov.**

*Candidatus Citocarcha novilitica* (NL. fem. n. *novilitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PFCU01 sp001872185*. The type genome for the species is the GenBank assembly GCA\_002792685.1. The GC content of the type genome is 31.56 % and the genome length is 0.76 Mbp.

**Description of *Candidatus Citocarcha* gen. nov.**

*Candidatus Citocarcha* (NL. fem. n. *Citocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PFCU01*. The type species for the genus is *Candidatus Citocarcha novilitica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *PFCU01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Citocarchaceae*.

**Description of *Candidatus Citocarchaceae* fam. nov.**

*Candidatus Citocarchaceae* (NL. fem. n. *Citocarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PFCU01*. The type genus for the taxon is *Candidatus Citocarcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

**Description of *Candidatus Citocarcha velifibra* sp. nov.**

*Candidatus Citocarcha velifibra* (NL. fem. n. *velifibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *PFCU01 sp002763155*. The type genome for the species is the GenBank assembly GCA\_002763155.1. The GC content of the type genome is 30.25 % and the genome length is 0.65 Mbp.

#### **Description of *Candidatus Cituvarcha cobalastra* sp. nov.**

*Candidatus Cituvarcha cobalastra* (NL. fem. n. *cobalastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOJC01 sp004376645*. The type genome for the species is the GenBank assembly GCA\_004376645.1. The GC content of the type genome is 44.59 % and the genome length is 1.25 Mbp.

#### **Description of *Candidatus Cituvarcha* gen. nov.**

*Candidatus Cituvarcha* (NL. fem. n. *Cituvarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SOJC01*. The type species for the genus is *Candidatus Cituvarcha cobalastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SOJC01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cituvarchaceae*.

#### **Description of *Candidatus Cituvarchaceae* fam. nov.**

*Candidatus Cituvarchaceae* (NL. fem. n. *Cituvarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SOJC01*. The type genus for the taxon is *Candidatus Cituvarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Remularchales*.

#### **Description of *Candidatus Cobalarcha bigemitoga* sp. nov.**

*Candidatus Cobalarcha bigemitoga* (NL. fem. n. *bigemitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *ARS1301 sp002686355*. The type genome for the species is the GenBank assembly GCA\_002686355.1. The GC content of the type genome is 33.92 % and the genome length is 0.44 Mbp.

#### **Description of *Candidatus Cobalarcha* gen. nov.**

*Candidatus Cobalarcha* (NL. fem. n. *Cobalarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARS1301*. The type species for the genus is *Candidatus Cobalarcha bigemitoga*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deseparchaceae*.

#### **Description of *Candidatus Cocibarcha viburitica* sp. nov.**

*Candidatus Cocibarcha viburitica* (NL. fem. n. *viburitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA12501 sp10192u*. The type genome for the species is the GenBank assembly GCA\_013330455.1. The GC content of the type genome is 42.98 % and the genome length is 1.11 Mbp.

#### **Description of *Candidatus Cocibarcha* gen. nov.**

*Candidatus Cocibarcha* (NL. fem. n. *Cocibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA12501*. The type species for the genus is *Candidatus Cocibarcha viburitica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA12501*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cocibarchaceae*.

#### **Description of *Candidatus Cocibarchaceae* fam. nov.**

*Candidatus Cocibarchaceae* (NL. fem. n. *Cocibarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this taxon is *UBA12501*. The type genus for the taxon is *Candidatus Cocibarcha* . According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

**Description of *Candidatus Cocolarcha divorimonas* sp. nov.**

*Candidatus Cocolarcha divorimonas* (NL. fem. n. *divorimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B75-G9 sp003661465*. The type genome for the species is the GenBank assembly GCA\_003661465.1. The GC content of the type genome is 50.1 % and the genome length is 0.73 Mbp.

**Description of *Candidatus Cocolarcha* gen. nov.**

*Candidatus Cocolarcha* (NL. fem. n. *Cocolarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B75-G9*. The type species for the genus is *Candidatus Cocolarcha divorimonas* .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Cocolarcha manibatica* sp. nov.**

*Candidatus Cocolarcha manibatica* (NL. fem. n. *manibatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B75-G9 sp012962055*. The type genome for the species is the GenBank assembly GCA\_012962055.1. The GC content of the type genome is 50.47 % and the genome length is 0.75 Mbp.

**Description of *Candidatus Codifarcha modifitia* sp. nov.**

*Candidatus Codifarcha modifitia* (NL. fem. n. *modifitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CADBMS01 sp902795935*. The type genome for the species is the GenBank assembly GCA\_902795935.1. The GC content of the type genome is 27.3 % and the genome length is 1.51 Mbp.

### **Description of *Candidatus Codifarcha* gen. nov.**

*Candidatus Codifarcha* (NL. fem. n. *Codifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CADBMS01*. The type species for the genus is *Candidatus Codifarcha modifitia* .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Cohonarcha volubimonia* sp. nov.**

*Candidatus Cohonarcha volubimonia* (NL. fem. n. *volubimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR15 sp000830295*. The type genome for the species is the GenBank assembly GCA\_000830295.1. The GC content of the type genome is 42.49 % and the genome length is 1.16 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "groundwater".

### **Description of *Candidatus Cohonarcha* gen. nov.**

*Candidatus Cohonarcha* (NL. fem. n. *Cohonarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GW2011-AR15*. The type species for the genus is *Candidatus Cohonarcha volubimonia* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR15*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cohonarchaceae*.

### **Description of *Candidatus Cohonarchaceae* fam. nov.**

*Candidatus Cohonarchaceae* (NL. fem. n. *Cohonarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GW2011-AR15*. The type genus for the taxon is *Candidatus Cohonarcha* .

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

### **Description of *Candidatus Cohorarcha baditibra* sp. nov.**

*Candidatus Cohorarcha baditibra* (NL. fem. n. *baditibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA102 sp002509225*. The type genome for the species is the GenBank assembly GCA\_002509225.1. The GC content of the type genome is 37.19 % and the genome length is 0.98 Mbp.

### **Description of *Candidatus Cohorarcha* gen. nov.**

*Candidatus Cohorarcha* (NL. fem. n. *Cohorarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA102*. The type species for the genus is *Candidatus Cohorarcha baditibra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG-Epi1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Volucarchaceae*.

### **Description of *Candidatus Cohorarcha bicodilega* sp. nov.**

*Candidatus Cohorarcha bicodilega* (NL. fem. n. *bicodilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA102 sp001875425*. The type genome for the species is the GenBank assembly GCA\_001875425.1. The GC content of the type genome is 37.55 % and the genome length is 1.04 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "marine water".

### **Description of *Candidatus Cohurarcha munifousia* sp. nov.**

*Candidatus Cohurarcha munifousia* (NL. fem. n. *munifousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIYHQ01 sp903926075*. The type genome for the species is the GenBank assembly GCA\_903828555.1. The GC content of the type genome is 40.57 % and the genome length is 3.17 Mbp.



### **Description of *Candidatus Cohurarcha* gen. nov.**

*Candidatus Cohurarcha* (NL. fem. n. *Cohurarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIYHQ01*. The type species for the genus is *Candidatus Cohurarcha munifousia*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Colaparcha secunitas* sp. nov.**

*Candidatus Colaparcha secunitas* (NL. fem. n. *secunitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRUP01 sp011371845*. The type genome for the species is the GenBank assembly GCA\_011371845.1. The GC content of the type genome is 47.11 % and the genome length is 0.75 Mbp.

### **Description of *Candidatus Colaparcha* gen. nov.**

*Candidatus Colaparcha* (NL. fem. n. *Colaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRUP01*. The type species for the genus is *Candidatus Colaparcha secunitas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DRUP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Colaparchaceae*.

### **Description of *Candidatus Colaparchaceae* fam. nov.**

*Candidatus Colaparchaceae* (NL. fem. n. *Colaparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DRUP01*. The type genus for the taxon is *Candidatus Colaparcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-205*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Bovicarchaeales*.

### **Description of *Candidatus Coleparcha dehisigena* sp. nov.**

*Candidatus Coleparcha dehisigena* (NL. fem. n. *dehisigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CSSED10-239 sp003559395*. The type genome for the species is the GenBank assembly GCA\_003559395.1. The GC content of the type genome is 32.35 % and the genome length is 0.91 Mbp.

### **Description of *Candidatus Coleparcha* gen. nov.**

*Candidatus Coleparcha* (NL. fem. n. *Coleparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CSSED10-239*. The type species for the genus is *Candidatus Coleparcha dehisigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CSSED10-239*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Coleparchaceae*.

### **Description of *Candidatus Coleparchaceae* fam. nov.**

*Candidatus Coleparchaceae* (NL. fem. n. *Coleparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CSSED10-239*. The type genus for the taxon is *Candidatus Coleparcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *0-14-0-20-30-16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Tumefarchales*.

### **Description of *Candidatus Colimarcha cohoredo* sp. nov.**

*Candidatus Colimarcha cohoredo* (NL. fem. n. *cohoredo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *21-14-0-10-32-9 sp903891505*. The type genome for the species is the GenBank assembly GCA\_903891505.1. The GC content of the type genome is 35.83 % and the genome length is 1.03 Mbp.

### **Description of *Candidatus Colimarcha* gen. nov.**

*Candidatus Colimarcha* (NL. fem. n. *Colimarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *21-14-0-10-32-9*. The type species for the genus is *Candidatus Colimarcha cohoredo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *21-14-0-10-32-9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Colimarchaceae*.

### **Description of *Candidatus Colimarchaceae* fam. nov.**

*Candidatus Colimarchaceae* (NL. fem. n. *Colimarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *21-14-0-10-32-9*. The type genus for the taxon is *Candidatus Colimarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

### **Description of *Candidatus Colimarcha faticibula* sp. nov.**

*Candidatus Colimarcha faticibula* (NL. fem. n. *faticibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *21-14-0-10-32-9 sp002762915*. The type genome for the species is the GenBank assembly GCA\_002762915.1. The GC content of the type genome is 31.71 % and the genome length is 0.77 Mbp.

### **Description of *Candidatus Coliparcha monogitrix* sp. nov.**

*Candidatus Coliparcha monogitrix* (NL. fem. n. *monogitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTHR01 sp011334665*. The type genome for the species is the GenBank assembly GCA\_011334665.1. The GC content of the type genome is 47.91 % and the genome length is 1.17 Mbp.

### **Description of *Candidatus Coliparcha* gen. nov.**

*Candidatus Coliparcha* (NL. fem. n. *Coliparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTHR01*. The type species for the genus is *Candidatus Coliparcha monogitrix* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

#### **Description of *Candidatus Coloparcha culigilega* sp. nov.**

*Candidatus Coloparcha culigilega* (NL. fem. n. *culigilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-41 sp002010285*. The type genome for the species is the GenBank assembly GCA\_002010285.1. The GC content of the type genome is 42.32 % and the genome length is 1.75 Mbp.

#### **Description of *Candidatus Coloparcha* gen. nov.**

*Candidatus Coloparcha* (NL. fem. n. *Coloparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-41*. The type species for the genus is *Candidatus Coloparcha culigilega* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Colubarcha denecitica* sp. nov.**

*Candidatus Colubarcha denecitica* (NL. fem. n. *denecitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8480 sp001871495*. The type genome for the species is the GenBank assembly GCA\_013330065.1. The GC content of the type genome is 50.89 % and the genome length is 1.0 Mbp.

#### **Description of *Candidatus Colubarcha* gen. nov.**

*Candidatus Colubarcha* (NL. fem. n. *Colubarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA8480*. The type species for the genus is *Candidatus Colubarcha denecitica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA8480*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Colubarchaceae*.

### **Description of *Candidatus Colubarchaceae* fam. nov.**

*Candidatus Colubarchaceae* (NL. fem. n. *Colubarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA8480*. The type genus for the taxon is *Candidatus Colubarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA8480*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Colubarchales*.

### **Description of *Candidatus Colubarchales* ord. nov.**

*Candidatus Colubarchales* (NL. fem. n. *Colubarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA8480*. The type genus for the taxon is *Candidatus Colubarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Micrarchaeia*.

### **Description of *Candidatus Colubarcha semimitia* sp. nov.**

*Candidatus Colubarcha semimitia* (NL. fem. n. *semimitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8480 sp013425325*. The type genome for the species is the GenBank assembly GCA\_013425325.1. The GC content of the type genome is 53.66 % and the genome length is 0.86 Mbp.

### **Description of *Candidatus Conabarcha luculentia* sp. nov.**

*Candidatus Conabarcha luculentia* (NL. fem. n. *luculentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTKX01 sp011333475*. The type genome for the species is the GenBank assembly GCA\_011333475.1. The GC content of the type genome is 38.11 % and the genome length is 3.28 Mbp.

#### **Description of *Candidatus Conabarcha* gen. nov.**

*Candidatus Conabarcha* (NL. fem. n. *Conabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTKX01*. The type species for the genus is *Candidatus Conabarcha luculentia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTKX01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Conabarchaceae*.

#### **Description of *Candidatus Conabarchaceae* fam. nov.**

*Candidatus Conabarchaceae* (NL. fem. n. *Conabarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTKX01*. The type genus for the taxon is *Candidatus Conabarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *DTKX01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Conabarchales*.

#### **Description of *Candidatus Conabarchales* ord. nov.**

*Candidatus Conabarchales* (NL. fem. n. *Conabarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTKX01*. The type genus for the taxon is *Candidatus Conabarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Thermoplasmata*.

#### **Description of *Candidatus Conamarcha divulgousia* sp. nov.**

*Candidatus Conamarcha divulgousia* (NL. fem. n. *divulgousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8941 sp001774245*. The type genome for the species is the GenBank assembly GCA\_001774245.1. The GC content of the type genome is 51.8 % and the genome length is 2.08 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 13ft depth".

**Description of *Candidatus Conamarcha* gen. nov.**

*Candidatus Conamarcha* (NL. fem. n. *Conamarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA8941*. The type species for the genus is *Candidatus Conamarcha divulgus*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *TCS64*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tegumarchaceae*.

**Description of *Candidatus Conamarcha homulimonas* sp. nov.**

*Candidatus Conamarcha homulimonas* (NL. fem. n. *homulimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8941 sp8941u*. The type genome for the species is the GenBank assembly GCA\_013329615.1. The GC content of the type genome is 58.89 % and the genome length is 1.82 Mbp.

**Description of *Candidatus Conararcha dehinessa* sp. nov.**

*Candidatus Conararcha dehinessa* (NL. fem. n. *dehinessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *FEN-987 sp003152955*. The type genome for the species is the GenBank assembly GCA\_003152955.1. The GC content of the type genome is 49.96 % and the genome length is 2.71 Mbp.

**Description of *Candidatus Conararcha* gen. nov.**

*Candidatus Conararcha* (NL. fem. n. *Conararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *FEN-987*. The type species for the genus is *Candidatus Conararcha dehinessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *FEN-987*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Conararchaceae*.

#### **Description of *Candidatus Conararchaceae* fam. nov.**

*Candidatus Conararchaceae* (NL. fem. n. *Conararchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *FEN-987*. The type genus for the taxon is *Candidatus Conararcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *40CM-2-53-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Nimirarchales*.

#### **Description of *Candidatus Conararcha derunitoga* sp. nov.**

*Candidatus Conararcha derunitoga* (NL. fem. n. *derunitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *FEN-987 sp001768965*. The type genome for the species is the GenBank assembly GCA\_001768965.1. The GC content of the type genome is 50.76 % and the genome length is 1.34 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 16ft depth".

#### **Description of *Candidatus Conexivisphaera vehicitas* sp. nov.**

*Candidatus Conexivisphaera vehicitas* (NL. fem. n. *vehicitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Conexivisphaera sp011054345*. The type genome for the species is the GenBank assembly GCA\_011054345.1. The GC content of the type genome is 66.85 % and the genome length is 1.44 Mbp.

#### **Description of *Candidatus Conibarcha nicometta* sp. nov.**



*Candidatus* Conibarcha nicometta (NL. fem. n. *nicometta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRYM01 sp011375895*. The type genome for the species is the GenBank assembly GCA\_011375895.1. The GC content of the type genome is 37.56 % and the genome length is 1.3 Mbp.

#### **Description of *Candidatus* Conibarcha gen. nov.**

*Candidatus* Conibarcha (NL. fem. n. *Conibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRYM01*. The type species for the genus is *Candidatus* Conibarcha nicometta .

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4484-217-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Bicaparchaceae.

#### **Description of *Candidatus* Conigarcha fetififica sp. nov.**

*Candidatus* Conigarcha fetififica (NL. fem. n. *fetififica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTEX01 sp011364715*. The type genome for the species is the GenBank assembly GCA\_011364715.1. The GC content of the type genome is 44.64 % and the genome length is 1.59 Mbp.

#### **Description of *Candidatus* Conigarcha gen. nov.**

*Candidatus* Conigarcha (NL. fem. n. *Conigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTEX01*. The type species for the genus is *Candidatus* Conigarcha fetififica .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Remularchaceae.

**Description of *Candidatus Conigarcha minagilega* sp. nov.**

*Candidatus Conigarcha minagilega* (NL. fem. n. *minagilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTEX01 sp011366945*. The type genome for the species is the GenBank assembly GCA\_011366945.1. The GC content of the type genome is 39.99 % and the genome length is 1.37 Mbp.

**Description of *Candidatus Conigarcha monumisca* sp. nov.**

*Candidatus Conigarcha monumisca* (NL. fem. n. *monumisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTEX01 sp011380195*. The type genome for the species is the GenBank assembly GCA\_011380195.1. The GC content of the type genome is 41.35 % and the genome length is 1.66 Mbp.

**Description of *Candidatus Conigarcha senacibra* sp. nov.**

*Candidatus Conigarcha senacibra* (NL. fem. n. *senacibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTEX01 sp011363705*. The type genome for the species is the GenBank assembly GCA\_011363705.1. The GC content of the type genome is 43.47 % and the genome length is 1.2 Mbp.

**Description of *Candidatus Conigarcha vitigiforma* sp. nov.**

*Candidatus Conigarcha vitigiforma* (NL. fem. n. *vitigiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTEX01 sp011363945*. The type genome for the species is the GenBank assembly GCA\_011363945.1. The GC content of the type genome is 45.12 % and the genome length is 1.26 Mbp.

**Description of *Candidatus Coninarcha rumifastra* sp. nov.**

*Candidatus Coninarcha rumifastra* (NL. fem. n. *rumifastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B29-G17 sp003650625*. The type genome for the species is the GenBank assembly GCA\_003650625.1. The GC content of the type genome is 44.52 % and the genome length is 0.52 Mbp.

#### **Description of *Candidatus Coninarcha* gen. nov.**

*Candidatus Coninarcha* (NL. fem. n. *Coninarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B29-G17*. The type species for the genus is *Candidatus Coninarcha rumifastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B29-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Coninarchaceae*.

#### **Description of *Candidatus Coninarchaceae* fam. nov.**

*Candidatus Coninarchaceae* (NL. fem. n. *Coninarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B29-G17*. The type genus for the taxon is *Candidatus Coninarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *B29-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Coninarchales*.

#### **Description of *Candidatus Coninarchales* ord. nov.**

*Candidatus Coninarchales* (NL. fem. n. *Coninarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B29-G17*. The type genus for the taxon is *Candidatus Coninarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Methanomethylica*.

#### **Description of *Candidatus Coninarcha velivilenta* sp. nov.**

*Candidatus Coninarcha velivilenta* (NL. fem. n. *velivilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B29-G17 sp003649145*. The type genome for the species is the GenBank assembly GCA\_003649145.1. The GC content of the type genome is 43.57 % and the genome length is 0.47 Mbp.

**Description of *Candidatus Coniparcha cocibetta* sp. nov.**

*Candidatus Coniparcha cocibetta* (NL. fem. n. *cocibetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMEP01 sp902385155*. The type genome for the species is the GenBank assembly GCA\_902385155.1. The GC content of the type genome is 57.23 % and the genome length is 0.97 Mbp.

**Description of *Candidatus Coniparcha* gen. nov.**

*Candidatus Coniparcha* (NL. fem. n. *Coniparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMEP01*. The type species for the genus is *Candidatus Coniparcha cocibetta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CABMEP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Coniparchaceae*.

**Description of *Candidatus Coniparchaceae* fam. nov.**

*Candidatus Coniparchaceae* (NL. fem. n. *Coniparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CABMEP01*. The type genus for the taxon is *Candidatus Coniparcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *CABMEP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Coniparchales*.

**Description of *Candidatus Coniparchales* ord. nov.**

*Candidatus Coniparchales* (NL. fem. n. *Coniparchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CABMEP01*. The type genus for the taxon is *Candidatus Coniparcha* . According to the GTDB R06-RS202, this order belongs to the class *Micrarchaeia*.

#### **Description of *Candidatus Conoparcha cepulatio* sp. nov.**

*Candidatus Conoparcha cepulatio* (NL. fem. n. *cepulatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002712285*. The type genome for the species is the GenBank assembly GCA\_002503675.1. The GC content of the type genome is 46.54 % and the genome length is 1.56 Mbp.

#### **Description of *Candidatus Conoparcha* gen. nov.**

*Candidatus Conoparcha* (NL. fem. n. *Conoparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIB-N2*. The type species for the genus is *Candidatus Conoparcha cepulatio* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Conoparcha deformimonia* sp. nov.**

*Candidatus Conoparcha deformimonia* (NL. fem. n. *deformimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002503665*. The type genome for the species is the GenBank assembly GCA\_002503665.1. The GC content of the type genome is 41.39 % and the genome length is 1.15 Mbp.

#### **Description of *Candidatus Conoparcha diluditura* sp. nov.**

*Candidatus Conoparcha diluditura* (NL. fem. n. *diluditura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002718215*. The type genome for the species is the GenBank assembly GCA\_002718215.1. The GC content of the type genome is 41.53 %

and the genome length is 1.58 Mbp.

**Description of *Candidatus Conoparcha feditago* sp. nov.**

*Candidatus Conoparcha feditago* (NL. fem. n. *feditago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002702985*. The type genome for the species is the GenBank assembly GCA\_002702985.1. The GC content of the type genome is 39.83 % and the genome length is 1.59 Mbp.

**Description of *Candidatus Conoparcha funivugo* sp. nov.**

*Candidatus Conoparcha funivugo* (NL. fem. n. *funivugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002506875*. The type genome for the species is the GenBank assembly GCA\_002506875.1. The GC content of the type genome is 48.7 % and the genome length is 1.8 Mbp.

**Description of *Candidatus Conoparcha paracicula* sp. nov.**

*Candidatus Conoparcha paracicula* (NL. fem. n. *paracicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002708695*. The type genome for the species is the GenBank assembly GCA\_002708695.1. The GC content of the type genome is 39.5 % and the genome length is 1.77 Mbp.

**Description of *Candidatus Conoparcha refulilega* sp. nov.**

*Candidatus Conoparcha refulilega* (NL. fem. n. *refulilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002697105*. The type genome for the species is the GenBank assembly GCA\_002697105.1. The GC content of the type genome is 40.0 % and the genome length is 1.36 Mbp.

**Description of *Candidatus Conoparcha semidugo* sp. nov.**

*Candidatus* Conoparcha semidugo (NL. fem. n. *semidugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002497905*. The type genome for the species is the GenBank assembly GCA\_013329765.1. The GC content of the type genome is 48.28 % and the genome length is 1.59 Mbp.

**Description of *Candidatus* Conoparcha serotimonas sp. nov.**

*Candidatus* Conoparcha serotimonas (NL. fem. n. *serotimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002502625*. The type genome for the species is the GenBank assembly GCA\_002170365.2. The GC content of the type genome is 39.31 % and the genome length is 1.72 Mbp.

**Description of *Candidatus* Conoparcha subodicella sp. nov.**

*Candidatus* Conoparcha subodicella (NL. fem. n. *subodicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002503045*. The type genome for the species is the GenBank assembly GCA\_002503045.1. The GC content of the type genome is 40.36 % and the genome length is 1.58 Mbp.

**Description of *Candidatus* Conoparcha vacilitudo sp. nov.**

*Candidatus* Conoparcha vacilitudo (NL. fem. n. *vacilitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002708015*. The type genome for the species is the GenBank assembly GCA\_002708015.1. The GC content of the type genome is 39.77 % and the genome length is 1.64 Mbp.

**Description of *Candidatus* Conoparcha viragilega sp. nov.**

*Candidatus* Conoparcha viragilega (NL. fem. n. *viragilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N2 sp002713585*. The type genome for the species is the GenBank assembly GCA\_002700955.2. The GC content of the type genome is 48.9 % and the genome length is 1.67 Mbp.

**Description of *Candidatus Conubarcha refunitas* sp. nov.**

*Candidatus Conubarcha refunitas* (NL. fem. n. *refunitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSQK01 sp011331795*. The type genome for the species is the GenBank assembly GCA\_011331795.1. The GC content of the type genome is 57.36 % and the genome length is 1.03 Mbp.

**Description of *Candidatus Conubarcha* gen. nov.**

*Candidatus Conubarcha* (NL. fem. n. *Conubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSQK01*. The type species for the genus is *Candidatus Conubarcha refunitas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS49*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Terebarchaceae*.

**Description of *Candidatus Corocarcha catafitio* sp. nov.**

*Candidatus Corocarcha catafitio* (NL. fem. n. *catafitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS1285 sp002688875*. The type genome for the species is the GenBank assembly GCA\_002688875.1. The GC content of the type genome is 34.48 % and the genome length is 1.21 Mbp.

**Description of *Candidatus Corocarcha* gen. nov.**

*Candidatus Corocarcha* (NL. fem. n. *Corocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this genus is *ARS1285*. The type species for the genus is *Candidatus Corocarcha catafitio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1285*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Corocarchaceae*.

#### **Description of *Candidatus Corocarchaceae* fam. nov.**

*Candidatus Corocarchaceae* (NL. fem. n. *Corocarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *ARS1285*. The type genus for the taxon is *Candidatus Corocarcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

#### **Description of *Candidatus Corocarcha dicanimonas* sp. nov.**

*Candidatus Corocarcha dicanimonas* (NL. fem. n. *dicanimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS1285 sp002688165*. The type genome for the species is the GenBank assembly GCA\_014240435.1. The GC content of the type genome is 31.09 % and the genome length is 0.72 Mbp.

#### **Description of *Candidatus Corocarcha resulilega* sp. nov.**

*Candidatus Corocarcha resulilega* (NL. fem. n. *resulilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS1285 sp002688335*. The type genome for the species is the GenBank assembly GCA\_002688335.1. The GC content of the type genome is 32.97 % and the genome length is 1.04 Mbp.

#### **Description of *Candidatus Cosidarcha bicubax* sp. nov.**

*Candidatus Cosidarcha bicubax* (NL. fem. n. *bicubax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J152 sp003694525*. The type genome for the species is the GenBank

assembly GCA\_003694525.1. The GC content of the type genome is 43.78 % and the genome length is 0.71 Mbp.

**Description of *Candidatus Cosidarcha* gen. nov.**

*Candidatus Cosidarcha* (NL. fem. n. *Cosidarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J152*. The type species for the genus is *Candidatus Cosidarcha bicubax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS49*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Terebarchaceae*.

**Description of *Candidatus Cotenarcha bonifatica* sp. nov.**

*Candidatus Cotenarcha bonifatica* (NL. fem. n. *bonifatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-13-33-26 sp012798335*. The type genome for the species is the GenBank assembly GCA\_012798335.1. The GC content of the type genome is 26.18 % and the genome length is 0.61 Mbp.

**Description of *Candidatus Cotenarcha* gen. nov.**

*Candidatus Cotenarcha* (NL. fem. n. *Cotenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *RBG-13-33-26*. The type species for the genus is *Candidatus Cotenarcha bonifatica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deseparchaceae*.

**Description of *Candidatus Cotenarcha coninigena* sp. nov.**

*Candidatus Cotenarcha coninigena* (NL. fem. n. *coninigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-13-33-26 sp001786415*. The type genome for the species is the

GenBank assembly GCA\_001786415.1. The GC content of the type genome is 33.44 % and the genome length is 0.6 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 19ft depth".

**Description of *Candidatus Cotenarcha ridibilega* sp. nov.**

*Candidatus Cotenarcha ridibilega* (NL. fem. n. *ridibilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-13-33-26 sp902386025*. The type genome for the species is the GenBank assembly GCA\_902386025.1. The GC content of the type genome is 33.35 % and the genome length is 0.56 Mbp.

**Description of *Candidatus Coticarcha manubitudo* sp. nov.**

*Candidatus Coticarcha manubitudo* (NL. fem. n. *manubitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAITNU01 sp903893865*. The type genome for the species is the GenBank assembly GCA\_903893865.1. The GC content of the type genome is 53.24 % and the genome length is 1.01 Mbp.

**Description of *Candidatus Coticarcha* gen. nov.**

*Candidatus Coticarcha* (NL. fem. n. *Coticarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAITNU01*. The type species for the genus is *Candidatus Coticarcha manubitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CAITNU01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Coticarchaceae*.

**Description of *Candidatus Coticarchaceae* fam. nov.**

*Candidatus Coticarchaceae* (NL. fem. n. *Coticarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CAITNU01*. The type genus for the taxon is *Candidatus Coticarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA8480*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Colubarchales.

#### **Description of *Candidatus* Coturarcha decacivita sp. nov.**

*Candidatus* Coturarcha decacivita (NL. fem. n. *decacivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QS-4-70-19 sp003020985*. The type genome for the species is the GenBank assembly GCA\_003020985.1. The GC content of the type genome is 69.69 % and the genome length is 2.84 Mbp.

#### **Description of *Candidatus* Coturarcha gen. nov.**

*Candidatus* Coturarcha (NL. fem. n. *Coturarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QS-4-70-19*. The type species for the genus is *Candidatus* Coturarcha decacivita .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Coturarcha futatedo sp. nov.**

*Candidatus* Coturarcha futatedo (NL. fem. n. *futatedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QS-4-70-19 sp007421925*. The type genome for the species is the GenBank assembly RS\_GCF\_007421925.1. The GC content of the type genome is 68.08 % and the genome length is 4.0 Mbp.

#### **Description of *Candidatus* Cucurarcha colimitrix sp. nov.**

*Candidatus* Cucurarcha colimitrix (NL. fem. n. *colimitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SCSR01 sp004297575*. The type genome for the species is the GenBank assembly GCA\_004297575.1. The GC content of the type genome is 44.82 %

and the genome length is 0.74 Mbp.

**Description of *Candidatus Cucurarcha* gen. nov.**

*Candidatus Cucurarcha* (NL. fem. n. *Cucurarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SCSR01*. The type species for the genus is *Candidatus Cucurarcha colimitrix*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SCSR01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cucurarchaceae*.

**Description of *Candidatus Cucurarchaceae* fam. nov.**

*Candidatus Cucurarchaceae* (NL. fem. n. *Cucurarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SCSR01*. The type genus for the taxon is *Candidatus Cucurarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *CG10238-14*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Biverarchales*.

**Description of *Candidatus Cuferarcha cicititia* sp. nov.**

*Candidatus Cuferarcha cicititia* (NL. fem. n. *cicititia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CSSed11-243R1 sp003563585*. The type genome for the species is the GenBank assembly GCA\_003563585.1. The GC content of the type genome is 30.52 % and the genome length is 0.54 Mbp.

**Description of *Candidatus Cuferarcha* gen. nov.**

*Candidatus Cuferarcha* (NL. fem. n. *Cuferarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CSSed11-243R1*. The type species for the genus is *Candidatus Cuferarcha cicititia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CSSed11-243R1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Cuferarchaceae.

**Description of *Candidatus* Cuferarchaceae fam. nov.**

*Candidatus* Cuferarchaceae (NL. fem. n. *Cuferarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CSSed11-243R1*. The type genus for the taxon is *Candidatus* Cuferarcha

According to the original version of GTDB R06-RS202, this family belongs to the order *CSSed11-243R1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Cuferarchales.

**Description of *Candidatus* Cuferarchales ord. nov.**

*Candidatus* Cuferarchales (NL. fem. n. *Cuferarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CSSed11-243R1*. The type genus for the taxon is *Candidatus* Cuferarcha

According to the GTDB R06-RS202, this order belongs to the class *Nanoarchaeia*.

**Description of *Candidatus* Cuferarcha cocibiforma sp. nov.**

*Candidatus* Cuferarcha cocibiforma (NL. fem. n. *cocibiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CSSed11-243R1 sp007133845*. The type genome for the species is the GenBank assembly GCA\_007133845.1. The GC content of the type genome is 29.94 % and the genome length is 0.52 Mbp.

**Description of *Candidatus* Culigarcha monodatio sp. nov.**

*Candidatus* Culigarcha monodatio (NL. fem. n. *monodatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *SpSt-1120 sp011373045*. The type genome for the species is the GenBank assembly GCA\_011373045.1. The GC content of the type genome is 46.23 % and the genome length is 0.56 Mbp.

#### **Description of *Candidatus Culigarcha* gen. nov.**

*Candidatus Culigarcha* (NL. fem. n. *Culigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SpSt-1120*. The type species for the genus is *Candidatus Culigarcha monodatio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SpSt-1120*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Culigarchaceae*.

#### **Description of *Candidatus Culigarchaceae* fam. nov.**

*Candidatus Culigarchaceae* (NL. fem. n. *Culigarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SpSt-1120*. The type genus for the taxon is *Candidatus Culigarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *GW2011-AR5*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Pericarchales*.

#### **Description of *Candidatus Culularcha fefelessa* sp. nov.**

*Candidatus Culularcha fefelessa* (NL. fem. n. *fefelessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADFI01 sp013152905*. The type genome for the species is the GenBank assembly GCA\_013152905.1. The GC content of the type genome is 45.78 % and the genome length is 0.55 Mbp.

#### **Description of *Candidatus Culularcha* gen. nov.**

*Candidatus Culularcha* (NL. fem. n. *Culularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADFI01*. The type species for the genus is *Candidatus Culularcha*

fefelessa .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAADFI01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Culularchaceae.

#### **Description of *Candidatus* Culularchaceae fam. nov.**

*Candidatus* Culularchaceae (NL. fem. n. *Culularchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAADFI01*. The type genus for the taxon is *Candidatus* Culularcha .

According to GTDB R06-RS202, this family belongs to the order *Aenigmataarchaeales*.

#### **Description of *Candidatus* Cunabarcha cilibibra sp. nov.**

*Candidatus* Cunabarcha cilibibra (NL. fem. n. *cilibibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *1-14-0-10-34-76 sp002763075*. The type genome for the species is the GenBank assembly GCA\_002763075.1. The GC content of the type genome is 34.44 % and the genome length is 0.91 Mbp.

#### **Description of *Candidatus* Cunabarcha gen. nov.**

*Candidatus* Cunabarcha (NL. fem. n. *Cunabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *1-14-0-10-34-76*. The type species for the genus is *Candidatus* Cunabarcha cilibibra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Decenarchaceae.

#### **Description of *Candidatus* Curabarcha mirifitio sp. nov.**

*Candidatus* Curabarcha mirifitio (NL. fem. n. *mirifitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this species is *CAIKOA01 sp903828955*. The type genome for the species is the GenBank assembly GCA\_903922105.1. The GC content of the type genome is 50.6 % and the genome length is 1.11 Mbp.

#### **Description of *Candidatus Curabarcha* gen. nov.**

*Candidatus Curabarcha* (NL. fem. n. *Curabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIKOA01*. The type species for the genus is *Candidatus Curabarcha mirifitio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Volubarchaceae*.

#### **Description of *Candidatus Curacarcha bicalitia* sp. nov.**

*Candidatus Curacarcha bicalitia* (NL. fem. n. *bicalitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp9354u*. The type genome for the species is the GenBank assembly GCA\_003672275.1. The GC content of the type genome is 44.8 % and the genome length is 1.6 Mbp.

#### **Description of *Candidatus Curacarcha* gen. nov.**

*Candidatus Curacarcha* (NL. fem. n. *Curacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIa-L1*. The type species for the genus is *Candidatus Curacarcha bicalitia*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Curacarcha cemenigena* sp. nov.**

*Candidatus Curacarcha cemenigena* (NL. fem. n. *cemenigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002702945*. The type genome for the species is the

GenBank assembly GCA\_002702945.1. The GC content of the type genome is 38.56 % and the genome length is 1.98 Mbp.

**Description of *Candidatus Curacarcha cerifatio* sp. nov.**

*Candidatus Curacarcha cerifatio* (NL. fem. n. *cerifatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002170315*. The type genome for the species is the GenBank assembly GCA\_002170315.2. The GC content of the type genome is 46.44 % and the genome length is 1.81 Mbp.

**Description of *Candidatus Curacarcha cerifousia* sp. nov.**

*Candidatus Curacarcha cerifousia* (NL. fem. n. *cerifousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002499545*. The type genome for the species is the GenBank assembly GCA\_002730005.1. The GC content of the type genome is 48.56 % and the genome length is 1.99 Mbp.

**Description of *Candidatus Curacarcha cilibentia* sp. nov.**

*Candidatus Curacarcha cilibentia* (NL. fem. n. *cilibentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp000246735*. The type genome for the species is the GenBank assembly GCA\_000246735.1. The GC content of the type genome is 51.56 % and the genome length is 2.06 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "surface seawater; Puget Sound".

**Description of *Candidatus Curacarcha cimelitrix* sp. nov.**

*Candidatus Curacarcha cimelitrix* (NL. fem. n. *cimelitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002505355*. The type genome for the species is the GenBank assembly GCA\_002505355.1. The GC content of the type genome is 44.77 % and the genome length is 1.72 Mbp.

### **Description of *Candidatus Curacarcha codifitudo* sp. nov.**

*Candidatus Curacarcha codifitudo* (NL. fem. n. *codifitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002499015*. The type genome for the species is the GenBank assembly GCA\_002499015.1. The GC content of the type genome is 41.6 % and the genome length is 1.81 Mbp.

### **Description of *Candidatus Curacarcha curotibula* sp. nov.**

*Candidatus Curacarcha curotibula* (NL. fem. n. *curotibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002502605*. The type genome for the species is the GenBank assembly GCA\_002502605.1. The GC content of the type genome is 51.48 % and the genome length is 1.88 Mbp.

### **Description of *Candidatus Curacarcha delebibra* sp. nov.**

*Candidatus Curacarcha delebibra* (NL. fem. n. *delebibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp8160u*. The type genome for the species is the GenBank assembly GCA\_013330285.1. The GC content of the type genome is 50.48 % and the genome length is 1.6 Mbp.

### **Description of *Candidatus Curacarcha depecitoga* sp. nov.**

*Candidatus Curacarcha depecitoga* (NL. fem. n. *depecitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002506025*. The type genome for the species is the GenBank assembly GCA\_002506025.1. The GC content of the type genome is 44.18 % and the genome length is 1.43 Mbp.

### **Description of *Candidatus Curacarcha depelatica* sp. nov.**

*Candidatus Curacarcha depelatica* (NL. fem. n. *depelatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002172355*. The type genome for the species is the GenBank assembly GCA\_002701025.1. The GC content of the type genome is 40.2 % and the genome length is 1.94 Mbp.

**Description of *Candidatus Curacarcha derunitia* sp. nov.**

*Candidatus Curacarcha derunitia* (NL. fem. n. *derunitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp009887195*. The type genome for the species is the GenBank assembly GCA\_009887195.1. The GC content of the type genome is 42.12 % and the genome length is 1.7 Mbp.

**Description of *Candidatus Curacarcha dilibibula* sp. nov.**

*Candidatus Curacarcha dilibibula* (NL. fem. n. *dilibibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002506275*. The type genome for the species is the GenBank assembly GCA\_009887245.1. The GC content of the type genome is 49.08 % and the genome length is 1.86 Mbp.

**Description of *Candidatus Curacarcha diluviforma* sp. nov.**

*Candidatus Curacarcha diluviforma* (NL. fem. n. *diluviforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp003602645*. The type genome for the species is the GenBank assembly GCA\_003602645.1. The GC content of the type genome is 50.93 % and the genome length is 1.76 Mbp.

**Description of *Candidatus Curacarcha domabitura* sp. nov.**

*Candidatus Curacarcha domabitura* (NL. fem. n. *domabitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *MGIIa-L1 sp002687075*. The type genome for the species is the GenBank assembly GCA\_003602455.1. The GC content of the type genome is 46.0 % and the genome length is 1.86 Mbp.

#### **Description of *Candidatus Curacarcha ducilibula* sp. nov.**

*Candidatus Curacarcha ducilibula* (NL. fem. n. *ducilibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002727485*. The type genome for the species is the GenBank assembly GCA\_002727485.1. The GC content of the type genome is 38.95 % and the genome length is 1.41 Mbp.

#### **Description of *Candidatus Curacarcha fatifastra* sp. nov.**

*Candidatus Curacarcha fatifastra* (NL. fem. n. *fatifastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp003602575*. The type genome for the species is the GenBank assembly GCA\_003602575.1. The GC content of the type genome is 39.84 % and the genome length is 1.97 Mbp.

#### **Description of *Candidatus Curacarcha fiducugo* sp. nov.**

*Candidatus Curacarcha fiducugo* (NL. fem. n. *fiducugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002499705*. The type genome for the species is the GenBank assembly GCA\_002499705.1. The GC content of the type genome is 46.38 % and the genome length is 1.88 Mbp.

#### **Description of *Candidatus Curacarcha foricatica* sp. nov.**

*Candidatus Curacarcha foricatica* (NL. fem. n. *foricatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002726395*. The type genome for the species is the GenBank assembly GCA\_002726395.1. The GC content of the type genome is 41.88 % and the genome length is 1.81 Mbp.

### **Description of *Candidatus Curacarcha hirunax* sp. nov.**

*Candidatus Curacarcha hirunax* (NL. fem. n. *hirunax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002697705*. The type genome for the species is the GenBank assembly GCA\_002503905.1. The GC content of the type genome is 39.63 % and the genome length is 1.56 Mbp.

### **Description of *Candidatus Curacarcha lacinilenta* sp. nov.**

*Candidatus Curacarcha lacinilenta* (NL. fem. n. *lacinilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp011526375*. The type genome for the species is the GenBank assembly GCA\_011526375.1. The GC content of the type genome is 43.18 % and the genome length is 2.23 Mbp.

### **Description of *Candidatus Curacarcha ludimimonas* sp. nov.**

*Candidatus Curacarcha ludimimonas* (NL. fem. n. *ludimimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002688825*. The type genome for the species is the GenBank assembly GCA\_002688825.1. The GC content of the type genome is 40.25 % and the genome length is 1.81 Mbp.

### **Description of *Candidatus Curacarcha luxurilenta* sp. nov.**

*Candidatus Curacarcha luxurilenta* (NL. fem. n. *luxurilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002729095*. The type genome for the species is the GenBank assembly GCA\_002502415.1. The GC content of the type genome is 39.81 % and the genome length is 1.86 Mbp.

### **Description of *Candidatus Curacarcha molecivita* sp. nov.**

*Candidatus Curacarcha molecivita* (NL. fem. n. *molecivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp009937205*. The type genome for the species is the GenBank assembly GCA\_009937205.1. The GC content of the type genome is 41.53 % and the genome length is 1.77 Mbp.

**Description of *Candidatus Curacarcha nocenitas* sp. nov.**

*Candidatus Curacarcha nocenitas* (NL. fem. n. *nocenitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002496955*. The type genome for the species is the GenBank assembly GCA\_002497885.1. The GC content of the type genome is 43.56 % and the genome length is 1.14 Mbp.

**Description of *Candidatus Curacarcha pavicitura* sp. nov.**

*Candidatus Curacarcha pavicitura* (NL. fem. n. *pavicitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002721085*. The type genome for the species is the GenBank assembly GCA\_002721085.1. The GC content of the type genome is 45.0 % and the genome length is 1.23 Mbp.

**Description of *Candidatus Curacarcha peripilenta* sp. nov.**

*Candidatus Curacarcha peripilenta* (NL. fem. n. *peripilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp009937025*. The type genome for the species is the GenBank assembly GCA\_009937025.1. The GC content of the type genome is 45.96 % and the genome length is 1.88 Mbp.

**Description of *Candidatus Curacarcha rorifentia* sp. nov.**

*Candidatus Curacarcha rorifentia* (NL. fem. n. *rorifentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *MGIIa-L1 sp902520595*. The type genome for the species is the GenBank assembly GCA\_902520595.1. The GC content of the type genome is 46.0 % and the genome length is 1.42 Mbp.

**Description of *Candidatus Curacarcha satacifica* sp. nov.**

*Candidatus Curacarcha satacifica* (NL. fem. n. *satacifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp009887095*. The type genome for the species is the GenBank assembly GCA\_009887095.1. The GC content of the type genome is 52.14 % and the genome length is 1.48 Mbp.

**Description of *Candidatus Curacarcha telefilega* sp. nov.**

*Candidatus Curacarcha telefilega* (NL. fem. n. *telefilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp003602605*. The type genome for the species is the GenBank assembly GCA\_003602605.1. The GC content of the type genome is 48.3 % and the genome length is 2.02 Mbp.

**Description of *Candidatus Curacarcha tiruniforma* sp. nov.**

*Candidatus Curacarcha tiruniforma* (NL. fem. n. *tiruniforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp8725u*. The type genome for the species is the GenBank assembly GCA\_003672545.1. The GC content of the type genome is 45.0 % and the genome length is 1.57 Mbp.

**Description of *Candidatus Curacarcha turicilenta* sp. nov.**

*Candidatus Curacarcha turicilenta* (NL. fem. n. *turicilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp9513u*. The type genome for the species is the GenBank assembly GCA\_013329255.1. The GC content of the type genome is 52.07 % and the genome length is 1.88 Mbp.



### **Description of *Candidatus Curacarcha vatiliforma* sp. nov.**

*Candidatus Curacarcha vatiliforma* (NL. fem. n. *vatiliforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002495945*. The type genome for the species is the GenBank assembly GCA\_002495945.1. The GC content of the type genome is 43.14 % and the genome length is 1.6 Mbp.

### **Description of *Candidatus Curacarcha venefitio* sp. nov.**

*Candidatus Curacarcha venefitio* (NL. fem. n. *venefitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp012959845*. The type genome for the species is the GenBank assembly GCA\_012959845.1. The GC content of the type genome is 41.84 % and the genome length is 1.87 Mbp.

### **Description of *Candidatus Curacarcha videlitas* sp. nov.**

*Candidatus Curacarcha videlitas* (NL. fem. n. *videlitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp8734u*. The type genome for the species is the GenBank assembly GCA\_013329925.1. The GC content of the type genome is 41.56 % and the genome length is 1.76 Mbp.

### **Description of *Candidatus Curacarcha xenopentia* sp. nov.**

*Candidatus Curacarcha xenopentia* (NL. fem. n. *xenopentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp002495535*. The type genome for the species is the GenBank assembly GCA\_002495535.1. The GC content of the type genome is 51.53 % and the genome length is 1.84 Mbp.

### **Description of *Candidatus Curacarcha xeropitura* sp. nov.**

*Candidatus Curacarcha xeropitura* (NL. fem. n. *xeropitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L1 sp9596u*. The type genome for the species is the GenBank assembly GCA\_003672325.1. The GC content of the type genome is 39.5 % and the genome length is 1.61 Mbp.

#### **Description of *Candidatus Curotarcha genocedo* sp. nov.**

*Candidatus Curotarcha genocedo* (NL. fem. n. *genocedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *0-14-0-20-59-11 sp902384935*. The type genome for the species is the GenBank assembly GCA\_902384935.1. The GC content of the type genome is 57.5 % and the genome length is 0.93 Mbp.

#### **Description of *Candidatus Curotarcha* gen. nov.**

*Candidatus Curotarcha* (NL. fem. n. *Curotarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *0-14-0-20-59-11*. The type species for the genus is *Candidatus Curotarcha genocedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA93*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tenilarchaceae*.

#### **Description of *Candidatus Curotarcha pavicicula* sp. nov.**

*Candidatus Curotarcha pavicicula* (NL. fem. n. *pavicicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *0-14-0-20-59-11 sp002763345*. The type genome for the species is the GenBank assembly GCA\_002763345.1. The GC content of the type genome is 59.18 % and the genome length is 0.79 Mbp.

#### **Description of *Candidatus Cuticarcha fidenax* sp. nov.**

*Candidatus Cuticarcha fidenax* (NL. fem. n. *fidenax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QS-5-68-33 sp003023785*. The type genome for the species is the GenBank assembly GCA\_003023785.1. The GC content of the type genome is 68.35 % and the genome length is 2.42 Mbp.

**Description of *Candidatus Cuticarcha* gen. nov.**

*Candidatus Cuticarcha* (NL. fem. n. *Cuticarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QS-5-68-33*. The type species for the genus is *Candidatus Cuticarcha fidenax*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Debucarcha bicipousia* sp. nov.**

*Candidatus Debucarcha bicipousia* (NL. fem. n. *bicipousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CSBR16-154 sp007117405*. The type genome for the species is the GenBank assembly GCA\_007117405.1. The GC content of the type genome is 29.06 % and the genome length is 0.5 Mbp.

**Description of *Candidatus Debucarcha* gen. nov.**

*Candidatus Debucarcha* (NL. fem. n. *Debucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CSBR16-154*. The type species for the genus is *Candidatus Debucarcha bicipousia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA583*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Filifarchaceae*.

**Description of *Candidatus Decacarcha cicaratica* sp. nov.**

*Candidatus Decacarcha cicaratica* (NL. fem. n. *cicaratica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRGT01 sp011055585*. The type genome for the species is the GenBank assembly GCA\_011055585.1. The GC content of the type genome is 34.19 % and the genome length is 1.45 Mbp.

#### **Description of *Candidatus Decacarcha* gen. nov.**

*Candidatus Decacarcha* (NL. fem. n. *Decacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRGT01*. The type species for the genus is *Candidatus Decacarcha cicaratica*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Decamarcha bigaricula* sp. nov.**

*Candidatus Decamarcha bigaricula* (NL. fem. n. *bigaricula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-19 sp002010075*. The type genome for the species is the GenBank assembly GCA\_002010075.1. The GC content of the type genome is 43.2 % and the genome length is 1.29 Mbp.

#### **Description of *Candidatus Decamarcha* gen. nov.**

*Candidatus Decamarcha* (NL. fem. n. *Decamarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-19*. The type species for the genus is *Candidatus Decamarcha bigaricula*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Decamarcha depasicula* sp. nov.**

*Candidatus Decamarcha depasicula* (NL. fem. n. *depasicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-19 sp003661015*. The type genome for the species is the GenBank assembly GCA\_003661015.1. The GC content of the type genome is 43.84 %

and the genome length is 0.82 Mbp.

**Description of *Candidatus Decaparcha telefitura* sp. nov.**

*Candidatus* Decaparcha telefitura (NL. fem. n. *telefitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTOY01 sp011358085*. The type genome for the species is the GenBank assembly GCA\_011358085.1. The GC content of the type genome is 49.1 % and the genome length is 1.8 Mbp.

**Description of *Candidatus Decaparcha* gen. nov.**

*Candidatus* Decaparcha (NL. fem. n. *Decaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTOY01*. The type species for the genus is *Candidatus* Decaparcha telefitura .

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTGE01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Delacarchaceae.

**Description of *Candidatus Decatarcha lametifica* sp. nov.**

*Candidatus* Decatarcha lametifica (NL. fem. n. *lametifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR13 sp9966u*. The type genome for the species is the GenBank assembly GCA\_013331835.1. The GC content of the type genome is 28.61 % and the genome length is 1.15 Mbp.

**Description of *Candidatus Decatarcha* gen. nov.**

*Candidatus* Decatarcha (NL. fem. n. *Decatarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GW2011-AR13*. The type species for the genus is *Candidatus* Decatarcha lametifica .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon

belongs to the family *Candidatus* Deceparchaceae.

#### **Description of *Candidatus* Dececarcha cohoretta sp. nov.**

*Candidatus* Dececarcha cohoretta (NL. fem. n. *cohoretta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAOZO01 sp011605715*. The type genome for the species is the GenBank assembly GCA\_011605715.1. The GC content of the type genome is 36.21 % and the genome length is 1.78 Mbp.

#### **Description of *Candidatus* Dececarcha gen. nov.**

*Candidatus* Dececarcha (NL. fem. n. *Dececarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAAOZO01*. The type species for the genus is *Candidatus* Dececarcha cohoretta .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAAOZO01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Deceparchaceae.

#### **Description of *Candidatus* Deceparchaceae fam. nov.**

*Candidatus* Deceparchaceae (NL. fem. n. *Deceparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAAOZO01*. The type genus for the taxon is *Candidatus* Dececarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-205*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Bovicarchales.

#### **Description of *Candidatus* Decenarcha ridibimonas sp. nov.**

*Candidatus* Decenarcha ridibimonas (NL. fem. n. *ridibimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA73 sp002496015*. The type genome for the species is the GenBank

assembly GCA\_002496015.1. The GC content of the type genome is 40.78 % and the genome length is 0.92 Mbp.

#### **Description of *Candidatus Decenarcha* gen. nov.**

*Candidatus Decenarcha* (NL. fem. n. *Decenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA73*. The type species for the genus is *Candidatus Decenarcha ridibimonas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Decenarchaceae*.

#### **Description of *Candidatus Decenarchaceae* fam. nov.**

*Candidatus Decenarchaceae* (NL. fem. n. *Decenarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA73*. The type genus for the taxon is *Candidatus Decenarcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

#### **Description of *Candidatus Decinarcha catabedo* sp. nov.**

*Candidatus Decinarcha catabedo* (NL. fem. n. *catabedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B23 sp001593875*. The type genome for the species is the GenBank assembly GCA\_001593875.1. The GC content of the type genome is 61.8 % and the genome length is 0.72 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "marine sediment sample collected by push cores at a deep sea vent site during cruise AT15-25 on Alvin dive 4358; sediment was oily and the sediment surface was covered with a white microbial mat".

#### **Description of *Candidatus Decinarcha* gen. nov.**

*Candidatus Decinarcha* (NL. fem. n. *Decinarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B23*. The type species for the genus is *Candidatus Decinarcha catabedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *TCS64*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tegumarchaceae*.

#### **Description of *Candidatus Decitarcha cuferatica* sp. nov.**

*Candidatus Decitarcha cuferatica* (NL. fem. n. *cuferatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MVQI01 sp002067795*. The type genome for the species is the GenBank assembly GCA\_002067935.1. The GC content of the type genome is 55.33 % and the genome length is 1.93 Mbp.

#### **Description of *Candidatus Decitarcha* gen. nov.**

*Candidatus Decitarcha* (NL. fem. n. *Decitarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MVQI01*. The type species for the genus is *Candidatus Decitarcha cuferatica*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Decomarcha sacomentia* sp. nov.**

*Candidatus Decomarcha sacomentia* (NL. fem. n. *sacomentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *0-14-0-20-34-12 sp002779065*. The type genome for the species is the GenBank assembly GCA\_002779065.1. The GC content of the type genome is 34.3 % and the genome length is 0.94 Mbp.

#### **Description of *Candidatus Decomarcha* gen. nov.**

*Candidatus Decomarcha* (NL. fem. n. *Decomarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *0-14-0-20-34-12*. The type species for the genus is *Candidatus Decomarcha sacomentia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family



0-14-0-20-34-12. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Decomarchaceae.

#### **Description of *Candidatus* Decomarchaceae fam. nov.**

*Candidatus* Decomarchaceae (NL. fem. n. *Decomarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is 0-14-0-20-34-12. The type genus for the taxon is *Candidatus* Decomarcha .

According to GTDB R06-RS202, this family belongs to the order *Iainarchaeales*.

#### **Description of *Candidatus* Decucarcha giganicella sp. nov.**

*Candidatus* Decucarcha giganicella (NL. fem. n. *giganicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J091* sp003695045. The type genome for the species is the GenBank assembly GCA\_003695045.1. The GC content of the type genome is 48.17 % and the genome length is 1.06 Mbp.

#### **Description of *Candidatus* Decucarcha gen. nov.**

*Candidatus* Decucarcha (NL. fem. n. *Decucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J091*. The type species for the genus is *Candidatus* Decucarcha giganicella .

According to the original version of GTDB R06-RS202, this genus belongs to the family *J091*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Decucarchaceae.

#### **Description of *Candidatus* Decucarchaceae fam. nov.**

*Candidatus* Decucarchaceae (NL. fem. n. *Decucarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *J091*. The type genus for the taxon is *Candidatus* Decucarcha .

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

### **Description of *Candidatus Decularcha revecibula* sp. nov.**

*Candidatus Decularcha revecibula* (NL. fem. n. *revecibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA11576 sp11576u*. The type genome for the species is the GenBank assembly GCA\_013331125.1. The GC content of the type genome is 48.01 % and the genome length is 1.51 Mbp.

### **Description of *Candidatus Decularcha* gen. nov.**

*Candidatus Decularcha* (NL. fem. n. *Decularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA11576*. The type species for the genus is *Candidatus Decularcha revecibula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA11576*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Decularchaceae*.

### **Description of *Candidatus Decularchaceae* fam. nov.**

*Candidatus Decularchaceae* (NL. fem. n. *Decularchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA11576*. The type genus for the taxon is *Candidatus Decularcha*.

According to GTDB R06-RS202, this family belongs to the order *Woeseearchaeales*.

### **Description of *Candidatus Decunarcha homoligena* sp. nov.**

*Candidatus Decunarcha homoligena* (NL. fem. n. *homoligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B3-WOES sp005222965*. The type genome for the species is the GenBank assembly GCA\_005222965.1. The GC content of the type genome is 30.17 % and the genome length is 1.02 Mbp.

### **Description of *Candidatus Decunarcha* gen. nov.**

*Candidatus* Decunarcha (NL. fem. n. *Decunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B3-WOES*. The type species for the genus is *Candidatus* Decunarcha homoligena .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-2687795*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Depecarchaceae.

### **Description of *Candidatus* Decuparcha ceraribula sp. nov.**

*Candidatus* Decuparcha ceraribula (NL. fem. n. *ceraribula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-001856825 sp001856825*. The type genome for the species is the GenBank assembly GCA\_001856825.1. The GC content of the type genome is 44.3 % and the genome length is 1.69 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "isolated from slime streamers and attached to pyrite surfaces at a sulfide ore body".

### **Description of *Candidatus* Decuparcha gen. nov.**

*Candidatus* Decuparcha (NL. fem. n. *Decuparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-001856825*. The type species for the genus is *Candidatus* Decuparcha ceraribula .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-001856825*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Decuparchaceae.

### **Description of *Candidatus* Decuparchaceae fam. nov.**

*Candidatus* Decuparchaceae (NL. fem. n. *Decuparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GCA-001856825*. The type genus for the taxon is *Candidatus* Decuparcha .

According to GTDB R06-RS202, this family belongs to the order *Thermoplasmatales*.

### **Description of *Candidatus Decuparcha pericastra* sp. nov.**

*Candidatus Decuparcha pericastra* (NL. fem. n. *pericastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-001856825 sp011358095*. The type genome for the species is the GenBank assembly GCA\_011358095.1. The GC content of the type genome is 42.85 % and the genome length is 1.55 Mbp.

### **Description of *Candidatus Dedigarcha defasigena* sp. nov.**

*Candidatus Dedigarcha defasigena* (NL. fem. n. *defasigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *VBQI01 sp008297865*. The type genome for the species is the GenBank assembly GCA\_008297865.1. The GC content of the type genome is 35.84 % and the genome length is 1.17 Mbp.

### **Description of *Candidatus Dedigarcha* gen. nov.**

*Candidatus Dedigarcha* (NL. fem. n. *Dedigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *VBQI01*. The type species for the genus is *Candidatus Dedigarcha defasigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JdFR-43*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pimenarchaceae*.

### **Description of *Candidatus Defacarcha sacopitrix* sp. nov.**

*Candidatus Defacarcha sacopitrix* (NL. fem. n. *sacopitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS1178 sp002688325*. The type genome for the species is the GenBank assembly GCA\_002688325.1. The GC content of the type genome is 27.75 % and the genome length is 0.61 Mbp.

### **Description of *Candidatus Defacarcha* gen. nov.**

*Candidatus Defacarcha* (NL. fem. n. *Defacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARS1178*. The type species for the genus is *Candidatus Defacarcha sacopitrix*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1178*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Defacarchaceae*.

### **Description of *Candidatus Defacarchaceae* fam. nov.**

*Candidatus Defacarchaceae* (NL. fem. n. *Defacarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *ARS1178*. The type genus for the taxon is *Candidatus Defacarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Lanifarchales*.

### **Description of *Candidatus Defalarcha mavorigena* sp. nov.**

*Candidatus Defalarcha mavorigena* (NL. fem. n. *mavorigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PFCY01 sp002763085*. The type genome for the species is the GenBank assembly GCA\_002763085.1. The GC content of the type genome is 32.27 % and the genome length is 1.15 Mbp.

### **Description of *Candidatus Defalarcha* gen. nov.**

*Candidatus Defalarcha* (NL. fem. n. *Defalarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PFCY01*. The type species for the genus is *Candidatus Defalarcha mavorigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deseparchaceae*.

### **Description of *Candidatus Defanarcha fibicisca* sp. nov.**

*Candidatus* Defanarcha fibicisca (NL. fem. n. *fibicisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS1309 sp002688015*. The type genome for the species is the GenBank assembly GCA\_002688015.1. The GC content of the type genome is 34.43 % and the genome length is 0.59 Mbp.

### **Description of *Candidatus Defanarcha* gen. nov.**

*Candidatus* Defanarcha (NL. fem. n. *Defanarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARS1309*. The type species for the genus is *Candidatus* Defanarcha fibicisca .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Decenarchaceae.

### **Description of *Candidatus Defararcha catabitudo* sp. nov.**

*Candidatus* Defararcha catabitudo (NL. fem. n. *catabitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAXQB01 sp012329085*. The type genome for the species is the GenBank assembly GCA\_012329085.1. The GC content of the type genome is 29.82 % and the genome length is 2.37 Mbp.

### **Description of *Candidatus Defararcha* gen. nov.**

*Candidatus* Defararcha (NL. fem. n. *Defararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAAXQB01*. The type species for the genus is *Candidatus* Defararcha catabitudo .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Defenarcha tirocitura* sp. nov.**

*Candidatus Defenarcha tirocitura* (NL. fem. n. *tirocitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABXJV01 sp013375355*. The type genome for the species is the GenBank assembly GCA\_013375355.1. The GC content of the type genome is 30.73 % and the genome length is 4.59 Mbp.

#### **Description of *Candidatus Defenarcha* gen. nov.**

*Candidatus Defenarcha* (NL. fem. n. *Defenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JABXJV01*. The type species for the genus is *Candidatus Defenarcha tirocitura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JABXJV01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Defenarchaceae*.

#### **Description of *Candidatus Defenarchaceae* fam. nov.**

*Candidatus Defenarchaceae* (NL. fem. n. *Defenarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JABXJV01*. The type genus for the taxon is *Candidatus Defenarcha*.

According to GTDB R06-RS202, this family belongs to the order *Helarchaeales*.

#### **Description of *Candidatus Defesarcha decamentia* sp. nov.**

*Candidatus Defesarcha decamentia* (NL. fem. n. *decamentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA71 sp006954425*. The type genome for the species is the GenBank assembly RS\_GCF\_009911715.1. The GC content of the type genome is 59.55 % and the genome length is 1.89 Mbp.

#### **Description of *Candidatus Defesarcha* gen. nov.**

*Candidatus Defesarcha* (NL. fem. n. *Defesarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA71*. The type species for the genus is *Candidatus Defesarcha decamentia*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Defesarcha depetilega* sp. nov.**

*Candidatus Defesarcha depetilega* (NL. fem. n. *depetilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA71 sp002506425*. The type genome for the species is the GenBank assembly GCA\_002497475.1. The GC content of the type genome is 57.57 % and the genome length is 1.64 Mbp.

**Description of *Candidatus Defesarcha lubenitoga* sp. nov.**

*Candidatus Defesarcha lubenitoga* (NL. fem. n. *lubenitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA71 sp002504405*. The type genome for the species is the GenBank assembly GCA\_002504405.1. The GC content of the type genome is 59.37 % and the genome length is 1.62 Mbp.

**Description of *Candidatus Defesarcha refiniforma* sp. nov.**

*Candidatus Defesarcha refiniforma* (NL. fem. n. *refiniforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA71 sp006954465*. The type genome for the species is the GenBank assembly RS\_GCF\_900768585.1. The GC content of the type genome is 57.72 % and the genome length is 1.72 Mbp.

**Description of *Candidatus Defesarcha solifugo* sp. nov.**

*Candidatus Defesarcha solifugo* (NL. fem. n. *solifugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this species is *UBA71 sp002504495*. The type genome for the species is the GenBank assembly GCA\_002504495.1. The GC content of the type genome is 58.97 % and the genome length is 1.61 Mbp.

#### **Description of *Candidatus Defesarcha tabitatio* sp. nov.**

*Candidatus Defesarcha tabitatio* (NL. fem. n. *tabitatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA71 sp900767505*. The type genome for the species is the GenBank assembly RS\_GCF\_900767505.1. The GC content of the type genome is 56.05 % and the genome length is 1.23 Mbp.

#### **Description of *Candidatus Defetarcha delubastra* sp. nov.**

*Candidatus Defetarcha delubastra* (NL. fem. n. *delubastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTCV01 sp011337845*. The type genome for the species is the GenBank assembly GCA\_011056405.1. The GC content of the type genome is 37.29 % and the genome length is 1.64 Mbp.

#### **Description of *Candidatus Defetarcha* gen. nov.**

*Candidatus Defetarcha* (NL. fem. n. *Defetarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTCV01*. The type species for the genus is *Candidatus Defetarcha delubastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *NBVN01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Redunarchaceae*.

#### **Description of *Candidatus Defetarcha ludifivita* sp. nov.**

*Candidatus Defetarcha ludifivita* (NL. fem. n. *ludifivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTCV01 sp011366425*. The type genome for the species is the

GenBank assembly GCA\_011369745.1. The GC content of the type genome is 41.55 % and the genome length is 1.41 Mbp.

#### **Description of *Candidatus Deforarcha divolago* sp. nov.**

*Candidatus Deforarcha divolago* (NL. fem. n. *divolago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BISed10-29 sp003551125*. The type genome for the species is the GenBank assembly GCA\_003551125.1. The GC content of the type genome is 34.37 % and the genome length is 0.4 Mbp.

#### **Description of *Candidatus Deforarcha* gen. nov.**

*Candidatus Deforarcha* (NL. fem. n. *Deforarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BISed10-29*. The type species for the genus is *Candidatus Deforarcha divolago*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *BISed10-29*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deforarchaceae*.

#### **Description of *Candidatus Deforarchaceae* fam. nov.**

*Candidatus Deforarchaceae* (NL. fem. n. *Deforarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *BISed10-29*. The type genus for the taxon is *Candidatus Deforarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *BISed10-29*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Deforarchales*.

#### **Description of *Candidatus Deforarchales* ord. nov.**

*Candidatus Deforarchales* (NL. fem. n. *Deforarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *BISed10-29*. The type genus for the taxon is *Candidatus Deforarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Iainarchaeia*.

**Description of *Candidatus Deforarcha vigenitica* sp. nov.**

*Candidatus Deforarcha vigenitica* (NL. fem. n. *vigenitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B1Sed10-29 sp003553825*. The type genome for the species is the GenBank assembly GCA\_003553825.1. The GC content of the type genome is 38.44 % and the genome length is 0.47 Mbp.

**Description of *Candidatus Defosarcha cimelousia* sp. nov.**

*Candidatus Defosarcha cimelousia* (NL. fem. n. *cimelousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B24-G1 sp003662535*. The type genome for the species is the GenBank assembly GCA\_003662535.1. The GC content of the type genome is 54.0 % and the genome length is 0.72 Mbp.

**Description of *Candidatus Defosarcha* gen. nov.**

*Candidatus Defosarcha* (NL. fem. n. *Defosarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B24-G1*. The type species for the genus is *Candidatus Defosarcha cimelousia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B24-G1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Defosarchaceae*.

**Description of *Candidatus Defosarchaceae* fam. nov.**

*Candidatus Defosarchaceae* (NL. fem. n. *Defosarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B24-G1*. The type genus for the taxon is *Candidatus Defosarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-135*. According to the renamed version of GTDB R06-RS202, this taxon belongs

to the order *Candidatus* Tabifarchales.

#### **Description of *Candidatus* Defularcha bonititio sp. nov.**

*Candidatus* Defularcha bonititio (NL. fem. n. *bonititio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA543 sp002502135*. The type genome for the species is the GenBank assembly GCA\_002502135.1. The GC content of the type genome is 39.54 % and the genome length is 0.73 Mbp.

#### **Description of *Candidatus* Defularcha gen. nov.**

*Candidatus* Defularcha (NL. fem. n. *Defularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA543*. The type species for the genus is *Candidatus* Defularcha bonititio .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA543*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Defularchaceae.

#### **Description of *Candidatus* Defularchaceae fam. nov.**

*Candidatus* Defularchaceae (NL. fem. n. *Defularchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA543*. The type genus for the taxon is *Candidatus* Defularcha .

According to GTDB R06-RS202, this family belongs to the order *Undinarchaeales*.

#### **Description of *Candidatus* Defunarcha lubenifica sp. nov.**

*Candidatus* Defunarcha lubenifica (NL. fem. n. *lubenifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMZJ01 sp003663115*. The type genome for the species is the GenBank assembly GCA\_003663115.1. The GC content of the type genome is 43.55 % and the genome length is 1.19 Mbp.

### **Description of *Candidatus Defunarcha* gen. nov.**

*Candidatus Defunarcha* (NL. fem. n. *Defunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMZJ01*. The type species for the genus is *Candidatus Defunarcha lubenifica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZM01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugivarchaceae*.

### **Description of *Candidatus Dehinarcha fibicicula* sp. nov.**

*Candidatus Dehinarcha fibicicula* (NL. fem. n. *fibicicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2688265 sp002688265*. The type genome for the species is the GenBank assembly *GCA\_002688265.1*. The GC content of the type genome is 34.2 % and the genome length is 1.07 Mbp.

### **Description of *Candidatus Dehinarcha* gen. nov.**

*Candidatus Dehinarcha* (NL. fem. n. *Dehinarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2688265*. The type species for the genus is *Candidatus Dehinarcha fibicicula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tirocarchaceae*.

### **Description of *Candidatus Dehisarcha penecitoga* sp. nov.**

*Candidatus Dehisarcha penecitoga* (NL. fem. n. *penecitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA328 sp002506905*. The type genome for the species is the GenBank assembly *GCA\_002496945.1*. The GC content of the type genome is 51.67 % and the genome length is 1.4 Mbp.

### **Description of *Candidatus Dehisarcha* gen. nov.**

*Candidatus Dehisarcha* (NL. fem. n. *Dehisarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA328*. The type species for the genus is *Candidatus Dehisarcha penecitoga*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Dehisarcha verifilenta* sp. nov.**

*Candidatus Dehisarcha verifilenta* (NL. fem. n. *verifilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA328 sp012719315*. The type genome for the species is the GenBank assembly GCA\_012719315.1. The GC content of the type genome is 62.73 % and the genome length is 0.98 Mbp.

### **Description of *Candidatus Delacarcha decacax* sp. nov.**

*Candidatus Delacarcha decacax* (NL. fem. n. *decacax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTGE01 sp011389385*. The type genome for the species is the GenBank assembly GCA\_011389385.1. The GC content of the type genome is 52.47 % and the genome length is 1.25 Mbp.

### **Description of *Candidatus Delacarcha* gen. nov.**

*Candidatus Delacarcha* (NL. fem. n. *Delacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTGE01*. The type species for the genus is *Candidatus Delacarcha decacax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTGE01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Delacarchaceae*.

### **Description of *Candidatus Delacarchaceae* fam. nov.**

*Candidatus* Delacarchaceae (NL. fem. n. *Delacarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTGE01*. The type genus for the taxon is *Candidatus* Delacarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *40CM-2-53-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Nimirarchales.

#### **Description of *Candidatus* Delaparcha mimogicula sp. nov.**

*Candidatus* Delaparcha mimogicula (NL. fem. n. *mimogicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIQQL01 sp903873955*. The type genome for the species is the GenBank assembly GCA\_903873955.1. The GC content of the type genome is 43.4 % and the genome length is 1.23 Mbp.

#### **Description of *Candidatus* Delaparcha gen. nov.**

*Candidatus* Delaparcha (NL. fem. n. *Delaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIQQL01*. The type species for the genus is *Candidatus* Delaparcha mimogicula .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Decenarchaceae.

#### **Description of *Candidatus* Delebarcha xeropessa sp. nov.**

*Candidatus* Delebarcha xeropessa (NL. fem. n. *xeropessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J104 sp003694495*. The type genome for the species is the GenBank assembly GCA\_003694495.1. The GC content of the type genome is 36.22 % and the genome length is 0.84 Mbp.

#### **Description of *Candidatus* Delebarcha gen. nov.**

*Candidatus* Delebarcha (NL. fem. n. *Delebarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J104*. The type species for the genus is *Candidatus* Delebarcha xeropessa .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Ratifarchaceae.

### **Description of *Candidatus* Delecarcha manupugo sp. nov.**

*Candidatus* Delecarcha manupugo (NL. fem. n. *manupugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWVO01 sp003561825*. The type genome for the species is the GenBank assembly GCA\_003561825.1. The GC content of the type genome is 41.99 % and the genome length is 1.11 Mbp.

### **Description of *Candidatus* Delecarcha gen. nov.**

*Candidatus* Delecarcha (NL. fem. n. *Delecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PWVO01*. The type species for the genus is *Candidatus* Delecarcha manupugo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG1-02-33-12*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Fecularchaceae.

### **Description of *Candidatus* Delubarcha verecago sp. nov.**

*Candidatus* Delubarcha verecago (NL. fem. n. *verecago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PSPT01 sp004195635*. The type genome for the species is the GenBank assembly GCA\_004195635.1. The GC content of the type genome is 43.38 % and the genome length is 1.75 Mbp.



### **Description of *Candidatus Delubarcha* gen. nov.**

*Candidatus Delubarcha* (NL. fem. n. *Delubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PSPT01*. The type species for the genus is *Candidatus Delubarcha verecago*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Delucarcha holisitura* sp. nov.**

*Candidatus Delucarcha holisitura* (NL. fem. n. *holisitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BISED10-34 sp003551065*. The type genome for the species is the GenBank assembly GCA\_003551065.1. The GC content of the type genome is 41.04 % and the genome length is 1.47 Mbp.

### **Description of *Candidatus Delucarcha* gen. nov.**

*Candidatus Delucarcha* (NL. fem. n. *Delucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BISED10-34*. The type species for the genus is *Candidatus Delucarcha holisitura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *PWKY01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Lanigarchaceae*.

### **Description of *Candidatus Demadarcha cenotricula* sp. nov.**

*Candidatus Demadarcha cenotricula* (NL. fem. n. *cenotricula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *NZ13-MG1 sp011363045*. The type genome for the species is the GenBank assembly GCA\_011331845.1. The GC content of the type genome is 45.7 % and the genome length is 1.1 Mbp.

### **Description of *Candidatus Demadarcha* gen. nov.**

*Candidatus Demadarcha* (NL. fem. n. *Demadarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *NZ13-MG1*. The type species for the genus is *Candidatus Demadarcha cenotricula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *NZ13-MGT*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Milifarchaceae*.

#### **Description of *Candidatus Demadarcha desepetta* sp. nov.**

*Candidatus Demadarcha desepetta* (NL. fem. n. *desepetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *NZ13-MG1 sp011364235*. The type genome for the species is the GenBank assembly GCA\_011364235.1. The GC content of the type genome is 45.14 % and the genome length is 1.18 Mbp.

#### **Description of *Candidatus Demadarcha vivifugo* sp. nov.**

*Candidatus Demadarcha vivifugo* (NL. fem. n. *vivifugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *NZ13-MG1 sp003056285*. The type genome for the species is the GenBank assembly GCA\_003056285.1. The GC content of the type genome is 51.29 % and the genome length is 1.54 Mbp.

#### **Description of *Candidatus Demagarcha locelitica* sp. nov.**

*Candidatus Demagarcha locelitica* (NL. fem. n. *locelitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B39-G2 sp003661185*. The type genome for the species is the GenBank assembly GCA\_003661185.1. The GC content of the type genome is 51.89 % and the genome length is 1.69 Mbp.

#### **Description of *Candidatus Demagarcha* gen. nov.**

*Candidatus Demagarcha* (NL. fem. n. *Demagarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B39-G2*. The type species for the genus is *Candidatus Demagarcha locelitica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B39-G2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Demagarchaceae*.

### **Description of *Candidatus Demagarchaceae* fam. nov.**

*Candidatus Demagarchaceae* (NL. fem. n. *Demagarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B39-G2*. The type genus for the taxon is *Candidatus Demagarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *ANME-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Loriparchales*.

### **Description of *Candidatus Democarcha desucedo* sp. nov.**

*Candidatus Democarcha desucedo* (NL. fem. n. *desucedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HEL-GB-A sp013375455*. The type genome for the species is the GenBank assembly GCA\_013375455.1. The GC content of the type genome is 38.63 % and the genome length is 5.31 Mbp.

### **Description of *Candidatus Democarcha* gen. nov.**

*Candidatus Democarcha* (NL. fem. n. *Democarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *HEL-GB-A*. The type species for the genus is *Candidatus Democarcha desucedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *HEL-GB-A*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Democarchaceae*.

### **Description of *Candidatus Democarchaceae* fam. nov.**

*Candidatus Democarchaceae* (NL. fem. n. *Democarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *HEL-GB-A*. The type genus for the taxon is *Candidatus Democarcha*.

According to GTDB R06-RS202, this family belongs to the order *Helarchaeales*.

### **Description of *Candidatus Democarcha murelimonia* sp. nov.**

*Candidatus Democarcha murelimonia* (NL. fem. n. *murelimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HEL-GB-A sp013375405*. The type genome for the species is the GenBank assembly GCA\_013375405.1. The GC content of the type genome is 36.42 % and the genome length is 4.65 Mbp.

### **Description of *Candidatus Democarcha tenebatio* sp. nov.**

*Candidatus Democarcha tenebatio* (NL. fem. n. *tenebatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HEL-GB-A sp005191415*. The type genome for the species is the GenBank assembly GCA\_005191415.1. The GC content of the type genome is 35.53 % and the genome length is 3.84 Mbp.

### **Description of *Candidatus Demogarcha cocodigena* sp. nov.**

*Candidatus Demogarcha cocodigena* (NL. fem. n. *cocodigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B12-G16 sp003650925*. The type genome for the species is the GenBank assembly GCA\_003650925.1. The GC content of the type genome is 44.5 % and the genome length is 2.14 Mbp.

### **Description of *Candidatus Demogarcha* gen. nov.**

*Candidatus Demogarcha* (NL. fem. n. *Demogarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B12-G16*. The type species for the genus is *Candidatus* Demogarcha cocodigena .

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMSL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Tametarchaceae.

### **Description of *Candidatus* Denavarcha duricifica sp. nov.**

*Candidatus* Denavarcha duricifica (NL. fem. n. *duricifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2688355 sp002688355*. The type genome for the species is the GenBank assembly GCA\_002688355.1. The GC content of the type genome is 27.63 % and the genome length is 0.96 Mbp.

### **Description of *Candidatus* Denavarcha gen. nov.**

*Candidatus* Denavarcha (NL. fem. n. *Denavarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2688355*. The type species for the genus is *Candidatus* Denavarcha duricifica .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR20*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Tabitarchaceae.

### **Description of *Candidatus* Denicarcha defenibula sp. nov.**

*Candidatus* Denicarcha defenibula (NL. fem. n. *defenibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SD8 sp001412335*. The type genome for the species is the GenBank assembly GCA\_001412335.1. The GC content of the type genome is 54.23 % and the genome length is 2.17 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "methanogenic consortium capable of long-chain paraffin degradation (SDB culture) enriched from contaminated sediments of San Diego Bay; California; degrades n-alkanes from C25 to C50".

### **Description of *Candidatus Denicarcha* gen. nov.**

*Candidatus Denicarcha* (NL. fem. n. *Denicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SD8*. The type species for the genus is *Candidatus Denicarcha defenibula*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Denicarcha nefanilenta* sp. nov.**

*Candidatus Denicarcha nefanilenta* (NL. fem. n. *nefanilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SD8 sp002509485*. The type genome for the species is the GenBank assembly GCA\_002509485.1. The GC content of the type genome is 54.3 % and the genome length is 1.66 Mbp.

### **Description of *Candidatus Denigarcha detepousia* sp. nov.**

*Candidatus Denigarcha detepousia* (NL. fem. n. *detepousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PFDC01 sp002763035*. The type genome for the species is the GenBank assembly GCA\_002763035.1. The GC content of the type genome is 34.72 % and the genome length is 0.85 Mbp.

### **Description of *Candidatus Denigarcha* gen. nov.**

*Candidatus Denigarcha* (NL. fem. n. *Denigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PFDC01*. The type species for the genus is *Candidatus Denigarcha detepousia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *PFDC01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Denigarchaceae*.

### **Description of *Candidatus Denigarchaceae* fam. nov.**

*Candidatus* Denigarchaceae (NL. fem. n. *Denigarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PFDC01*. The type genus for the taxon is *Candidatus* Denigarcha .

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

#### **Description of *Candidatus* Denixarcha buxifatio sp. nov.**

*Candidatus* Denixarcha buxifatio (NL. fem. n. *buxifatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-6 sp002254385*. The type genome for the species is the GenBank assembly GCA\_002254385.1. The GC content of the type genome is 53.84 % and the genome length is 1.83 Mbp.

#### **Description of *Candidatus* Denixarcha gen. nov.**

*Candidatus* Denixarcha (NL. fem. n. *Denixarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-6*. The type species for the genus is *Candidatus* Denixarcha buxifatio .

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4484-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Denixarchaceae.

#### **Description of *Candidatus* Denixarchaceae fam. nov.**

*Candidatus* Denixarchaceae (NL. fem. n. *Denixarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-6*. The type genus for the taxon is *Candidatus* Denixarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Denixarchales.

#### **Description of *Candidatus* Denixarchales ord. nov.**

*Candidatus* Denixarchales (NL. fem. n. *Denixarchales* a name created from the name of

the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-6*. The type genus for the taxon is *Candidatus Denixarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the class *EX4484-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Denixarchae*.

#### **Description of *Candidatus Denixarchae* class. nov.**

*Candidatus Denixarchae* (NL. fem. n. *c\_\_Denixarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-6*. The type genus for the taxon is *Candidatus Denixarcha*.

According to GTDB R06-RS202, this class belongs to the phylum *Thermoplasmatota*.

#### **Description of *Candidatus Denomarcha galacicula* sp. nov.**

*Candidatus Denomarcha galacicula* (NL. fem. n. *galacicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYEQ01 sp009904015*. The type genome for the species is the GenBank assembly GCA\_011048525.1. The GC content of the type genome is 44.5 % and the genome length is 1.13 Mbp.

#### **Description of *Candidatus Denomarcha* gen. nov.**

*Candidatus Denomarcha* (NL. fem. n. *Denomarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WYEQ01*. The type species for the genus is *Candidatus Denomarcha galacicula*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Denorarcha munimimonia* sp. nov.**

*Candidatus Denorarcha munimimonia* (NL. fem. n. *munimimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).



A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B91-G9 sp003650935*. The type genome for the species is the GenBank assembly GCA\_003650935.1. The GC content of the type genome is 41.43 % and the genome length is 1.33 Mbp.

**Description of *Candidatus Denorarcha* gen. nov.**

*Candidatus Denorarcha* (NL. fem. n. *Denorarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B91-G9*. The type species for the genus is *Candidatus Denorarcha munimimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B18-G2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Monoparchaceae*.

**Description of *Candidatus Denunarcha telefetta* sp. nov.**

*Candidatus Denunarcha telefetta* (NL. fem. n. *telefetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WUQV01 sp009889585*. The type genome for the species is the GenBank assembly GCA\_009889585.1. The GC content of the type genome is 47.44 % and the genome length is 1.75 Mbp.

**Description of *Candidatus Denunarcha* gen. nov.**

*Candidatus Denunarcha* (NL. fem. n. *Denunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WUQV01*. The type species for the genus is *Candidatus Denunarcha telefetta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *WUQV01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Denunarchaceae*.

**Description of *Candidatus Denunarchaceae* fam. nov.**

*Candidatus Denunarchaceae* (NL. fem. n. *Denunarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *WUQV01*. The type genus for the taxon is *Candidatus* Denunarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Remularchales.

#### **Description of *Candidatus* Depacarcha nicomifica sp. nov.**

*Candidatus* Depacarcha nicomifica (NL. fem. n. *nicomifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMGE01 sp902385625*. The type genome for the species is the GenBank assembly GCA\_902385625.1. The GC content of the type genome is 30.71 % and the genome length is 1.34 Mbp.

#### **Description of *Candidatus* Depacarcha gen. nov.**

*Candidatus* Depacarcha (NL. fem. n. *Depacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMGE01*. The type species for the genus is *Candidatus* Depacarcha nicomifica .

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1285*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Corocarchaceae.

#### **Description of *Candidatus* Depasarcha cinipibula sp. nov.**

*Candidatus* Depasarcha cinipibula (NL. fem. n. *cinipibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRZQ01 sp011055445*. The type genome for the species is the GenBank assembly GCA\_011055445.1. The GC content of the type genome is 64.29 % and the genome length is 1.91 Mbp.

#### **Description of *Candidatus* Depasarcha gen. nov.**

*Candidatus* Depasarcha (NL. fem. n. *Depasarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRZQ01*. The type species for the genus is *Candidatus Depasarcha cinipibula*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Depasarcha cotenisca* sp. nov.**

*Candidatus Depasarcha cotenisca* (NL. fem. n. *cotenisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRZQ01 sp011053655*. The type genome for the species is the GenBank assembly GCA\_011375505.1. The GC content of the type genome is 53.92 % and the genome length is 0.67 Mbp.

#### **Description of *Candidatus Depasarcha mahemitrix* sp. nov.**

*Candidatus Depasarcha mahemitrix* (NL. fem. n. *mahemitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRZQ01 sp011372935*. The type genome for the species is the GenBank assembly GCA\_011372935.1. The GC content of the type genome is 58.63 % and the genome length is 1.26 Mbp.

#### **Description of *Candidatus Depasarcha mutabetta* sp. nov.**

*Candidatus Depasarcha mutabetta* (NL. fem. n. *mutabetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRZQ01 sp011369665*. The type genome for the species is the GenBank assembly GCA\_011369665.1. The GC content of the type genome is 54.93 % and the genome length is 0.61 Mbp.

#### **Description of *Candidatus Depecarcha nocumilega* sp. nov.**

*Candidatus Depecarcha nocumilega* (NL. fem. n. *nocumilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *GCA-2687795 sp002687795*. The type genome for the species is the GenBank assembly *GCA\_002687795.1*. The GC content of the type genome is 38.27 % and the genome length is 0.93 Mbp.

#### **Description of *Candidatus Depecarcha* gen. nov.**

*Candidatus Depecarcha* (NL. fem. n. *Depecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2687795*. The type species for the genus is *Candidatus Depecarcha nocumilega*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-2687795*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Depecarchaceae*.

#### **Description of *Candidatus Depecarchaceae* fam. nov.**

*Candidatus Depecarchaceae* (NL. fem. n. *Depecarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GCA-2687795*. The type genus for the taxon is *Candidatus Depecarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Depelarcha cicaribula* sp. nov.**

*Candidatus Depelarcha cicaribula* (NL. fem. n. *cicaribula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA287 sp011620765*. The type genome for the species is the GenBank assembly *GCA\_011620765.1*. The GC content of the type genome is 44.25 % and the genome length is 1.29 Mbp.

#### **Description of *Candidatus Depelarcha* gen. nov.**

*Candidatus Depelarcha* (NL. fem. n. *Depelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA287*. The type species for the genus is *Candidatus Depelarcha cicaribula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA287*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Depelarchaceae*.

**Description of *Candidatus Depelarchaceae* fam. nov.**

*Candidatus Depelarchaceae* (NL. fem. n. *Depelarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA287*. The type genus for the taxon is *Candidatus Depelarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA287*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Depelarchales*.

**Description of *Candidatus Depelarchales* ord. nov.**

*Candidatus Depelarchales* (NL. fem. n. *Depelarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA287*. The type genus for the taxon is *Candidatus Depelarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the class *UBA186*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Bulaparchae*.

**Description of *Candidatus Depelarcha repuritica* sp. nov.**

*Candidatus Depelarcha repuritica* (NL. fem. n. *repuritica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA287 sp002495235*. The type genome for the species is the GenBank assembly GCA\_002495235.1. The GC content of the type genome is 53.15 % and the genome length is 1.04 Mbp.

**Description of *Candidatus Depicarcha cacopitas* sp. nov.**

*Candidatus Depicarcha cacopitas* (NL. fem. n. *cacopitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *PWVY01 sp003561665*. The type genome for the species is the GenBank assembly GCA\_003561665.1. The GC content of the type genome is 61.82 % and the genome length is 2.05 Mbp.

#### **Description of *Candidatus Depicarcha* gen. nov.**

*Candidatus Depicarcha* (NL. fem. n. *Depicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PWVY01*. The type species for the genus is *Candidatus Depicarcha cacopitas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SW-10-69-26*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Vitabarchaceae*.

#### **Description of *Candidatus Depocarcha megalimonia* sp. nov.**

*Candidatus Depocarcha megalimonia* (NL. fem. n. *megalimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ASMP01 sp000405225*. The type genome for the species is the GenBank assembly GCA\_000405225.1. The GC content of the type genome is 37.27 % and the genome length is 0.55 Mbp.

#### **Description of *Candidatus Depocarcha* gen. nov.**

*Candidatus Depocarcha* (NL. fem. n. *Depocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ASMP01*. The type species for the genus is *Candidatus Depocarcha megalimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deseparchaceae*.

#### **Description of *Candidatus Depoparcha purulifica* sp. nov.**

*Candidatus Depoparcha purulifica* (NL. fem. n. *purulifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SW-9-67-25 sp003022745*. The type genome for the species is the GenBank assembly GCA\_003022745.1. The GC content of the type genome is 67.1 % and the genome length is 1.79 Mbp.

#### **Description of *Candidatus Depoparcha* gen. nov.**

*Candidatus Depoparcha* (NL. fem. n. *Depoparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SW-9-67-25*. The type species for the genus is *Candidatus Depoparcha purulifica*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Depubarcha cilotifica* sp. nov.**

*Candidatus Depubarcha cilotifica* (NL. fem. n. *cilotifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B66-G16 sp003649085*. The type genome for the species is the GenBank assembly GCA\_003649085.1. The GC content of the type genome is 42.68 % and the genome length is 1.94 Mbp.

#### **Description of *Candidatus Depubarcha* gen. nov.**

*Candidatus Depubarcha* (NL. fem. n. *Depubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B66-G16*. The type species for the genus is *Candidatus Depubarcha cilotifica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B66-G16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Depubarchaceae*.

#### **Description of *Candidatus Depubarchaceae* fam. nov.**

*Candidatus Depubarchaceae* (NL. fem. n. *Depubarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B66-G16*. The type genus for the taxon is *Candidatus Depubarcha*.

According to GTDB R06-RS202, this family belongs to the order *Methanomethylica*les.

**Description of *Candidatus Depuparcha retectitoga* sp. nov.**

*Candidatus Depuparcha retectitoga* (NL. fem. n. *retectitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9640 sp9640u*. The type genome for the species is the GenBank assembly GCA\_013329215.1. The GC content of the type genome is 44.62 % and the genome length is 1.42 Mbp.

**Description of *Candidatus Depuparcha* gen. nov.**

*Candidatus Depuparcha* (NL. fem. n. *Depuparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA9640*. The type species for the genus is *Candidatus Depuparcha retectitoga*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Ratifarchaceae*.

**Description of *Candidatus Derecarcha necopimonas* sp. nov.**

*Candidatus Derecarcha necopimonas* (NL. fem. n. *necopimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TA-20 sp013287585*. The type genome for the species is the GenBank assembly GCA\_013287585.1. The GC content of the type genome is 35.4 % and the genome length is 1.35 Mbp.

**Description of *Candidatus Derecarcha* gen. nov.**

*Candidatus Derecarcha* (NL. fem. n. *Derecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *TA-20*. The type species for the genus is *Candidatus Derecarcha necopimonas*.

According to GTDB R06-RS202, this genus belongs to the family .



### **Description of *Candidatus Derecarcha papavitudo* sp. nov.**

*Candidatus Derecarcha papavitudo* (NL. fem. n. *papavitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TA-20 sp005877305*. The type genome for the species is the GenBank assembly GCA\_005877115.1. The GC content of the type genome is 35.45 % and the genome length is 1.44 Mbp.

### **Description of *Candidatus Derecarcha verifimonas* sp. nov.**

*Candidatus Derecarcha verifimonas* (NL. fem. n. *verifimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TA-20 sp007280335*. The type genome for the species is the GenBank assembly GCA\_007280335.1. The GC content of the type genome is 35.51 % and the genome length is 1.3 Mbp.

### **Description of *Candidatus Derelarcha decinitrix* sp. nov.**

*Candidatus Derelarcha decinitrix* (NL. fem. n. *decinitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTU008 sp001421185*. The type genome for the species is the GenBank assembly GCA\_001421185.1. The GC content of the type genome is 62.09 % and the genome length is 2.12 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "enrichment culture inoculated with rumen fluid from *Bos taurus*".

### **Description of *Candidatus Derelarcha* gen. nov.**

*Candidatus Derelarcha* (NL. fem. n. *Derelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTU008*. The type species for the genus is *Candidatus Derelarcha decinitrix*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Derelarcha desoretta* sp. nov.**

*Candidatus Derelarcha desoretta* (NL. fem. n. *desoretta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTU008 sp002498285*. The type genome for the species is the GenBank assembly GCA\_002498285.1. The GC content of the type genome is 62.04 % and the genome length is 1.83 Mbp.

**Description of *Candidatus Derelarcha dupunitas* sp. nov.**

*Candidatus Derelarcha dupunitas* (NL. fem. n. *dupunitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTU008 sp012519255*. The type genome for the species is the GenBank assembly GCA\_012519255.1. The GC content of the type genome is 53.5 % and the genome length is 1.75 Mbp.

**Description of *Candidatus Derelarcha navicilenta* sp. nov.**

*Candidatus Derelarcha navicilenta* (NL. fem. n. *navicilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTU008 sp002504525*. The type genome for the species is the GenBank assembly GCA\_002502005.1. The GC content of the type genome is 61.08 % and the genome length is 1.92 Mbp.

**Description of *Candidatus Derelarcha ranunimonia* sp. nov.**

*Candidatus Derelarcha ranunimonia* (NL. fem. n. *ranunimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTU008 sp012518185*. The type genome for the species is the GenBank assembly GCA\_012518185.1. The GC content of the type genome is 41.96 % and the genome length is 1.6 Mbp.

**Description of *Candidatus Derelarcha turifibula* sp. nov.**

*Candidatus Derelarcha turifibula* (NL. fem. n. *turifibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTU008 sp001512965*. The type genome for the species is the GenBank assembly GCA\_001512965.1. The GC content of the type genome is 58.82 % and the genome length is 1.76 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "pool of bioreactors CSTR01a; CSTR02a; and CSTR03a; thermophilic anaerobic digestion of cattle manure in continuous reactors for biogas production (methane)".

**Description of *Candidatus Derunarcha depocax* sp. nov.**

*Candidatus Derunarcha depocax* (NL. fem. n. *depocax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADCV01 sp013154235*. The type genome for the species is the GenBank assembly GCA\_013154235.1. The GC content of the type genome is 52.86 % and the genome length is 1.6 Mbp.

**Description of *Candidatus Derunarcha* gen. nov.**

*Candidatus Derunarcha* (NL. fem. n. *Derunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADCV01*. The type species for the genus is *Candidatus Derunarcha depocax*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Desacarcha decupivita* sp. nov.**

*Candidatus Desacarcha decupivita* (NL. fem. n. *decupivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SM23-78 sp001595785*. The type genome for the species is the GenBank assembly GCA\_001595785.1. The GC content of the type genome is 36.74 % and the genome length is 1.48 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Sulfate-methane transition zone estuary sediments 16-26 cm".

**Description of *Candidatus Desacarcha* gen. nov.**

*Candidatus Desacarcha* (NL. fem. n. *Desacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SM23-78*. The type species for the genus is *Candidatus Desacarcha decupivita*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SM23-78*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Desacarchaceae*.

#### **Description of *Candidatus Desacarchaceae* fam. nov.**

*Candidatus Desacarchaceae* (NL. fem. n. *Desacarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SM23-78*. The type genus for the taxon is *Candidatus Desacarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Desacarcha verifitudo* sp. nov.**

*Candidatus Desacarcha verifitudo* (NL. fem. n. *verifitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SM23-78 sp011372335*. The type genome for the species is the GenBank assembly GCA\_011372335.1. The GC content of the type genome is 39.29 % and the genome length is 0.78 Mbp.

#### **Description of *Candidatus Deseparcha colopitoga* sp. nov.**

*Candidatus Deseparcha colopitoga* (NL. fem. n. *colopitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR1 sp903831045*. The type genome for the species is the GenBank assembly GCA\_903831045.1. The GC content of the type genome is 31.79 % and the genome length is 0.82 Mbp.

#### **Description of *Candidatus Deseparcha* gen. nov.**

*Candidatus Deseparcha* (NL. fem. n. *Deseparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this genus is *GW2011-AR1*. The type species for the genus is *Candidatus Deseparcha colopitoga*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deseparchaceae*.

#### **Description of *Candidatus Deseparchaceae* fam. nov.**

*Candidatus Deseparchaceae* (NL. fem. n. *Deseparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GW2011-AR1*. The type genus for the taxon is *Candidatus Deseparcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

#### **Description of *Candidatus Deseparcha mirabetta* sp. nov.**

*Candidatus Deseparcha mirabetta* (NL. fem. n. *mirabetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR1 sp009992215*. The type genome for the species is the GenBank assembly GCA\_009992215.1. The GC content of the type genome is 29.05 % and the genome length is 0.89 Mbp.

#### **Description of *Candidatus Deseparcha pinifetta* sp. nov.**

*Candidatus Deseparcha pinifetta* (NL. fem. n. *pinifetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR1 sp002762735*. The type genome for the species is the GenBank assembly GCA\_009992385.1. The GC content of the type genome is 30.0 % and the genome length is 0.52 Mbp.

#### **Description of *Candidatus Deseparcha pinigibra* sp. nov.**

*Candidatus Deseparcha pinigibra* (NL. fem. n. *pinigibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR1 sp009992175*. The type genome for the species is the

GenBank assembly GCA\_009992175.1. The GC content of the type genome is 29.58 % and the genome length is 0.61 Mbp.

**Description of *Candidatus Desomarcha cacalentia* sp. nov.**

*Candidatus Desomarcha cacalentia* (NL. fem. n. *cacalentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WRER01 sp009779205*. The type genome for the species is the GenBank assembly GCA\_009779205.1. The GC content of the type genome is 42.49 % and the genome length is 1.25 Mbp.

**Description of *Candidatus Desomarcha* gen. nov.**

*Candidatus Desomarcha* (NL. fem. n. *Desomarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WRER01*. The type species for the genus is *Candidatus Desomarcha cacalentia*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Desonarcha bipatitudo* sp. nov.**

*Candidatus Desonarcha bipatitudo* (NL. fem. n. *bipatitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA493 sp002499505*. The type genome for the species is the GenBank assembly GCA\_002499505.1. The GC content of the type genome is 35.01 % and the genome length is 0.57 Mbp.

**Description of *Candidatus Desonarcha* gen. nov.**

*Candidatus Desonarcha* (NL. fem. n. *Desonarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA493*. The type species for the genus is *Candidatus Desonarcha bipatitudo*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Desonarcha conopax* sp. nov.**

*Candidatus Desonarcha conopax* (NL. fem. n. *conopax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA493 sp002687735*. The type genome for the species is the GenBank assembly GCA\_002687735.1. The GC content of the type genome is 35.34 % and the genome length is 0.55 Mbp.

### **Description of *Candidatus Desonarcha repurastra* sp. nov.**

*Candidatus Desonarcha repurastra* (NL. fem. n. *repurastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA493 sp002762975*. The type genome for the species is the GenBank assembly GCA\_002762975.1. The GC content of the type genome is 37.27 % and the genome length is 1.13 Mbp.

### **Description of *Candidatus Desorarcha catecicella* sp. nov.**

*Candidatus Desorarcha catecicella* (NL. fem. n. *catecicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878385*. The type genome for the species is the GenBank assembly GCA\_005878405.1. The GC content of the type genome is 63.56 % and the genome length is 2.09 Mbp.

### **Description of *Candidatus Desorarcha* gen. nov.**

*Candidatus Desorarcha* (NL. fem. n. *Desorarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *RBG-16-68-12*. The type species for the genus is *Candidatus Desorarcha catecicella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *RBG-16-68-12*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Desorarchaceae*.

### **Description of *Candidatus Desorarchaceae* fam. nov.**

*Candidatus* Desorarchaceae (NL. fem. n. *Desorarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *RBG-16-68-12*. The type genus for the taxon is *Candidatus* Desorarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *RBG-16-68-12*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Desorarchales.

### **Description of *Candidatus* Desorarchales ord. nov.**

*Candidatus* Desorarchales (NL. fem. n. *Desorarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *RBG-16-68-12*. The type genus for the taxon is *Candidatus* Desorarcha .

According to the GTDB R06-RS202, this order belongs to the class *Thermoplasmata*.

### **Description of *Candidatus* Desorarcha cerimifica sp. nov.**

*Candidatus* Desorarcha cerimifica (NL. fem. n. *cerimifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005879045*. The type genome for the species is the GenBank assembly GCA\_005879045.1. The GC content of the type genome is 64.1 % and the genome length is 1.7 Mbp.

### **Description of *Candidatus* Desorarcha corocifica sp. nov.**

*Candidatus* Desorarcha corocifica (NL. fem. n. *corocifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878395*. The type genome for the species is the GenBank assembly GCA\_005878395.1. The GC content of the type genome is 64.69 % and the genome length is 2.17 Mbp.

### **Description of *Candidatus* Desorarcha cuferibra sp. nov.**

*Candidatus* Desorarcha cuferibra (NL. fem. n. *cuferibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).



A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp011331255*. The type genome for the species is the GenBank assembly GCA\_011331255.1. The GC content of the type genome is 65.03 % and the genome length is 2.06 Mbp.

**Description of *Candidatus Desorarcha decucax* sp. nov.**

*Candidatus Desorarcha decucax* (NL. fem. n. *decucax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878325*. The type genome for the species is the GenBank assembly GCA\_005878325.1. The GC content of the type genome is 64.61 % and the genome length is 1.76 Mbp.

**Description of *Candidatus Desorarcha decupitura* sp. nov.**

*Candidatus Desorarcha decupitura* (NL. fem. n. *decupitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878525*. The type genome for the species is the GenBank assembly GCA\_005878525.1. The GC content of the type genome is 63.93 % and the genome length is 2.02 Mbp.

**Description of *Candidatus Desorarcha deforicula* sp. nov.**

*Candidatus Desorarcha deforicula* (NL. fem. n. *deforicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878615*. The type genome for the species is the GenBank assembly GCA\_005878625.1. The GC content of the type genome is 64.86 % and the genome length is 1.68 Mbp.

**Description of *Candidatus Desorarcha delapitas* sp. nov.**

*Candidatus Desorarcha delapitas* (NL. fem. n. *delapitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005879015*. The type genome for the species is the GenBank assembly GCA\_005879015.1. The GC content of the type genome is 63.78 %

and the genome length is 1.58 Mbp.

**Description of *Candidatus Desorarcha derunifica* sp. nov.**

*Candidatus Desorarcha derunifica* (NL. fem. n. *derunifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878515*. The type genome for the species is the GenBank assembly GCA\_005878515.1. The GC content of the type genome is 64.05 % and the genome length is 1.84 Mbp.

**Description of *Candidatus Desorarcha detumitrix* sp. nov.**

*Candidatus Desorarcha detumitrix* (NL. fem. n. *detumitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp001800745*. The type genome for the species is the GenBank assembly GCA\_001800745.1. The GC content of the type genome is 67.99 % and the genome length is 1.55 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 16ft depth".

**Description of *Candidatus Desorarcha gasomitudo* sp. nov.**

*Candidatus Desorarcha gasomitudo* (NL. fem. n. *gasomitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp011362635*. The type genome for the species is the GenBank assembly GCA\_011362635.1. The GC content of the type genome is 65.85 % and the genome length is 2.19 Mbp.

**Description of *Candidatus Desorarcha ludibicula* sp. nov.**

*Candidatus Desorarcha ludibicula* (NL. fem. n. *ludibicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp001800825*. The type genome for the species is the GenBank assembly GCA\_001800825.1. The GC content of the type genome is 69.31 % and the genome length is 2.21 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at

19ft depth".

**Description of *Candidatus Desorarcha maxiledo* sp. nov.**

*Candidatus Desorarcha maxiledo* (NL. fem. n. *maxiledo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878985*. The type genome for the species is the GenBank assembly GCA\_005878985.1. The GC content of the type genome is 64.24 % and the genome length is 2.11 Mbp.

**Description of *Candidatus Desorarcha medimiforma* sp. nov.**

*Candidatus Desorarcha medimiforma* (NL. fem. n. *medimiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878635*. The type genome for the species is the GenBank assembly GCA\_005878635.1. The GC content of the type genome is 64.65 % and the genome length is 1.95 Mbp.

**Description of *Candidatus Desorarcha minagitura* sp. nov.**

*Candidatus Desorarcha minagitura* (NL. fem. n. *minagitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878485*. The type genome for the species is the GenBank assembly GCA\_005878485.1. The GC content of the type genome is 64.31 % and the genome length is 2.08 Mbp.

**Description of *Candidatus Desorarcha pabilitio* sp. nov.**

*Candidatus Desorarcha pabilitio* (NL. fem. n. *pabilitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878995*. The type genome for the species is the GenBank assembly GCA\_005878995.1. The GC content of the type genome is 64.45 % and the genome length is 1.67 Mbp.

**Description of *Candidatus Desorarcha paracibra* sp. nov.**

*Candidatus Desorarcha paracibra* (NL. fem. n. *paracibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878415*. The type genome for the species is the GenBank assembly GCA\_005878415.1. The GC content of the type genome is 66.14 % and the genome length is 1.74 Mbp.

**Description of *Candidatus Desorarcha selecugo* sp. nov.**

*Candidatus Desorarcha selecugo* (NL. fem. n. *selecugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005879065*. The type genome for the species is the GenBank assembly GCA\_005879065.1. The GC content of the type genome is 63.77 % and the genome length is 1.84 Mbp.

**Description of *Candidatus Desorarcha veridedo* sp. nov.**

*Candidatus Desorarcha veridedo* (NL. fem. n. *veridedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp005878665*. The type genome for the species is the GenBank assembly GCA\_005878665.1. The GC content of the type genome is 64.15 % and the genome length is 1.75 Mbp.

**Description of *Candidatus Desorarcha vinacicella* sp. nov.**

*Candidatus Desorarcha vinacicella* (NL. fem. n. *vinacicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-68-12 sp8695u*. The type genome for the species is the GenBank assembly GCA\_013329855.1. The GC content of the type genome is 67.7 % and the genome length is 1.71 Mbp.

**Description of *Candidatus Desucarcha cocibilega* sp. nov.**

*Candidatus Desucarcha cocibilega* (NL. fem. n. *cocibilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAISET01 sp903884505*. The type genome for the species is the GenBank assembly GCA\_903830965.1. The GC content of the type genome is 56.98 % and the genome length is 1.51 Mbp.

**Description of *Candidatus Desucarcha* gen. nov.**

*Candidatus Desucarcha* (NL. fem. n. *Desucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAISET01*. The type species for the genus is *Candidatus Desucarcha cocibilega*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTNL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nivomarchaceae*.

**Description of *Candidatus Desuparcha ficulitas* sp. nov.**

*Candidatus Desuparcha ficulitas* (NL. fem. n. *ficulitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SW-4-43-9 sp003009815*. The type genome for the species is the GenBank assembly GCA\_003009815.1. The GC content of the type genome is 43.5 % and the genome length is 0.66 Mbp.

**Description of *Candidatus Desuparcha* gen. nov.**

*Candidatus Desuparcha* (NL. fem. n. *Desuparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SW-4-43-9*. The type species for the genus is *Candidatus Desuparcha ficulitas*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Desuparcha venunifica* sp. nov.**

*Candidatus Desuparcha venunifica* (NL. fem. n. *venunifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SW-4-43-9 sp003009795*. The type genome for the species is the GenBank assembly GCA\_003009795.1. The GC content of the type genome is 42.61 % and the genome length is 0.96 Mbp.

**Description of *Candidatus Desurarcha vitifago* sp. nov.**

*Candidatus Desurarcha vitifago* (NL. fem. n. *vitifago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRYY01 sp011375665*. The type genome for the species is the GenBank assembly GCA\_011375665.1. The GC content of the type genome is 61.46 % and the genome length is 1.05 Mbp.

**Description of *Candidatus Desurarcha* gen. nov.**

*Candidatus Desurarcha* (NL. fem. n. *Desurarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRYY01*. The type species for the genus is *Candidatus Desurarcha vitifago*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B40-G2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Lucelarchaceae*.

**Description of *Candidatus Detecarcha sitelastra* sp. nov.**

*Candidatus Detecarcha sitelastra* (NL. fem. n. *sitelastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA206 sp002503105*. The type genome for the species is the GenBank assembly GCA\_002503105.1. The GC content of the type genome is 63.0 % and the genome length is 1.62 Mbp.

**Description of *Candidatus Detecarcha* gen. nov.**

*Candidatus Detecarcha* (NL. fem. n. *Detecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA206*. The type species for the genus is *Candidatus Detecarcha*

sitelastra .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Detenarcha volunibra* sp. nov.**

*Candidatus Detenarcha volunibra* (NL. fem. n. *volunibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J101 sp003695435*. The type genome for the species is the GenBank assembly GCA\_003695435.1. The GC content of the type genome is 41.23 % and the genome length is 0.9 Mbp.

#### **Description of *Candidatus Detenarcha* gen. nov.**

*Candidatus Detenarcha* (NL. fem. n. *Detenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J101*. The type species for the genus is *Candidatus Detenarcha volunibra* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA11576*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Decularchaceae*.

#### **Description of *Candidatus Deteparcha bicubilenta* sp. nov.**

*Candidatus Deteparcha bicubilenta* (NL. fem. n. *bicubilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *LCB-4 sp001940665*. The type genome for the species is the GenBank assembly GCA\_001940665.1. The GC content of the type genome is 38.05 % and the genome length is 1.46 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "lower Culex Basin hot spring".

#### **Description of *Candidatus Deteparcha* gen. nov.**

*Candidatus Deteparcha* (NL. fem. n. *Deteparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *LCB-4*. The type species for the genus is *Candidatus Deteparcha*

bicubilenta .

According to the original version of GTDB R06-RS202, this genus belongs to the family *LCB-4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deteparchaceae*.

#### **Description of *Candidatus Deteparchaceae* fam. nov.**

*Candidatus Deteparchaceae* (NL. fem. n. *Deteparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *LCB-4*. The type genus for the taxon is *Candidatus Deteparcha* .

According to GTDB R06-RS202, this family belongs to the order *Odinarchaeales*.

#### **Description of *Candidatus Detesarcha cerifisca* sp. nov.**

*Candidatus Detesarcha cerifisca* (NL. fem. n. *cerifisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B1-Br10-U2g19 sp001563875*. The type genome for the species is the GenBank assembly GCA\_001564195.1. The GC content of the type genome is 42.36 % and the genome length is 0.76 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample PL-Br10; brine of Picturesque Lake".

#### **Description of *Candidatus Detesarcha* gen. nov.**

*Candidatus Detesarcha* (NL. fem. n. *Detesarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B1-Br10-U2g19*. The type species for the genus is *Candidatus Detesarcha cerifisca* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Detesarcha nubigatica* sp. nov.**

*Candidatus Detesarcha nubigatica* (NL. fem. n. *nubigatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this species is *B1-Br10-U2g19 sp001563905*. The type genome for the species is the GenBank assembly GCA\_001563905.1. The GC content of the type genome is 40.95 % and the genome length is 0.66 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample B1-Br-g2; brine of Lake Bitter-1".

#### **Description of *Candidatus Detorarcha loraritio* sp. nov.**

*Candidatus Detorarcha loraritio* (NL. fem. n. *loraritio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMZP01 sp003663225*. The type genome for the species is the GenBank assembly GCA\_003663225.1. The GC content of the type genome is 51.92 % and the genome length is 0.94 Mbp.

#### **Description of *Candidatus Detorarcha* gen. nov.**

*Candidatus Detorarcha* (NL. fem. n. *Detorarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMZP01*. The type species for the genus is *Candidatus Detorarcha loraritio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Detorarchaceae*.

#### **Description of *Candidatus Detorarchaceae* fam. nov.**

*Candidatus Detorarchaceae* (NL. fem. n. *Detorarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMZP01*. The type genus for the taxon is *Candidatus Detorarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *QMZP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Detorarchales*.

#### **Description of *Candidatus Detorarchales* ord. nov.**

*Candidatus Detorarchales* (NL. fem. n. *Detorarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMZP01*. The type genus for the taxon is *Candidatus Detorarcha* .

According to the GTDB R06-RS202, this order belongs to the class *Aenigmataarchaeia*.

#### **Description of *Candidatus Detosarcha podagilega* sp. nov.**

*Candidatus Detosarcha podagilega* (NL. fem. n. *podagilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ISO4-G1 sp002506175*. The type genome for the species is the GenBank assembly GCA\_002506175.1. The GC content of the type genome is 51.15 % and the genome length is 1.23 Mbp.

#### **Description of *Candidatus Detosarcha* gen. nov.**

*Candidatus Detosarcha* (NL. fem. n. *Detosarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ISO4-G1*. The type species for the genus is *Candidatus Detosarcha podagilega* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Detosarcha semilimonia* sp. nov.**

*Candidatus Detosarcha semilimonia* (NL. fem. n. *semilimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ISO4-G1 sp001563305*. The type genome for the species is the GenBank assembly GCA\_001563305.1. The GC content of the type genome is 55.53 % and the genome length is 1.59 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Ovine rumen".

#### **Description of *Candidatus Detotarcha cosidilenta* sp. nov.**

*Candidatus Detotarcha cosidilenta* (NL. fem. n. *cosidilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2726865 sp014381835*. The type genome for the species is the

GenBank assembly GCA\_014381835.1. The GC content of the type genome is 58.4 % and the genome length is 2.24 Mbp.

**Description of *Candidatus Detotarcha* gen. nov.**

*Candidatus Detotarcha* (NL. fem. n. *Detotarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2726865*. The type species for the genus is *Candidatus Detotarcha cosidilenta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *TCS64*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tegumarchaceae*.

**Description of *Candidatus Detotarcha venefessa* sp. nov.**

*Candidatus Detotarcha venefessa* (NL. fem. n. *venefessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2726865 sp002726865*. The type genome for the species is the GenBank assembly GCA\_002726865.1. The GC content of the type genome is 48.4 % and the genome length is 2.0 Mbp.

**Description of *Candidatus Detumarcha celamedo* sp. nov.**

*Candidatus Detumarcha celamedo* (NL. fem. n. *celamedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACAEJ01 sp013388925*. The type genome for the species is the GenBank assembly GCA\_013388925.1. The GC content of the type genome is 45.02 % and the genome length is 1.28 Mbp.

**Description of *Candidatus Detumarcha* gen. nov.**

*Candidatus Detumarcha* (NL. fem. n. *Detumarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JACAEJ01*. The type species for the genus is *Candidatus Detumarcha celamedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family

*JACAEJ01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Detumarchaceae.

**Description of *Candidatus* Detumarchaceae fam. nov.**

*Candidatus* Detumarchaceae (NL. fem. n. *Detumarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JACAEJ01*. The type genus for the taxon is *Candidatus* Detumarcha .

According to GTDB R06-RS202, this family belongs to the order *Nitrososphaerales*.

**Description of *Candidatus* Detumarcha fetiforma sp. nov.**

*Candidatus* Detumarcha fetiforma (NL. fem. n. *fetiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACAEJ01 sp011358735*. The type genome for the species is the GenBank assembly GCA\_011358735.1. The GC content of the type genome is 38.91 % and the genome length is 1.57 Mbp.

**Description of *Candidatus* Devecarcha maledugo sp. nov.**

*Candidatus* Devecarcha maledugo (NL. fem. n. *maledugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADFM01 sp013152845*. The type genome for the species is the GenBank assembly GCA\_013152845.1. The GC content of the type genome is 59.77 % and the genome length is 1.17 Mbp.

**Description of *Candidatus* Devecarcha gen. nov.**

*Candidatus* Devecarcha (NL. fem. n. *Devecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADFM01*. The type species for the genus is *Candidatus* Devecarcha maledugo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAADFM01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Devecarchaceae.

### **Description of *Candidatus Devecarchaceae* fam. nov.**

*Candidatus* Devecarchaceae (NL. fem. n. *Devecarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAADFM01*. The type genus for the taxon is *Candidatus* Devecarcha .

According to GTDB R06-RS202, this family belongs to the order *Hydrothermarchaeales*.

### **Description of *Candidatus Dibaparcha bugilivita* sp. nov.**

*Candidatus* Dibaparcha bugilivita (NL. fem. n. *bugilivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMGO01 sp902385655*. The type genome for the species is the GenBank assembly GCA\_902385655.1. The GC content of the type genome is 33.74 % and the genome length is 0.84 Mbp.

### **Description of *Candidatus Dibaparcha* gen. nov.**

*Candidatus* Dibaparcha (NL. fem. n. *Dibaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMGO01*. The type species for the genus is *Candidatus* Dibaparcha bugilivita .

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1160*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Navicarchaceae.

### **Description of *Candidatus Dibucarcha melilitas* sp. nov.**

*Candidatus* Dibucarcha melilitas (NL. fem. n. *melilitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKVC01 sp007129655*. The type genome for the species is the GenBank assembly GCA\_003559355.1. The GC content of the type genome is 43.32 % and the genome length is 1.92 Mbp.

### **Description of *Candidatus Dibucarcha* gen. nov.**

*Candidatus* Dibucarcha (NL. fem. n. *Dibucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SKVC01*. The type species for the genus is *Candidatus* Dibucarcha melilitas .

According to the original version of GTDB R06-RS202, this genus belongs to the family *PWKY01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Lanigarchaceae.

### **Description of *Candidatus* Dicanarcha venabetta sp. nov.**

*Candidatus* Dicanarcha venabetta (NL. fem. n. *venabetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABDBI01 sp013288705*. The type genome for the species is the GenBank assembly GCA\_013288705.1. The GC content of the type genome is 50.81 % and the genome length is 1.63 Mbp.

### **Description of *Candidatus* Dicanarcha gen. nov.**

*Candidatus* Dicanarcha (NL. fem. n. *Dicanarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JABDBI01*. The type species for the genus is *Candidatus* Dicanarcha venabetta .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JABDBI01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Dicanarchaceae.

### **Description of *Candidatus* Dicanarchaceae fam. nov.**

*Candidatus* Dicanarchaceae (NL. fem. n. *Dicanarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JABDBI01*. The type genus for the taxon is *Candidatus* Dicanarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *JABDBI01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Dicanarchales.

### **Description of *Candidatus Dicanarchales* ord. nov.**

*Candidatus Dicanarchales* (NL. fem. n. *Dicanarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JABDBI01*. The type genus for the taxon is *Candidatus Dicanarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the class *JABDBI01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Dicanarchae*.

### **Description of *Candidatus Dicanarchae* class. nov.**

*Candidatus Dicanarchae* (NL. fem. n. *c\_\_Dicanarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JABDBI01*. The type genus for the taxon is *Candidatus Dicanarcha*.

According to GTDB R06-RS202, this class belongs to the phylum *Thermoplasmatota*.

### **Description of *Candidatus Dicibarcha dilemessa* sp. nov.**

*Candidatus Dicibarcha dilemessa* (NL. fem. n. *dilemessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACAEI01 sp013388905*. The type genome for the species is the GenBank assembly GCA\_013388905.1. The GC content of the type genome is 40.74 % and the genome length is 1.5 Mbp.

### **Description of *Candidatus Dicibarcha* gen. nov.**

*Candidatus Dicibarcha* (NL. fem. n. *Dicibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JACAEI01*. The type species for the genus is *Candidatus Dicibarcha dilemessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

### **Description of *Candidatus Dicibarcha necopitica* sp. nov.**

*Candidatus* Dicibarcha necopitica (NL. fem. n. *necopitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACAEI01 sp013388895*. The type genome for the species is the GenBank assembly GCA\_013388895.1. The GC content of the type genome is 42.09 % and the genome length is 1.58 Mbp.

#### **Description of *Candidatus* Dicimarcha refinugo sp. nov.**

*Candidatus* Dicimarcha refinugo (NL. fem. n. *refinugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10204 sp10204u*. The type genome for the species is the GenBank assembly GCA\_013331555.1. The GC content of the type genome is 39.38 % and the genome length is 1.36 Mbp.

#### **Description of *Candidatus* Dicimarcha gen. nov.**

*Candidatus* Dicimarcha (NL. fem. n. *Dicimarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10204*. The type species for the genus is *Candidatus* Dicimarcha refinugo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Tirocarchaceae.

#### **Description of *Candidatus* Didacarcha gen. nov.**

*Candidatus* Didacarcha (NL. fem. n. *Didacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRZC01*. The type species for the genus is *Candidatus* Didacarcha fontis\_A .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Dilacarcha detepigena sp. nov.**

*Candidatus* Dilacarcha detepigena (NL. fem. n. *detepigena* a species epithet created



arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-002838935 sp002838935*. The type genome for the species is the GenBank assembly GCA\_002838935.1. The GC content of the type genome is 53.69 % and the genome length is 1.45 Mbp.

#### **Description of *Candidatus Dilacarcha* gen. nov.**

*Candidatus Dilacarcha* (NL. fem. n. *Dilacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-002838935*. The type species for the genus is *Candidatus Dilacarcha detepigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-002838935*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Dilacarchaceae*.

#### **Description of *Candidatus Dilacarchaceae* fam. nov.**

*Candidatus Dilacarchaceae* (NL. fem. n. *Dilacarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GCA-002838935*. The type genus for the taxon is *Candidatus Dilacarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA9212*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Murelarchales*.

#### **Description of *Candidatus Dilemarcha nugacax* sp. nov.**

*Candidatus Dilemarcha nugacax* (NL. fem. n. *nugacax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA213 sp011331095*. The type genome for the species is the GenBank assembly GCA\_011331095.1. The GC content of the type genome is 40.59 % and the genome length is 1.79 Mbp.

#### **Description of *Candidatus Dilemarcha* gen. nov.**

*Candidatus* Dilemarcha (NL. fem. n. *Dilemarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA213*. The type species for the genus is *Candidatus* Dilemarcha nugacax .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA213*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Dilemarchaceae.

#### **Description of *Candidatus* Dilemarchaceae fam. nov.**

*Candidatus* Dilemarchaceae (NL. fem. n. *Dilemarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA213*. The type genus for the taxon is *Candidatus* Dilemarcha .

According to GTDB R06-RS202, this family belongs to the order *Nitrososphaerales*.

#### **Description of *Candidatus* Dilemarcha verifedo sp. nov.**

*Candidatus* Dilemarcha verifedo (NL. fem. n. *verifedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA213 sp002713325*. The type genome for the species is the GenBank assembly GCA\_002494485.1. The GC content of the type genome is 34.76 % and the genome length is 1.24 Mbp.

#### **Description of *Candidatus* Dilibarcha cicarousia sp. nov.**

*Candidatus* Dilibarcha cicarousia (NL. fem. n. *cicarousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA284 sp002499185*. The type genome for the species is the GenBank assembly GCA\_002499185.1. The GC content of the type genome is 30.26 % and the genome length is 0.97 Mbp.

#### **Description of *Candidatus* Dilibarcha gen. nov.**

*Candidatus* Dilibarcha (NL. fem. n. *Dilibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA284*. The type species for the genus is *Candidatus Dilibarcha cicarousia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA284*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Dilibarchaceae*.

#### **Description of *Candidatus Dilibarchaceae* fam. nov.**

*Candidatus Dilibarchaceae* (NL. fem. n. *Dilibarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA284*. The type genus for the taxon is *Candidatus Dilibarcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

#### **Description of *Candidatus Dilicarcha monocimonas* sp. nov.**

*Candidatus Dilicarcha monocimonas* (NL. fem. n. *monocimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MVRE01 sp903900025*. The type genome for the species is the GenBank assembly GCA\_903900025.1. The GC content of the type genome is 53.85 % and the genome length is 1.75 Mbp.

#### **Description of *Candidatus Dilicarcha* gen. nov.**

*Candidatus Dilicarcha* (NL. fem. n. *Dilicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MVRE01*. The type species for the genus is *Candidatus Dilicarcha monocimonas*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Dilicarcha solivitoga* sp. nov.**

*Candidatus Dilicarcha solivitoga* (NL. fem. n. *solivitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MVRE01 sp002067895*. The type genome for the species is the GenBank assembly GCA\_002067895.1. The GC content of the type genome is 54.47 % and the genome length is 2.31 Mbp.

#### **Description of *Candidatus Dilogarcha bicipessa* sp. nov.**

*Candidatus Dilogarcha bicipessa* (NL. fem. n. *bicipessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-Q1 sp012959435*. The type genome for the species is the GenBank assembly GCA\_012959435.1. The GC content of the type genome is 44.17 % and the genome length is 2.22 Mbp.

#### **Description of *Candidatus Dilogarcha* gen. nov.**

*Candidatus Dilogarcha* (NL. fem. n. *Dilogarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIB-Q1*. The type species for the genus is *Candidatus Dilogarcha bicipessa*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Dilogarcha categentia* sp. nov.**

*Candidatus Dilogarcha categentia* (NL. fem. n. *categentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-Q1 sp002727675*. The type genome for the species is the GenBank assembly GCA\_002727675.1. The GC content of the type genome is 39.56 % and the genome length is 1.57 Mbp.

#### **Description of *Candidatus Dilogarcha culibigena* sp. nov.**

*Candidatus Dilogarcha culibigena* (NL. fem. n. *culibigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-Q1 sp002505495*. The type genome for the species is the GenBank assembly GCA\_002505495.1. The GC content of the type genome is 56.79 %

and the genome length is 1.84 Mbp.

**Description of *Candidatus Dilogarcha debucitoga* sp. nov.**

*Candidatus Dilogarcha debucitoga* (NL. fem. n. *debucitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-Q1 sp012964335*. The type genome for the species is the GenBank assembly GCA\_012966225.1. The GC content of the type genome is 44.49 % and the genome length is 1.91 Mbp.

**Description of *Candidatus Dilogarcha nocenitudo* sp. nov.**

*Candidatus Dilogarcha nocenitudo* (NL. fem. n. *nocenitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-Q1 sp002685895*. The type genome for the species is the GenBank assembly GCA\_002685895.1. The GC content of the type genome is 44.98 % and the genome length is 1.63 Mbp.

**Description of *Candidatus Dilogarcha ratifigena* sp. nov.**

*Candidatus Dilogarcha ratifigena* (NL. fem. n. *ratifigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-Q1 sp014384685*. The type genome for the species is the GenBank assembly GCA\_014384685.1. The GC content of the type genome is 43.75 % and the genome length is 1.56 Mbp.

**Description of *Candidatus Dilogarcha xeramatio* sp. nov.**

*Candidatus Dilogarcha xeramatio* (NL. fem. n. *xeramatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-Q1 sp002725475*. The type genome for the species is the GenBank assembly GCA\_002725475.1. The GC content of the type genome is 42.11 % and the genome length is 1.52 Mbp.

**Description of *Candidatus Diludarcha subofitoga* sp. nov.**

*Candidatus Diludarcha subofitoga* (NL. fem. n. *subofitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B67-G16 sp003650675*. The type genome for the species is the GenBank assembly GCA\_003650675.1. The GC content of the type genome is 42.12 % and the genome length is 2.07 Mbp.

#### **Description of *Candidatus Diludarcha* gen. nov.**

*Candidatus Diludarcha* (NL. fem. n. *Diludarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B67-G16*. The type species for the genus is *Candidatus Diludarcha subofitoga*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B20-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Holisarchaceae*.

#### **Description of *Candidatus Diluvarcha celumicella* sp. nov.**

*Candidatus Diluvarcha celumicella* (NL. fem. n. *celumicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-121 sp003660635*. The type genome for the species is the GenBank assembly GCA\_003660635.1. The GC content of the type genome is 47.43 % and the genome length is 1.23 Mbp.

#### **Description of *Candidatus Diluvarcha* gen. nov.**

*Candidatus Diluvarcha* (NL. fem. n. *Diluvarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-121*. The type species for the genus is *Candidatus Diluvarcha celumicella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *NZ13-MGT*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Milifarchaceae*.

### **Description of *Candidatus Diluvarcha desonedo* sp. nov.**

*Candidatus Diluvarcha desonedo* (NL. fem. n. *desonedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-121 sp002255105*. The type genome for the species is the GenBank assembly GCA\_002255105.1. The GC content of the type genome is 51.51 % and the genome length is 0.87 Mbp.

### **Description of *Candidatus Dimacarcha refocedo* sp. nov.**

*Candidatus Dimacarcha refocedo* (NL. fem. n. *refocedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CS3-C152 sp011772645*. The type genome for the species is the GenBank assembly GCA\_011772255.1. The GC content of the type genome is 46.3 % and the genome length is 0.83 Mbp.

### **Description of *Candidatus Dimacarcha* gen. nov.**

*Candidatus Dimacarcha* (NL. fem. n. *Dimacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CS3-C152*. The type species for the genus is *Candidatus Dimacarcha refocedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZT01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nitelarchaceae*.

### **Description of *Candidatus Dimadarcha catapugo* sp. nov.**

*Candidatus Dimadarcha catapugo* (NL. fem. n. *catapugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SpSt-28 sp011047985*. The type genome for the species is the GenBank assembly GCA\_011047985.1. The GC content of the type genome is 34.34 % and the genome length is 0.79 Mbp.

### **Description of *Candidatus Dimadarcha* gen. nov.**

*Candidatus* Dimadarcha (NL. fem. n. *Dimadarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SpSt-28*. The type species for the genus is *Candidatus* Dimadarcha catapugo .

According to the original version of GTDB R06-RS202, this genus belongs to the family EX4484-224. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Cemenarchaceae.

### **Description of *Candidatus* Dimidarcha bugiledo sp. nov.**

*Candidatus* Dimidarcha bugiledo (NL. fem. n. *bugiledo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA184 sp013044425*. The type genome for the species is the GenBank assembly GCA\_013044425.1. The GC content of the type genome is 67.3 % and the genome length is 1.42 Mbp.

### **Description of *Candidatus* Dimidarcha gen. nov.**

*Candidatus* Dimidarcha (NL. fem. n. *Dimidarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA184*. The type species for the genus is *Candidatus* Dimidarcha bugiledo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA184*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Dimidarchaceae.

### **Description of *Candidatus* Dimidarchaceae fam. nov.**

*Candidatus* Dimidarchaceae (NL. fem. n. *Dimidarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA184*. The type genus for the taxon is *Candidatus* Dimidarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA184*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Dimidarchales.



### **Description of *Candidatus Dimidarchales* ord. nov.**

*Candidatus Dimidarchales* (NL. fem. n. *Dimidarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA184*. The type genus for the taxon is *Candidatus Dimidarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Thermoplasmata*.

### **Description of *Candidatus Dimidarcha cimelitura* sp. nov.**

*Candidatus Dimidarcha cimelitura* (NL. fem. n. *cimelitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA184 sp002495185*. The type genome for the species is the GenBank assembly GCA\_002495185.1. The GC content of the type genome is 67.84 % and the genome length is 1.82 Mbp.

### **Description of *Candidatus Dimidarcha defalitoga* sp. nov.**

*Candidatus Dimidarcha defalitoga* (NL. fem. n. *defalitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA184 sp013290045*. The type genome for the species is the GenBank assembly GCA\_013290045.1. The GC content of the type genome is 68.38 % and the genome length is 2.23 Mbp.

### **Description of *Candidatus Dimidarcha xeramivita* sp. nov.**

*Candidatus Dimidarcha xeramivita* (NL. fem. n. *xeramivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA184 sp002503985*. The type genome for the species is the GenBank assembly GCA\_002503985.1. The GC content of the type genome is 67.14 % and the genome length is 1.79 Mbp.

### **Description of *Candidatus Diminarcha saxifitudo* sp. nov.**

*Candidatus Diminarcha saxifitudo* (NL. fem. n. *saxifitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9915 sp9915u*. The type genome for the species is the GenBank assembly GCA\_013329105.1. The GC content of the type genome is 48.58 % and the genome length is 0.98 Mbp.

**Description of *Candidatus Diminarcha* gen. nov.**

*Candidatus* Diminarcha (NL. fem. n. *Diminarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA9915*. The type species for the genus is *Candidatus* Diminarcha saxifitudo .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Dinuparcha locupicula* sp. nov.**

*Candidatus* Dinuparcha locupicula (NL. fem. n. *locupicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B5-G16 sp003662995*. The type genome for the species is the GenBank assembly GCA\_003662995.1. The GC content of the type genome is 38.41 % and the genome length is 2.61 Mbp.

**Description of *Candidatus Dinuparcha* gen. nov.**

*Candidatus* Dinuparcha (NL. fem. n. *Dinuparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B5-G16*. The type species for the genus is *Candidatus* Dinuparcha locupicula .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Diponarcha cenobatio* sp. nov.**

*Candidatus* Diponarcha cenobatio (NL. fem. n. *cenobatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B25 sp001593855*. The type genome for the species is the GenBank

assembly GCA\_001593855.1. The GC content of the type genome is 50.5 % and the genome length is 0.82 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "marine sediment sample collected by push cores at a deep sea vent site during cruise AT15-25 on Alvin dive 4358; sediment was oily and the sediment surface was covered with a white microbial mat".

#### **Description of *Candidatus Diponarcha* gen. nov.**

*Candidatus Diponarcha* (NL. fem. n. *Diponarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B25*. The type species for the genus is *Candidatus Diponarcha cenobatio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B25*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Diponarchaceae*.

#### **Description of *Candidatus Diponarchaceae* fam. nov.**

*Candidatus Diponarchaceae* (NL. fem. n. *Diponarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B25*. The type genus for the taxon is *Candidatus Diponarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *B25*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Diponarchales*.

#### **Description of *Candidatus Diponarchales* ord. nov.**

*Candidatus Diponarchales* (NL. fem. n. *Diponarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B25*. The type genus for the taxon is *Candidatus Diponarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Bathyarchaeia*.

#### **Description of *Candidatus Diponarcha gerunisca* sp. nov.**

*Candidatus Diponarcha gerunisca* (NL. fem. n. *gerunisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B25 sp003662515*. The type genome for the species is the GenBank assembly GCA\_003662625.1. The GC content of the type genome is 50.63 % and the genome length is 0.92 Mbp.

**Description of *Candidatus Diponarcha telegilega* sp. nov.**

*Candidatus* Diponarcha telegilega (NL. fem. n. *telegilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B25 sp003662485*. The type genome for the species is the GenBank assembly GCA\_003662485.1. The GC content of the type genome is 51.9 % and the genome length is 1.06 Mbp.

**Description of *Candidatus Diponarcha vacilicula* sp. nov.**

*Candidatus* Diponarcha vacilicula (NL. fem. n. *vacilicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B25 sp003662305*. The type genome for the species is the GenBank assembly GCA\_003662305.1. The GC content of the type genome is 50.86 % and the genome length is 1.12 Mbp.

**Description of *Candidatus Direcarcha soliforma* sp. nov.**

*Candidatus* Direcarcha soliforma (NL. fem. n. *soliforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA12276 sp8261u*. The type genome for the species is the GenBank assembly GCA\_013330215.1. The GC content of the type genome is 50.04 % and the genome length is 0.75 Mbp.

**Description of *Candidatus Direcarcha* gen. nov.**

*Candidatus* Direcarcha (NL. fem. n. *Direcarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA12276*. The type species for the genus is *Candidatus* Direcarcha soliforma .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Direparcha bacifitudo* sp. nov.**

*Candidatus* Direparcha bacifitudo (NL. fem. n. *bacifitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WTHC01 sp011523285*. The type genome for the species is the GenBank assembly GCA\_012271085.1. The GC content of the type genome is 44.23 % and the genome length is 1.71 Mbp.

### **Description of *Candidatus Direparcha* gen. nov.**

*Candidatus* Direparcha (NL. fem. n. *Direparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WTHC01*. The type species for the genus is *Candidatus* Direparcha bacifitudo .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Diritarcha colutitura* sp. nov.**

*Candidatus* Diritarcha colutitura (NL. fem. n. *colutitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSCA01 sp011049295*. The type genome for the species is the GenBank assembly GCA\_011049295.1. The GC content of the type genome is 61.09 % and the genome length is 1.28 Mbp.

### **Description of *Candidatus Diritarcha* gen. nov.**

*Candidatus* Diritarcha (NL. fem. n. *Diritarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSCA01*. The type species for the genus is *Candidatus* Diritarcha colutitura .

According to the original version of GTDB R06-RS202, this genus belongs to the family *DSCA01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Diritarchaceae.

### **Description of *Candidatus Diritarchaceae* fam. nov.**

*Candidatus* Diritarchaceae (NL. fem. n. *Diritarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DSCA01*. The type genus for the taxon is *Candidatus* Diritarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA202*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Cimitarchales.

#### **Description of *Candidatus* Disidarcha detesimonia sp. nov.**

*Candidatus* Disidarcha detesimonia (NL. fem. n. *detesimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4572-44 sp002254825*. The type genome for the species is the GenBank assembly GCA\_002254825.2. The GC content of the type genome is 46.29 % and the genome length is 1.07 Mbp.

#### **Description of *Candidatus* Disidarcha gen. nov.**

*Candidatus* Disidarcha (NL. fem. n. *Disidarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4572-44*. The type species for the genus is *Candidatus* Disidarcha detesimonia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4572-44*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Disidarchaceae.

#### **Description of *Candidatus* Disidarchaceae fam. nov.**

*Candidatus* Disidarchaceae (NL. fem. n. *Disidarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4572-44*. The type genus for the taxon is *Candidatus* Disidarcha .

According to GTDB R06-RS202, this family belongs to the order *Methanosarcinales*.

#### **Description of *Candidatus* Disidarcha domicitas sp. nov.**

*Candidatus* Disidarcha domicitas (NL. fem. n. *domicitas* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4572-44 sp002255135*. The type genome for the species is the GenBank assembly GCA\_002255135.1. The GC content of the type genome is 46.22 % and the genome length is 1.08 Mbp.

#### **Description of *Candidatus Divolarcha hemidax* sp. nov.**

*Candidatus Divolarcha hemidax* (NL. fem. n. *hemidax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWWA01 sp003560545*. The type genome for the species is the GenBank assembly GCA\_003560545.1. The GC content of the type genome is 43.26 % and the genome length is 0.92 Mbp.

#### **Description of *Candidatus Divolarcha* gen. nov.**

*Candidatus Divolarcha* (NL. fem. n. *Divolarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PWWA01*. The type species for the genus is *Candidatus Divolarcha hemidax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family 21-14-0-10-32-9. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Colimarchaceae*.

#### **Description of *Candidatus Divolarcha vatilatica* sp. nov.**

*Candidatus Divolarcha vatilatica* (NL. fem. n. *vatilatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWWA01 sp007131205*. The type genome for the species is the GenBank assembly GCA\_007131205.1. The GC content of the type genome is 40.99 % and the genome length is 0.93 Mbp.

#### **Description of *Candidatus Divolarcha vatililenta* sp. nov.**

*Candidatus Divolarcha vatililenta* (NL. fem. n. *vatililenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWWA01 sp003562145*. The type genome for the species is the GenBank assembly GCA\_003562145.1. The GC content of the type genome is 42.88 % and the genome length is 0.66 Mbp.

#### **Description of *Candidatus Divorarcha cepurivita* sp. nov.**

*Candidatus Divorarcha cepurivita* (NL. fem. n. *cepurivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-21 sp002011165*. The type genome for the species is the GenBank assembly GCA\_002011165.1. The GC content of the type genome is 41.21 % and the genome length is 1.42 Mbp.

#### **Description of *Candidatus Divorarcha* gen. nov.**

*Candidatus Divorarcha* (NL. fem. n. *Divorarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-21*. The type species for the genus is *Candidatus Divorarcha cepurivita*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JdFR-21*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Divorarchaceae*.

#### **Description of *Candidatus Divorarchaceae* fam. nov.**

*Candidatus Divorarchaceae* (NL. fem. n. *Divorarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JdFR-21*. The type genus for the taxon is *Candidatus Divorarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *JdFR-21*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Divorarchales*.

#### **Description of *Candidatus Divorarchales* ord. nov.**

*Candidatus Divorarchales* (NL. fem. n. *Divorarchales* a name created from the name of the type genus by addition of the appropriate suffix).



A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JdFR-21*. The type genus for the taxon is *Candidatus* Divorarcha .

According to the GTDB R06-RS202, this order belongs to the class *Archaeoglobi*.

#### **Description of *Candidatus* Divorarcha semipax sp. nov.**

*Candidatus* Divorarcha semipax (NL. fem. n. *semipax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-21 sp014361165*. The type genome for the species is the GenBank assembly GCA\_014361165.1. The GC content of the type genome is 46.68 % and the genome length is 1.17 Mbp.

#### **Description of *Candidatus* Divularcha calipastra sp. nov.**

*Candidatus* Divularcha calipastra (NL. fem. n. *calipastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J144 sp003694055*. The type genome for the species is the GenBank assembly GCA\_003694055.1. The GC content of the type genome is 46.27 % and the genome length is 0.99 Mbp.

#### **Description of *Candidatus* Divularcha gen. nov.**

*Candidatus* Divularcha (NL. fem. n. *Divularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J144*. The type species for the genus is *Candidatus* Divularcha calipastra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Decenarchaceae.

#### **Description of *Candidatus* Documarcha malivilega sp. nov.**

*Candidatus* Documarcha malivilega (NL. fem. n. *malivilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS23 sp002686195*. The type genome for the species is the GenBank assembly GCA\_002686195.1. The GC content of the type genome is 40.72 % and the genome length is 3.97 Mbp.

#### **Description of *Candidatus Documarcha* gen. nov.**

*Candidatus Documarcha* (NL. fem. n. *Documarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARS23*. The type species for the genus is *Candidatus Documarcha malivilega*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Decenarchaceae*.

#### **Description of *Candidatus Domabarcha cadurax* sp. nov.**

*Candidatus Domabarcha cadurax* (NL. fem. n. *cadurax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *OWC5 sp003345555*. The type genome for the species is the GenBank assembly GCA\_003345555.1. The GC content of the type genome is 51.12 % and the genome length is 2.28 Mbp.

#### **Description of *Candidatus Domabarcha* gen. nov.**

*Candidatus Domabarcha* (NL. fem. n. *Domabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *OWC5*. The type species for the genus is *Candidatus Domabarcha cadurax*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Domabarcha venabessa* sp. nov.**

*Candidatus Domabarcha venabessa* (NL. fem. n. *venabessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *OWC5 sp003345595*. The type genome for the species is the GenBank assembly GCA\_003345595.1. The GC content of the type genome is 52.2 % and the genome length is 2.73 Mbp.

#### **Description of *Candidatus Domicarcha cemenimonia* sp. nov.**

*Candidatus Domicarcha cemenimonia* (NL. fem. n. *cemenimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B15-G2 sp003649445*. The type genome for the species is the GenBank assembly GCA\_003649445.1. The GC content of the type genome is 38.6 % and the genome length is 3.54 Mbp.

#### **Description of *Candidatus Domicarcha* gen. nov.**

*Candidatus Domicarcha* (NL. fem. n. *Domicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B15-G2*. The type species for the genus is *Candidatus Domicarcha cemenimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B15-G2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Domicarchaceae*.

#### **Description of *Candidatus Domicarchaceae* fam. nov.**

*Candidatus Domicarchaceae* (NL. fem. n. *Domicarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B15-G2*. The type genus for the taxon is *Candidatus Domicarcha*.

According to GTDB R06-RS202, this family belongs to the order *Thermofilales*.

#### **Description of *Candidatus Domicarcha semififorma* sp. nov.**

*Candidatus Domicarcha semififorma* (NL. fem. n. *semififorma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B15-G2 sp003650815*. The type genome for the species is the GenBank assembly GCA\_003650815.1. The GC content of the type genome is 40.18 %

and the genome length is 1.99 Mbp.

**Description of *Candidatus Domigarcha lucubitoga* sp. nov.**

*Candidatus Domigarcha lucubitoga* (NL. fem. n. *lucubitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B44-G15 sp003649845*. The type genome for the species is the GenBank assembly GCA\_003649845.1. The GC content of the type genome is 34.5 % and the genome length is 1.72 Mbp.

**Description of *Candidatus Domigarcha* gen. nov.**

*Candidatus Domigarcha* (NL. fem. n. *Domigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B44-G15*. The type species for the genus is *Candidatus Domigarcha lucubitoga*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DHVEG-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pedifarchaceae*.

**Description of *Candidatus Domiparcha rubecilenta* sp. nov.**

*Candidatus Domiparcha rubecilenta* (NL. fem. n. *rubecilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B50-G16 sp003663345*. The type genome for the species is the GenBank assembly GCA\_003663345.1. The GC content of the type genome is 45.38 % and the genome length is 0.95 Mbp.

**Description of *Candidatus Domiparcha* gen. nov.**

*Candidatus Domiparcha* (NL. fem. n. *Domiparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B50-G16*. The type species for the genus is *Candidatus Domiparcha rubecilenta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B50-G16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to

the family *Candidatus* Domiparchaceae.

#### **Description of *Candidatus* Domiparchaceae fam. nov.**

*Candidatus* Domiparchaceae (NL. fem. n. *Domiparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B50-G16*. The type genus for the taxon is *Candidatus* Domiparcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *PWEA01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Nutamarchales.

#### **Description of *Candidatus* Doxolarcha curacugo sp. nov.**

*Candidatus* Doxolarcha curacugo (NL. fem. n. *curacugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *VadinCA11 sp002509405*. The type genome for the species is the GenBank assembly GCA\_002509405.1. The GC content of the type genome is 54.94 % and the genome length is 1.18 Mbp.

#### **Description of *Candidatus* Doxolarcha gen. nov.**

*Candidatus* Doxolarcha (NL. fem. n. *Doxolarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *VadinCA11*. The type species for the genus is *Candidatus* Doxolarcha curacugo .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Doxolarcha favonitoga sp. nov.**

*Candidatus* Doxolarcha favonitoga (NL. fem. n. *favonitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *VadinCA11 sp002505345*. The type genome for the species is the GenBank assembly GCA\_002506565.1. The GC content of the type genome is 55.87 % and the genome length is 1.11 Mbp.

### **Description of *Candidatus Doxolarcha furibax* sp. nov.**

*Candidatus Doxolarcha furibax* (NL. fem. n. *furibax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *VadinCA11 sp002498365*. The type genome for the species is the GenBank assembly GCA\_002498805.1. The GC content of the type genome is 55.69 % and the genome length is 1.3 Mbp.

### **Description of *Candidatus Doxolarcha furibiforma* sp. nov.**

*Candidatus Doxolarcha furibiforma* (NL. fem. n. *furibiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *VadinCA11 sp002498605*. The type genome for the species is the GenBank assembly GCA\_002498605.1. The GC content of the type genome is 47.02 % and the genome length is 1.19 Mbp.

### **Description of *Candidatus Doxolarcha palifimonia* sp. nov.**

*Candidatus Doxolarcha palifimonia* (NL. fem. n. *palifimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *VadinCA11 sp011620825*. The type genome for the species is the GenBank assembly GCA\_011620825.1. The GC content of the type genome is 54.19 % and the genome length is 0.92 Mbp.

### **Description of *Candidatus Ducilarcha conifitia* sp. nov.**

*Candidatus Ducilarcha conifitia* (NL. fem. n. *conifitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIOIN01 sp903858385*. The type genome for the species is the GenBank assembly GCA\_903858385.1. The GC content of the type genome is 52.15 % and the genome length is 0.76 Mbp.

### **Description of *Candidatus Ducilarcha* gen. nov.**

*Candidatus Ducilarcha* (NL. fem. n. *Ducilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIOIN01*. The type species for the genus is *Candidatus* *Ducilarcha conifitia* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* *Duponarcha locupiforma* sp. nov.**

*Candidatus* *Duponarcha locupiforma* (NL. fem. n. *locupiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMDC01 sp902384795*. The type genome for the species is the GenBank assembly GCA\_902384795.1. The GC content of the type genome is 49.69 % and the genome length is 1.47 Mbp.

#### **Description of *Candidatus* *Duponarcha* gen. nov.**

*Candidatus* *Duponarcha* (NL. fem. n. *Duponarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMDC01*. The type species for the genus is *Candidatus* *Duponarcha locupiforma* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *CABMDC01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* *Duponarchaceae*.

#### **Description of *Candidatus* *Duponarchaceae* fam. nov.**

*Candidatus* *Duponarchaceae* (NL. fem. n. *Duponarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CABMDC01*. The type genus for the taxon is *Candidatus* *Duponarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *CABMDC01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* *Duponarchales*.

#### **Description of *Candidatus* *Duponarchales* ord. nov.**

*Candidatus* *Duponarchales* (NL. fem. n. *Duponarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CABMDC01*. The type genus for the taxon is *Candidatus Dupunarcha* . According to the GTDB R06-RS202, this order belongs to the class *Micrarchaeia*.

#### **Description of *Candidatus Dupunarcha lapicicula* sp. nov.**

*Candidatus Dupunarcha lapicicula* (NL. fem. n. *lapicicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HRBIN02 sp009889515*. The type genome for the species is the GenBank assembly GCA\_009889515.1. The GC content of the type genome is 52.3 % and the genome length is 2.11 Mbp.

#### **Description of *Candidatus Dupunarcha* gen. nov.**

*Candidatus Dupunarcha* (NL. fem. n. *Dupunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *HRBIN02*. The type species for the genus is *Candidatus Dupunarcha lapicicula* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *HR02*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Verecarchaceae*.

#### **Description of *Candidatus Dupunarcha maledilega* sp. nov.**

*Candidatus Dupunarcha maledilega* (NL. fem. n. *maledilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HRBIN02 sp011373505*. The type genome for the species is the GenBank assembly GCA\_011373505.1. The GC content of the type genome is 51.66 % and the genome length is 1.43 Mbp.

#### **Description of *Candidatus Dupunarcha nitelessa* sp. nov.**

*Candidatus Dupunarcha nitelessa* (NL. fem. n. *nitelessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy



Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HRBIN02 sp011373385*. The type genome for the species is the GenBank assembly GCA\_011373385.1. The GC content of the type genome is 53.05 % and the genome length is 1.35 Mbp.

**Description of *Candidatus Dupunarcha tiguretta* sp. nov.**

*Candidatus Dupunarcha tiguretta* (NL. fem. n. *turetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HRBIN02 sp002898395*. The type genome for the species is the GenBank assembly GCA\_002898395.1. The GC content of the type genome is 51.45 % and the genome length is 1.73 Mbp.

**Description of *Candidatus Duricarcha decinatio* sp. nov.**

*Candidatus Duricarcha decinatio* (NL. fem. n. *decinatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSZF01 sp011605825*. The type genome for the species is the GenBank assembly GCA\_011605825.1. The GC content of the type genome is 36.75 % and the genome length is 0.32 Mbp.

**Description of *Candidatus Duricarcha* gen. nov.**

*Candidatus Duricarcha* (NL. fem. n. *Duricarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSZF01*. The type species for the genus is *Candidatus Duricarcha decinatio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DSZF01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Duricarchaceae*.

**Description of *Candidatus Duricarchaceae* fam. nov.**

*Candidatus Duricarchaceae* (NL. fem. n. *Duricarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DSZF01*. The type genus for the taxon is *Candidatus Duricarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *B29-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Coninarchales.

**Description of *Candidatus* Duricarcha defulentia sp. nov.**

*Candidatus* Duricarcha defulentia (NL. fem. n. *defulentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSZF01 sp011370515*. The type genome for the species is the GenBank assembly GCA\_011370515.1. The GC content of the type genome is 38.73 % and the genome length is 0.79 Mbp.

**Description of *Candidatus* Duricarcha nocenicula sp. nov.**

*Candidatus* Duricarcha nocenicula (NL. fem. n. *nocenicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSZF01 sp011372955*. The type genome for the species is the GenBank assembly GCA\_011372955.1. The GC content of the type genome is 36.62 % and the genome length is 1.41 Mbp.

**Description of *Candidatus* Duricarcha repudicula sp. nov.**

*Candidatus* Duricarcha repudicula (NL. fem. n. *repudicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSZF01 sp011367155*. The type genome for the species is the GenBank assembly GCA\_011367155.1. The GC content of the type genome is 31.94 % and the genome length is 0.87 Mbp.

**Description of *Candidatus* Ethanoperedens visibitudo sp. nov.**

*Candidatus* Ethanoperedens visibitudo (NL. fem. n. *visibitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Ethanoperedens sp004212095*. The type genome for the species is the GenBank assembly GCA\_004212095.1. The GC content of the type genome is 40.95 % and the genome length is 1.46 Mbp.

### **Description of *Candidatus Facunarcha categitica* sp. nov.**

*Candidatus Facunarcha categitica* (NL. fem. n. *categitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TH5896 sp009377575*. The type genome for the species is the GenBank assembly GCA\_009377575.1. The GC content of the type genome is 38.71 % and the genome length is 3.89 Mbp.

### **Description of *Candidatus Facunarcha* gen. nov.**

*Candidatus Facunarcha* (NL. fem. n. *Facunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *TH5896*. The type species for the genus is *Candidatus Facunarcha categitica*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Facunarcha dececicula* sp. nov.**

*Candidatus Facunarcha dececicula* (NL. fem. n. *dececicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TH5896 sp014523625*. The type genome for the species is the GenBank assembly GCA\_014523625.1. The GC content of the type genome is 38.93 % and the genome length is 2.74 Mbp.

### **Description of *Candidatus Facunarcha lavabibula* sp. nov.**

*Candidatus Facunarcha lavabibula* (NL. fem. n. *lavabibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TH5896 sp014523695*. The type genome for the species is the GenBank assembly GCA\_014523695.1. The GC content of the type genome is 38.99 % and the genome length is 3.88 Mbp.

### **Description of *Candidatus Facunarcha tomacago* sp. nov.**

*Candidatus Facunarcha tomacago* (NL. fem. n. *tomacago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TH5896 sp014523665*. The type genome for the species is the GenBank assembly GCA\_014523665.1. The GC content of the type genome is 38.85 % and the genome length is 4.9 Mbp.

#### **Description of *Candidatus Famelarcha xeropitas* sp. nov.**

*Candidatus Famelarcha xeropitas* (NL. fem. n. *xeropitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSAX01 sp011046235*. The type genome for the species is the GenBank assembly GCA\_011046235.1. The GC content of the type genome is 54.46 % and the genome length is 1.57 Mbp.

#### **Description of *Candidatus Famelarcha* gen. nov.**

*Candidatus Famelarcha* (NL. fem. n. *Famelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSAX01*. The type species for the genus is *Candidatus Famelarcha xeropitas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTMW01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tolutarchaceae*.

#### **Description of *Candidatus Faticarcha caselastra* sp. nov.**

*Candidatus Faticarcha caselastra* (NL. fem. n. *caselastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B46-G15 sp003662205*. The type genome for the species is the GenBank assembly GCA\_003662205.1. The GC content of the type genome is 62.89 % and the genome length is 1.5 Mbp.

#### **Description of *Candidatus Faticarcha* gen. nov.**

*Candidatus Faticarcha* (NL. fem. n. *Faticarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B46-G15*. The type species for the genus is *Candidatus Fatifarcha caselastra* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *TCS64*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tegumarchaceae*.

#### **Description of *Candidatus Fatifarcha colopitrix* sp. nov.**

*Candidatus Fatifarcha colopitrix* (NL. fem. n. *colopitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAOZN01 sp011605775*. The type genome for the species is the GenBank assembly GCA\_011605775.1. The GC content of the type genome is 47.17 % and the genome length is 1.62 Mbp.

#### **Description of *Candidatus Fatifarcha* gen. nov.**

*Candidatus Fatifarcha* (NL. fem. n. *Fatifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAAOZN01*. The type species for the genus is *Candidatus Fatifarcha colopitrix* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAAOZN01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Fatifarchaceae*.

#### **Description of *Candidatus Fatifarchaceae* fam. nov.**

*Candidatus Fatifarchaceae* (NL. fem. n. *Fatifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAAOZN01*. The type genus for the taxon is *Candidatus Fatifarcha* .

According to GTDB R06-RS202, this family belongs to the order *Nitrososphaerales*.

#### **Description of *Candidatus Fatifarcha semigentia* sp. nov.**

*Candidatus Fatifarcha semigentia* (NL. fem. n. *semigentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAOZN01 sp011355215*. The type genome for the species is the GenBank assembly GCA\_011355215.1. The GC content of the type genome is 46.29 % and the genome length is 1.49 Mbp.

**Description of *Candidatus Fatilarcha bipinitia* sp. nov.**

*Candidatus Fatilarcha bipinitia* (NL. fem. n. *bipinitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PUNK01 sp003552585*. The type genome for the species is the GenBank assembly GCA\_003552585.1. The GC content of the type genome is 42.6 % and the genome length is 1.84 Mbp.

**Description of *Candidatus Fatilarcha* gen. nov.**

*Candidatus Fatilarcha* (NL. fem. n. *Fatilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PUNK01*. The type species for the genus is *Candidatus Fatilarcha bipinitia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *PWKY01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Lanigarchaceae*.

**Description of *Candidatus Favilarcha canacatica* sp. nov.**

*Candidatus Favilarcha canacatica* (NL. fem. n. *canacatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOJA01 sp004376975*. The type genome for the species is the GenBank assembly GCA\_004376975.1. The GC content of the type genome is 41.87 % and the genome length is 1.65 Mbp.

**Description of *Candidatus Favilarcha* gen. nov.**

*Candidatus Favilarcha* (NL. fem. n. *Favilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this genus is *SOJA01*. The type species for the genus is *Candidatus Favilarcha canacatica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

#### **Description of *Candidatus Favonarcha defalitia* sp. nov.**

*Candidatus Favonarcha defalitia* (NL. fem. n. *defalitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRAE01 sp011041895*. The type genome for the species is the GenBank assembly GCA\_011041895.1. The GC content of the type genome is 40.94 % and the genome length is 0.94 Mbp.

#### **Description of *Candidatus Favonarcha* gen. nov.**

*Candidatus Favonarcha* (NL. fem. n. *Favonarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRAE01*. The type species for the genus is *Candidatus Favonarcha defalitia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DRAE01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Favonarchaceae*.

#### **Description of *Candidatus Favonarchaceae* fam. nov.**

*Candidatus Favonarchaceae* (NL. fem. n. *Favonarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DRAE01*. The type genus for the taxon is *Candidatus Favonarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *DRAE01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Favonarchales*.

#### **Description of *Candidatus Favonarchales* ord. nov.**

*Candidatus Favonarchales* (NL. fem. n. *Favonarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DRAE01*. The type genus for the taxon is *Candidatus Favonarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Korarchaeia*.

#### **Description of *Candidatus Fecularcha cosigastra* sp. nov.**

*Candidatus Fecularcha cosigastra* (NL. fem. n. *cosigastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CGI-02-33-12 sp002762865*. The type genome for the species is the GenBank assembly GCA\_002762865.1. The GC content of the type genome is 33.28 % and the genome length is 1.05 Mbp.

#### **Description of *Candidatus Fecularcha* gen. nov.**

*Candidatus Fecularcha* (NL. fem. n. *Fecularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CGI-02-33-12*. The type species for the genus is *Candidatus Fecularcha cosigastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CGI-02-33-12*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Fecularchaceae*.

#### **Description of *Candidatus Fecularchaceae* fam. nov.**

*Candidatus Fecularchaceae* (NL. fem. n. *Fecularchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CGI-02-33-12*. The type genus for the taxon is *Candidatus Fecularcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Fecunarcha defasatio* sp. nov.**

*Candidatus Fecunarcha defasatio* (NL. fem. n. *defasatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this species is *DTGL01 sp011334955*. The type genome for the species is the GenBank assembly GCA\_011334955.1. The GC content of the type genome is 40.32 % and the genome length is 0.88 Mbp.

#### **Description of *Candidatus Fecunarcha* gen. nov.**

*Candidatus Fecunarcha* (NL. fem. n. *Fecunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTGL01*. The type species for the genus is *Candidatus Fecunarcha defasatio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTGL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Fecunarchaceae*.

#### **Description of *Candidatus Fecunarchaceae* fam. nov.**

*Candidatus Fecunarchaceae* (NL. fem. n. *Fecunarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTGL01*. The type genus for the taxon is *Candidatus Fecunarcha*.

According to GTDB R06-RS202, this family belongs to the order *Iainarchaeales*.

#### **Description of *Candidatus Fefelarcha delucetta* sp. nov.**

*Candidatus Fefelarcha delucetta* (NL. fem. n. *delucetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SZUA-236 sp002923215*. The type genome for the species is the GenBank assembly GCA\_002923215.1. The GC content of the type genome is 46.74 % and the genome length is 1.63 Mbp.

#### **Description of *Candidatus Fefelarcha* gen. nov.**

*Candidatus Fefelarcha* (NL. fem. n. *Fefelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SZUA-236*. The type species for the genus is *Candidatus Fefelarcha delucetta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SZUA-236*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Fefelarchaceae*.

### **Description of *Candidatus Fefelarchaceae* fam. nov.**

*Candidatus Fefelarchaceae* (NL. fem. n. *Fefelarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SZUA-236*. The type genus for the taxon is *Candidatus Fefelarcha*.

According to GTDB R06-RS202, this family belongs to the order *Hydrothermarchaeales*.

### **Description of *Candidatus Fefelarcha holisilenta* sp. nov.**

*Candidatus Fefelarcha holisilenta* (NL. fem. n. *holisilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SZUA-236 sp003230355*. The type genome for the species is the GenBank assembly GCA\_003230355.1. The GC content of the type genome is 47.58 % and the genome length is 1.27 Mbp.

### **Description of *Candidatus Feficarcha cinefitudo* sp. nov.**

*Candidatus Feficarcha cinefitudo* (NL. fem. n. *cinefitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SICU01 sp009694755*. The type genome for the species is the GenBank assembly GCA\_009694755.1. The GC content of the type genome is 31.56 % and the genome length is 0.52 Mbp.

### **Description of *Candidatus Feficarcha* gen. nov.**

*Candidatus Feficarcha* (NL. fem. n. *Feficarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SICU01*. The type species for the genus is *Candidatus Feficarcha cinefitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to

the family *Candidatus* Decenarchaceae.

**Description of *Candidatus* Femelarcha dicimibra sp. nov.**

*Candidatus* Femelarcha dicimibra (NL. fem. n. *dicimibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTIH01 sp011334515*. The type genome for the species is the GenBank assembly GCA\_011334515.1. The GC content of the type genome is 29.66 % and the genome length is 0.65 Mbp.

**Description of *Candidatus* Femelarcha gen. nov.**

*Candidatus* Femelarcha (NL. fem. n. *Femelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTIH01*. The type species for the genus is *Candidatus* Femelarcha dicimibra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10161*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Siligarchaceae.

**Description of *Candidatus* Ferroplasma cocolitio sp. nov.**

*Candidatus* Ferroplasma cocolitio (NL. fem. n. *cocolitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Ferroplasma sp002505185*. The type genome for the species is the GenBank assembly GCA\_002505185.1. The GC content of the type genome is 37.08 % and the genome length is 1.5 Mbp.

**Description of *Candidatus* Fetifarcha calipitrix sp. nov.**

*Candidatus* Fetifarcha calipitrix (NL. fem. n. *calipitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O2 sp902593945*. The type genome for the species is the GenBank assembly GCA\_902593945.1. The GC content of the type genome is 38.18 %

and the genome length is 1.21 Mbp.

**Description of *Candidatus Fetifarcha* gen. nov.**

*Candidatus Fetifarcha* (NL. fem. n. *Fetifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIB-O2*. The type species for the genus is *Candidatus Fetifarcha calipitrix*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Fetifarcha delubitio* sp. nov.**

*Candidatus Fetifarcha delubitio* (NL. fem. n. *delubitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O2 sp002495525*. The type genome for the species is the GenBank assembly GCA\_002495525.1. The GC content of the type genome is 37.73 % and the genome length is 1.39 Mbp.

**Description of *Candidatus Fetifarcha dinupatio* sp. nov.**

*Candidatus Fetifarcha dinupatio* (NL. fem. n. *dinupatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O2 sp902514485*. The type genome for the species is the GenBank assembly GCA\_902513375.1. The GC content of the type genome is 38.63 % and the genome length is 1.24 Mbp.

**Description of *Candidatus Fetifarcha lugubatio* sp. nov.**

*Candidatus Fetifarcha lugubatio* (NL. fem. n. *lugubatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O2 sp002504905*. The type genome for the species is the GenBank assembly GCA\_002494965.1. The GC content of the type genome is 37.51 % and the genome length is 1.43 Mbp.

**Description of *Candidatus Fetifarcha mirabitia* sp. nov.**

*Candidatus* Fetifarcha mirabitia (NL. fem. n. *mirabitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O2 sp002498985*. The type genome for the species is the GenBank assembly GCA\_002496435.1. The GC content of the type genome is 38.08 % and the genome length is 1.35 Mbp.

**Description of *Candidatus* Fetifarcha monocilenta sp. nov.**

*Candidatus* Fetifarcha monocilenta (NL. fem. n. *monocilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O2 sp002494975*. The type genome for the species is the GenBank assembly GCA\_003672205.1. The GC content of the type genome is 38.53 % and the genome length is 1.04 Mbp.

**Description of *Candidatus* Fetifarcha navifatio sp. nov.**

*Candidatus* Fetifarcha navifatio (NL. fem. n. *navifatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O2 sp002497245*. The type genome for the species is the GenBank assembly GCA\_002714605.1. The GC content of the type genome is 37.82 % and the genome length is 1.29 Mbp.

**Description of *Candidatus* Fetifarcha peracetta sp. nov.**

*Candidatus* Fetifarcha peracetta (NL. fem. n. *peracetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O2 sp002499785*. The type genome for the species is the GenBank assembly GCA\_002499785.1. The GC content of the type genome is 43.84 % and the genome length is 1.2 Mbp.

**Description of *Candidatus* Fetifarcha reforousia sp. nov.**

*Candidatus* Fetifarcha reforousia (NL. fem. n. *reforousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O2 sp002686525*. The type genome for the species is the GenBank assembly GCA\_902635905.1. The GC content of the type genome is 37.94 % and the genome length is 1.12 Mbp.

**Description of *Candidatus Fetifarcha senipigena* sp. nov.**

*Candidatus Fetifarcha senipigena* (NL. fem. n. *senipigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O2 sp002730775*. The type genome for the species is the GenBank assembly GCA\_002730775.1. The GC content of the type genome is 38.25 % and the genome length is 1.21 Mbp.

**Description of *Candidatus Fetifarcha seposatica* sp. nov.**

*Candidatus Fetifarcha seposatica* (NL. fem. n. *seposatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O2 sp902511005*. The type genome for the species is the GenBank assembly GCA\_902511005.1. The GC content of the type genome is 38.58 % and the genome length is 1.3 Mbp.

**Description of *Candidatus Fetifarcha tolutentia* sp. nov.**

*Candidatus Fetifarcha tolutentia* (NL. fem. n. *tolutentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O2 sp002685315*. The type genome for the species is the GenBank assembly GCA\_002685315.1. The GC content of the type genome is 38.18 % and the genome length is 1.1 Mbp.

**Description of *Candidatus Fetifarcha vavasitia* sp. nov.**

*Candidatus Fetifarcha vavasitia* (NL. fem. n. *vavasitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O2 sp004195525*. The type genome for the species is the GenBank assembly GCA\_012960975.1. The GC content of the type genome is 43.97 %

and the genome length is 1.59 Mbp.

**Description of *Candidatus Fetutarcha dibucugo* sp. nov.**

*Candidatus Fetutarcha dibucugo* (NL. fem. n. *dibucugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABABT01 sp014238095*. The type genome for the species is the GenBank assembly GCA\_014238095.1. The GC content of the type genome is 24.3 % and the genome length is 0.52 Mbp.

**Description of *Candidatus Fetutarcha* gen. nov.**

*Candidatus Fetutarcha* (NL. fem. n. *Fetutarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JABABT01*. The type species for the genus is *Candidatus Fetutarcha dibucugo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SCSR01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cucurarchaceae*.

**Description of *Candidatus Fibicarcha colutisca* sp. nov.**

*Candidatus Fibicarcha colutisca* (NL. fem. n. *colutisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA525 sp10207u*. The type genome for the species is the GenBank assembly GCA\_013331575.1. The GC content of the type genome is 54.84 % and the genome length is 1.63 Mbp.

**Description of *Candidatus Fibicarcha* gen. nov.**

*Candidatus Fibicarcha* (NL. fem. n. *Fibicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA525*. The type species for the genus is *Candidatus Fibicarcha colutisca*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA525*. According to the renamed version of GTDB R06-RS202, this taxon belongs to

the family *Candidatus Fibicarchaceae*.

**Description of *Candidatus Fibicarchaceae* fam. nov.**

*Candidatus Fibicarchaceae* (NL. fem. n. *Fibicarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA525*. The type genus for the taxon is *Candidatus Fibicarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

**Description of *Candidatus Fibicarcha funebago* sp. nov.**

*Candidatus Fibicarcha funebago* (NL. fem. n. *funebago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA525 sp002498125*. The type genome for the species is the GenBank assembly GCA\_002498125.1. The GC content of the type genome is 56.19 % and the genome length is 1.36 Mbp.

**Description of *Candidatus Ficedarcha cucuricella* sp. nov.**

*Candidatus Ficedarcha cucuricella* (NL. fem. n. *cucuricella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAEEP01 sp013415695*. The type genome for the species is the GenBank assembly GCA\_013415715.1. The GC content of the type genome is 51.47 % and the genome length is 2.07 Mbp.

**Description of *Candidatus Ficedarcha* gen. nov.**

*Candidatus Ficedarcha* (NL. fem. n. *Ficedarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAAEEP01*. The type species for the genus is *Candidatus Ficedarcha cucuricella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAAEEP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Ficedarchaceae*.



### **Description of *Candidatus Ficedarchaceae* fam. nov.**

*Candidatus Ficedarchaceae* (NL. fem. n. *Ficedarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAAEEP01*. The type genus for the taxon is *Candidatus Ficedarcha*.

According to GTDB R06-RS202, this family belongs to the order *Methanomassiliicoccales*.

### **Description of *Candidatus Ficularcha panopitudo* sp. nov.**

*Candidatus Ficularcha panopitudo* (NL. fem. n. *panopitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAZKV01 sp012799645*. The type genome for the species is the GenBank assembly GCA\_012799645.1. The GC content of the type genome is 30.06 % and the genome length is 0.78 Mbp.

### **Description of *Candidatus Ficularcha* gen. nov.**

*Candidatus Ficularcha* (NL. fem. n. *Ficularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAAZKV01*. The type species for the genus is *Candidatus Ficularcha panopitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAAZKV01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Ficularchaceae*.

### **Description of *Candidatus Ficularchaceae* fam. nov.**

*Candidatus Ficularchaceae* (NL. fem. n. *Ficularchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAAZKV01*. The type genus for the taxon is *Candidatus Ficularcha*.

According to GTDB R06-RS202, this family belongs to the order *Iainarchaeales*.

### **Description of *Candidatus Ficularcha rosacitura* sp. nov.**

*Candidatus* Ficularcha rosacitura (NL. fem. n. *rosacitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAZKV01 sp002068885*. The type genome for the species is the GenBank assembly GCA\_002068885.1. The GC content of the type genome is 30.23 % and the genome length is 0.93 Mbp.

#### **Description of *Candidatus* Ficularcha tibicousia sp. nov.**

*Candidatus* Ficularcha tibicousia (NL. fem. n. *tibicousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAZKV01 sp902385225*. The type genome for the species is the GenBank assembly GCA\_902385225.1. The GC content of the type genome is 40.59 % and the genome length is 1.05 Mbp.

#### **Description of *Candidatus* Fidenarcha catafibra sp. nov.**

*Candidatus* Fidenarcha catafibra (NL. fem. n. *catafibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TH1177 sp014523515*. The type genome for the species is the GenBank assembly GCA\_014523515.1. The GC content of the type genome is 28.08 % and the genome length is 2.68 Mbp.

#### **Description of *Candidatus* Fidenarcha gen. nov.**

*Candidatus* Fidenarcha (NL. fem. n. *Fidenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *TH1177*. The type species for the genus is *Candidatus* Fidenarcha catafibra .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Fidenarcha momorentia sp. nov.**

*Candidatus* Fidenarcha momorentia (NL. fem. n. *momorentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TH1177 sp014523485*. The type genome for the species is the GenBank assembly GCA\_014523485.1. The GC content of the type genome is 28.84 % and the genome length is 2.36 Mbp.

**Description of *Candidatus Fiducarcha disidatica* sp. nov.**

*Candidatus Fiducarcha disidatica* (NL. fem. n. *disidatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SMTZ1-83 sp011364985*. The type genome for the species is the GenBank assembly GCA\_011364985.1. The GC content of the type genome is 45.51 % and the genome length is 1.7 Mbp.

**Description of *Candidatus Fiducarcha* gen. nov.**

*Candidatus Fiducarcha* (NL. fem. n. *Fiducarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SMTZ1-83*. The type species for the genus is *Candidatus Fiducarcha disidatica*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Fiducarcha recumibula* sp. nov.**

*Candidatus Fiducarcha recumibula* (NL. fem. n. *recumibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SMTZ1-83 sp011365025*. The type genome for the species is the GenBank assembly GCA\_011365025.1. The GC content of the type genome is 47.2 % and the genome length is 3.47 Mbp.

**Description of *Candidatus Fiducarcha sonabigena* sp. nov.**

*Candidatus Fiducarcha sonabigena* (NL. fem. n. *sonabigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SMTZ1-83 sp001563325*. The type genome for the species is the

GenBank assembly GCA\_001563325.1. The GC content of the type genome is 49.28 % and the genome length is 3.26 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Sulfate-methane transition zone estuary sediments 16-26 cm".

#### **Description of *Candidatus Figilarcha manubimonia* sp. nov.**

*Candidatus Figilarcha manubimonia* (NL. fem. n. *manubimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8471 sp001871535*. The type genome for the species is the GenBank assembly GCA\_002778915.1. The GC content of the type genome is 49.24 % and the genome length is 1.05 Mbp.

#### **Description of *Candidatus Figilarcha* gen. nov.**

*Candidatus Figilarcha* (NL. fem. n. *Figilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA8471*. The type species for the genus is *Candidatus Figilarcha manubimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA8471*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Figilarchaceae*.

#### **Description of *Candidatus Figilarchaceae* fam. nov.**

*Candidatus Figilarchaceae* (NL. fem. n. *Figilarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA8471*. The type genus for the taxon is *Candidatus Figilarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Volubarchales*.

#### **Description of *Candidatus Filifarcha capilousia* sp. nov.**

*Candidatus Filifarcha capilousia* (NL. fem. n. *capilousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA583 sp002506365*. The type genome for the species is the GenBank assembly GCA\_002506365.1. The GC content of the type genome is 25.57 % and the genome length is 1.39 Mbp.

#### **Description of *Candidatus Filifarcha* gen. nov.**

*Candidatus Filifarcha* (NL. fem. n. *Filifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA583*. The type species for the genus is *Candidatus Filifarcha capilousia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA583*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Filifarchaceae*.

#### **Description of *Candidatus Filifarchaceae* fam. nov.**

*Candidatus Filifarchaceae* (NL. fem. n. *Filifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA583*. The type genus for the taxon is *Candidatus Filifarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA583*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Filifarchales*.

#### **Description of *Candidatus Filifarchales* ord. nov.**

*Candidatus Filifarchales* (NL. fem. n. *Filifarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA583*. The type genus for the taxon is *Candidatus Filifarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Nanoarchaeia*.

#### **Description of *Candidatus Filifarcha pinigitica* sp. nov.**

*Candidatus Filifarcha pinigitica* (NL. fem. n. *pinigitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *UBA583 sp013215525*. The type genome for the species is the GenBank assembly GCA\_013215525.1. The GC content of the type genome is 25.85 % and the genome length is 1.75 Mbp.

#### **Description of *Candidatus Forabarcha panificella* sp. nov.**

*Candidatus Forabarcha panificella* (NL. fem. n. *panificella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ANME1a sp003194425*. The type genome for the species is the GenBank assembly GCA\_003194425.1. The GC content of the type genome is 52.19 % and the genome length is 1.4 Mbp.

#### **Description of *Candidatus Forabarcha* gen. nov.**

*Candidatus Forabarcha* (NL. fem. n. *Forabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ANME1a*. The type species for the genus is *Candidatus Forabarcha panificella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ANME-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Loriparchaceae*.

#### **Description of *Candidatus Foricarcha resalifica* sp. nov.**

*Candidatus Foricarcha resalifica* (NL. fem. n. *resalifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA119 sp002505945*. The type genome for the species is the GenBank assembly GCA\_002505945.1. The GC content of the type genome is 37.6 % and the genome length is 1.04 Mbp.

#### **Description of *Candidatus Foricarcha* gen. nov.**

*Candidatus Foricarcha* (NL. fem. n. *Foricarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA119*. The type species for the genus is *Candidatus Foricarcha resalifica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA119*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Foricarchaceae*.

#### **Description of *Candidatus Foricarchaceae* fam. nov.**

*Candidatus Foricarchaceae* (NL. fem. n. *Foricarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA119*. The type genus for the taxon is *Candidatus Foricarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Forinarcha dibapitudo* sp. nov.**

*Candidatus Forinarcha dibapitudo* (NL. fem. n. *dibapitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2688965 sp002688965*. The type genome for the species is the GenBank assembly GCA\_002688965.1. The GC content of the type genome is 33.71 % and the genome length is 1.9 Mbp.

#### **Description of *Candidatus Forinarcha* gen. nov.**

*Candidatus Forinarcha* (NL. fem. n. *Forinarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2688965*. The type species for the genus is *Candidatus Forinarcha dibapitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-2688965*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Forinarchaceae*.

#### **Description of *Candidatus Forinarchaceae* fam. nov.**

*Candidatus Forinarchaceae* (NL. fem. n. *Forinarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GCA-2688965*. The type genus for the taxon is *Candidatus Forinarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order

*GW2011-AR5*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Pericarchales.

#### **Description of *Candidatus* Fuligarcha cerebatio sp. nov.**

*Candidatus* Fuligarcha cerebatio (NL. fem. n. *cerebatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSLFO1 sp011051215*. The type genome for the species is the GenBank assembly GCA\_011054055.1. The GC content of the type genome is 45.48 % and the genome length is 1.36 Mbp.

#### **Description of *Candidatus* Fuligarcha gen. nov.**

*Candidatus* Fuligarcha (NL. fem. n. *Fuligarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSLFO1*. The type species for the genus is *Candidatus* Fuligarcha cerebatio .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Nugacarchaceae.

#### **Description of *Candidatus* Fumacarcha turicicella sp. nov.**

*Candidatus* Fumacarcha turicicella (NL. fem. n. *turicicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSFO01 sp011056475*. The type genome for the species is the GenBank assembly GCA\_011056475.1. The GC content of the type genome is 32.24 % and the genome length is 1.04 Mbp.

#### **Description of *Candidatus* Fumacarcha gen. nov.**

*Candidatus* Fumacarcha (NL. fem. n. *Fumacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSFO01*. The type species for the genus is *Candidatus* Fumacarcha turicicella .



According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Fumifarcha decomicella* sp. nov.**

*Candidatus Fumifarcha decomicella* (NL. fem. n. *decomicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B24-2 sp002490245*. The type genome for the species is the GenBank assembly GCA\_002490245.1. The GC content of the type genome is 47.36 % and the genome length is 1.35 Mbp.

**Description of *Candidatus Fumifarcha* gen. nov.**

*Candidatus Fumifarcha* (NL. fem. n. *Fumifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B24-2*. The type species for the genus is *Candidatus Fumifarcha decomicella* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B24-2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Fumifarchaceae*.

**Description of *Candidatus Fumifarchaceae* fam. nov.**

*Candidatus Fumifarchaceae* (NL. fem. n. *Fumifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B24-2*. The type genus for the taxon is *Candidatus Fumifarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Remularchales*.

**Description of *Candidatus Funamarcha funivigena* sp. nov.**

*Candidatus Funamarcha funivigena* (NL. fem. n. *funivigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKIS01 sp007117755*. The type genome for the species is the GenBank

assembly GCA\_007117755.1. The GC content of the type genome is 31.69 % and the genome length is 0.78 Mbp.

#### **Description of *Candidatus Funamarcha* gen. nov.**

*Candidatus Funamarcha* (NL. fem. n. *Funamarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SKIS01*. The type species for the genus is *Candidatus Funamarcha funivigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family 21-14-0-10-32-9. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Colimarchaceae*.

#### **Description of *Candidatus Funamarcha volubitura* sp. nov.**

*Candidatus Funamarcha volubitura* (NL. fem. n. *volubitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKIS01 sp007116295*. The type genome for the species is the GenBank assembly GCA\_007116295.1. The GC content of the type genome is 32.26 % and the genome length is 0.49 Mbp.

#### **Description of *Candidatus Funebarcha fatifibra* sp. nov.**

*Candidatus Funebarcha fatifibra* (NL. fem. n. *fatifibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRIF01 sp011052825*. The type genome for the species is the GenBank assembly GCA\_011052825.1. The GC content of the type genome is 33.81 % and the genome length is 1.99 Mbp.

#### **Description of *Candidatus Funebarcha* gen. nov.**

*Candidatus Funebarcha* (NL. fem. n. *Funebarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRIF01*. The type species for the genus is *Candidatus Funebarcha fatifibra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family

*JdFR-43*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pimenarchaceae.

**Description of *Candidatus* Funivarcha cosigilenta sp. nov.**

*Candidatus* Funivarcha cosigilenta (NL. fem. n. *cosigilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SpSt-1190 sp011049195*. The type genome for the species is the GenBank assembly GCA\_011049195.1. The GC content of the type genome is 52.54 % and the genome length is 0.69 Mbp.

**Description of *Candidatus* Funivarcha gen. nov.**

*Candidatus* Funivarcha (NL. fem. n. *Funivarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SpSt-1190*. The type species for the genus is *Candidatus* Funivarcha cosigilenta .

According to the original version of GTDB R06-RS202, this genus belongs to the family *SpSt-1190*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Funivarchaceae.

**Description of *Candidatus* Funivarchaceae fam. nov.**

*Candidatus* Funivarchaceae (NL. fem. n. *Funivarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SpSt-1190*. The type genus for the taxon is *Candidatus* Funivarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *SpSt-1190*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Funivarchales.

**Description of *Candidatus* Funivarchales ord. nov.**

*Candidatus* Funivarchales (NL. fem. n. *Funivarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SpSt-1190*. The type genus for the taxon is *Candidatus* Funivarcha .

According to the original version of GTDB R06-RS202, this family belongs to the class *SpSt-1190*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Funivarchae*.

#### **Description of *Candidatus Funivarchae* class. nov.**

*Candidatus Funivarchae* (NL. fem. n. *c\_\_Funivarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SpSt-1190*. The type genus for the taxon is *Candidatus Funivarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the phylum *SpSt-1190*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the phylum *Candidatus Funivarchota*.

#### **Description of *Candidatus Funivarchota* phyl. nov.**

*Candidatus Funivarchota* (NL. fem. n. *Funivarchota* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SpSt-1190*. The type genus for the taxon is *Candidatus Funivarcha*.

According to GTDB R06-RS202, this phylum belongs to the domain *Archaea*.

#### **Description of *Candidatus Furibarcha detosiforma* sp. nov.**

*Candidatus Furibarcha detosiforma* (NL. fem. n. *detosiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMZZ01 sp003663445*. The type genome for the species is the GenBank assembly GCA\_003663445.1. The GC content of the type genome is 46.9 % and the genome length is 0.57 Mbp.

#### **Description of *Candidatus Furibarcha* gen. nov.**

*Candidatus Furibarcha* (NL. fem. n. *Furibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMZZ01*. The type species for the genus is *Candidatus Furibarcha detosiforma*.

According to the original version of GTDB R06-RS202, this genus belongs to the family

*QMZZ01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Furibarchaceae.

#### **Description of *Candidatus* Furibarchaceae fam. nov.**

*Candidatus* Furibarchaceae (NL. fem. n. *Furibarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMZZ01*. The type genus for the taxon is *Candidatus* Furibarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *QMZP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Detorarchales.

#### **Description of *Candidatus* Fusifarcha dimadibra sp. nov.**

*Candidatus* Fusifarcha dimadibra (NL. fem. n. *dimadibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIPHS01 sp903864915*. The type genome for the species is the GenBank assembly GCA\_903857235.1. The GC content of the type genome is 42.29 % and the genome length is 0.66 Mbp.

#### **Description of *Candidatus* Fusifarcha gen. nov.**

*Candidatus* Fusifarcha (NL. fem. n. *Fusifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIPHS01*. The type species for the genus is *Candidatus* Fusifarcha dimadibra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10117*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pinigarchaceae.

#### **Description of *Candidatus* Futatarcha derecifica sp. nov.**

*Candidatus* Futatarcha derecifica (NL. fem. n. *derecifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *JAAEEW01 sp013415595*. The type genome for the species is the GenBank assembly GCA\_013415595.1. The GC content of the type genome is 60.54 % and the genome length is 1.94 Mbp.

#### **Description of *Candidatus Futatarcha* gen. nov.**

*Candidatus Futatarcha* (NL. fem. n. *Futatarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAAEEW01*. The type species for the genus is *Candidatus Futatarcha derecifica*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Galacarcha tomogimonia* sp. nov.**

*Candidatus Galacarcha tomogimonia* (NL. fem. n. *tomogimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *LC-3 sp001940645*. The type genome for the species is the GenBank assembly GCA\_001940645.1. The GC content of the type genome is 29.72 % and the genome length is 5.68 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "LokiAmp MDA-amplified sample from Loki s castle hydrothermal vent sediment".

#### **Description of *Candidatus Galacarcha* gen. nov.**

*Candidatus Galacarcha* (NL. fem. n. *Galacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *LC-3*. The type species for the genus is *Candidatus Galacarcha tomogimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *LC-3*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Galacarchaceae*.

#### **Description of *Candidatus Galacarchaceae* fam. nov.**

*Candidatus Galacarchaceae* (NL. fem. n. *Galacarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this taxon is *LC-3*. The type genus for the taxon is *Candidatus Galacarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *LC-3*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Galacarchales*.

### **Description of *Candidatus Galacarchales* ord. nov.**

*Candidatus Galacarchales* (NL. fem. n. *Galacarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *LC-3*. The type genus for the taxon is *Candidatus Galacarcha* .

According to the GTDB R06-RS202, this order belongs to the class *Heimdallarchaeia*.

### **Description of *Candidatus Gasifarcha detenibra* sp. nov.**

*Candidatus Gasifarcha detenibra* (NL. fem. n. *detenibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BIN-L-1 sp003096235*. The type genome for the species is the GenBank assembly GCA\_003096235.1. The GC content of the type genome is 41.65 % and the genome length is 2.25 Mbp.

### **Description of *Candidatus Gasifarcha* gen. nov.**

*Candidatus Gasifarcha* (NL. fem. n. *Gasifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BIN-L-1*. The type species for the genus is *Candidatus Gasifarcha detenibra* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *BA1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Hemitarhaceae*.

### **Description of *Candidatus Gasifarcha lanifastra* sp. nov.**

*Candidatus Gasifarcha lanifastra* (NL. fem. n. *lanifastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *BIN-L-1 sp004376385*. The type genome for the species is the GenBank assembly GCA\_004376385.1. The GC content of the type genome is 43.35 % and the genome length is 1.59 Mbp.

#### **Description of *Candidatus Gasifarcha viburetta* sp. nov.**

*Candidatus Gasifarcha viburetta* (NL. fem. n. *viburetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BIN-L-1 sp003096255*. The type genome for the species is the GenBank assembly GCA\_003096255.1. The GC content of the type genome is 43.5 % and the genome length is 2.33 Mbp.

#### **Description of *Candidatus Gasomarcha capudax* sp. nov.**

*Candidatus Gasomarcha capudax* (NL. fem. n. *capudax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA349 sp002839705*. The type genome for the species is the GenBank assembly GCA\_002839705.1. The GC content of the type genome is 32.96 % and the genome length is 2.57 Mbp.

#### **Description of *Candidatus Gasomarcha* gen. nov.**

*Candidatus Gasomarcha* (NL. fem. n. *Gasomarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA349*. The type species for the genus is *Candidatus Gasomarcha capudax*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Gasomarcha corocatio* sp. nov.**

*Candidatus Gasomarcha corocatio* (NL. fem. n. *corocatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA349 sp002509745*. The type genome for the species is the GenBank assembly GCA\_002509745.1. The GC content of the type genome is 32.63 % and the genome length is 2.25 Mbp.



### **Description of *Candidatus Genufarcha benemousia* sp. nov.**

*Candidatus Genufarcha benemousia* (NL. fem. n. *benemousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMZS01 sp003663295*. The type genome for the species is the GenBank assembly GCA\_003663295.1. The GC content of the type genome is 32.9 % and the genome length is 0.82 Mbp.

### **Description of *Candidatus Genufarcha* gen. nov.**

*Candidatus Genufarcha* (NL. fem. n. *Genufarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMZS01*. The type species for the genus is *Candidatus Genufarcha benemousia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZS01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Genufarchaceae*.

### **Description of *Candidatus Genufarchaceae* fam. nov.**

*Candidatus Genufarchaceae* (NL. fem. n. *Genufarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMZS01*. The type genus for the taxon is *Candidatus Genufarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *QMZS01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Genufarchales*.

### **Description of *Candidatus Genufarchales* ord. nov.**

*Candidatus Genufarchales* (NL. fem. n. *Genufarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMZS01*. The type genus for the taxon is *Candidatus Genufarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the class *QMZS01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Genufarchae*.

### **Description of *Candidatus Genufarchae* class. nov.**

*Candidatus Genufarchae* (NL. fem. n. *c\_\_Genufarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMZS01*. The type genus for the taxon is *Candidatus Genufarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the phylum *QMZS01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the phylum *Candidatus Genufarchota*.

### **Description of *Candidatus Genufarchota* phyl. nov.**

*Candidatus Genufarchota* (NL. fem. n. *Genufarchota* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMZS01*. The type genus for the taxon is *Candidatus Genufarcha*.

According to GTDB R06-RS202, this phylum belongs to the domain *Archaea*.

### **Description of *Candidatus Genufarcha subadilenta* sp. nov.**

*Candidatus Genufarcha subadilenta* (NL. fem. n. *subadilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMZS01 sp003663355*. The type genome for the species is the GenBank assembly GCA\_003663355.1. The GC content of the type genome is 30.13 % and the genome length is 0.75 Mbp.

### **Description of *Candidatus Geoglobus conarimonia* sp. nov.**

*Candidatus Geoglobus conarimonia* (NL. fem. n. *conarimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Geoglobus sp002494725*. The type genome for the species is the GenBank assembly GCA\_004366975.1. The GC content of the type genome is 44.48 % and the genome length is 1.86 Mbp.

### **Description of *Candidatus Gerunarcha dimacricula* sp. nov.**

*Candidatus Gerunarcha dimacricula* (NL. fem. n. *dimacricula* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B14-G17 sp003649515*. The type genome for the species is the GenBank assembly GCA\_003649345.1. The GC content of the type genome is 44.48 % and the genome length is 1.76 Mbp.

#### **Description of *Candidatus Gerunarcha* gen. nov.**

*Candidatus Gerunarcha* (NL. fem. n. *Gerunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B14-G17*. The type species for the genus is *Candidatus Gerunarcha dimacacula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B20-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Holisarchaceae*.

#### **Description of *Candidatus Giganarcha catagitoga* sp. nov.**

*Candidatus Giganarcha catagitoga* (NL. fem. n. *catagitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIib-O1 sp002496905*. The type genome for the species is the GenBank assembly GCA\_002498215.1. The GC content of the type genome is 45.64 % and the genome length is 0.99 Mbp.

#### **Description of *Candidatus Giganarcha* gen. nov.**

*Candidatus Giganarcha* (NL. fem. n. *Giganarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIib-O1*. The type species for the genus is *Candidatus Giganarcha catagitoga*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Giganarcha culigago* sp. nov.**

*Candidatus Giganarcha culigago* (NL. fem. n. *culigago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O1 sp002498525*. The type genome for the species is the GenBank assembly GCA\_004195625.1. The GC content of the type genome is 56.27 % and the genome length is 1.5 Mbp.

#### **Description of *Candidatus Giganarcha dehisax* sp. nov.**

*Candidatus Giganarcha dehisax* (NL. fem. n. *dehisax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O1 sp002685415*. The type genome for the species is the GenBank assembly GCA\_002685415.1. The GC content of the type genome is 42.68 % and the genome length is 1.62 Mbp.

#### **Description of *Candidatus Giganarcha diluvatio* sp. nov.**

*Candidatus Giganarcha diluvatio* (NL. fem. n. *diluvatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O1 sp002502365*. The type genome for the species is the GenBank assembly GCA\_002502365.1. The GC content of the type genome is 43.51 % and the genome length is 1.08 Mbp.

#### **Description of *Candidatus Giganarcha direpilega* sp. nov.**

*Candidatus Giganarcha direpilega* (NL. fem. n. *direpilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O1 sp002502175*. The type genome for the species is the GenBank assembly GCA\_002502325.1. The GC content of the type genome is 45.58 % and the genome length is 1.33 Mbp.

#### **Description of *Candidatus Giganarcha doxoletta* sp. nov.**

*Candidatus Giganarcha doxoletta* (NL. fem. n. *doxoletta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *MGIIB-O1 sp002708385*. The type genome for the species is the GenBank assembly GCA\_002708385.1. The GC content of the type genome is 43.51 % and the genome length is 1.14 Mbp.

#### **Description of *Candidatus Giganarcha feculilega* sp. nov.**

*Candidatus Giganarcha feculilega* (NL. fem. n. *feculilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O1 sp002497895*. The type genome for the species is the GenBank assembly GCA\_002499365.1. The GC content of the type genome is 52.11 % and the genome length is 1.46 Mbp.

#### **Description of *Candidatus Giganarcha genocibula* sp. nov.**

*Candidatus Giganarcha genocibula* (NL. fem. n. *genocibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O1 sp12570u*. The type genome for the species is the GenBank assembly GCA\_013330385.1. The GC content of the type genome is 44.54 % and the genome length is 1.25 Mbp.

#### **Description of *Candidatus Giganarcha mirabitus* sp. nov.**

*Candidatus Giganarcha mirabitus* (NL. fem. n. *mirabitus* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O1 sp902560445*. The type genome for the species is the GenBank assembly GCA\_902560445.1. The GC content of the type genome is 45.12 % and the genome length is 1.1 Mbp.

#### **Description of *Candidatus Giganarcha notabatica* sp. nov.**

*Candidatus Giganarcha notabatica* (NL. fem. n. *notabatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O1 sp8684u*. The type genome for the species is the GenBank assembly GCA\_002499425.1. The GC content of the type genome is 53.05 % and the genome length is 1.4 Mbp.

### **Description of *Candidatus Giganarcha notacax* sp. nov.**

*Candidatus Giganarcha notacax* (NL. fem. n. *notacax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O1 sp002497025*. The type genome for the species is the GenBank assembly GCA\_002503725.1. The GC content of the type genome is 44.99 % and the genome length is 1.19 Mbp.

### **Description of *Candidatus Giganarcha pavimatica* sp. nov.**

*Candidatus Giganarcha pavimatica* (NL. fem. n. *pavimatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O1 sp002457595*. The type genome for the species is the GenBank assembly GCA\_002457595.1. The GC content of the type genome is 43.65 % and the genome length is 0.89 Mbp.

### **Description of *Candidatus Giganarcha recucugo* sp. nov.**

*Candidatus Giganarcha recucugo* (NL. fem. n. *recucugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O1 sp002457555*. The type genome for the species is the GenBank assembly GCA\_002501975.1. The GC content of the type genome is 45.86 % and the genome length is 1.29 Mbp.

### **Description of *Candidatus Giganarcha repagitoga* sp. nov.**

*Candidatus Giganarcha repagitoga* (NL. fem. n. *repagitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O1 sp002498725*. The type genome for the species is the GenBank assembly GCA\_002502055.1. The GC content of the type genome is 40.43 % and the genome length is 1.55 Mbp.

### **Description of *Candidatus Habacarcha vatilastra* sp. nov.**

*Candidatus Habacarcha vatilastra* (NL. fem. n. *vatilastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACAFH01 sp013538715*. The type genome for the species is the GenBank assembly GCA\_013538715.1. The GC content of the type genome is 31.89 % and the genome length is 1.46 Mbp.

#### **Description of *Candidatus Habacarcha* gen. nov.**

*Candidatus Habacarcha* (NL. fem. n. *Habacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JACAFH01*. The type species for the genus is *Candidatus Habacarcha vatilastra* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Hadarchaeum demulitas* sp. nov.**

*Candidatus Hadarchaeum demulitas* (NL. fem. n. *demulitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Hadarchaeum sp014361095*. The type genome for the species is the GenBank assembly GCA\_014361095.1. The GC content of the type genome is 51.89 % and the genome length is 1.2 Mbp.

#### **Description of *Candidatus Haladaptatus gasomitas* sp. nov.**

*Candidatus Haladaptatus gasomitas* (NL. fem. n. *gasomitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haladaptatus sp001625445*. The type genome for the species is the GenBank assembly RS\_GCF\_001625445.1. The GC content of the type genome is 60.18 % and the genome length is 4.9 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "saltern".

#### **Description of *Candidatus Haladaptatus homogibula* sp. nov.**

*Candidatus Haladaptatus homogibula* (NL. fem. n. *homogibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haladaptatus sp003298465*. The type genome for the species is the GenBank assembly RS\_GCF\_003298465.1. The GC content of the type genome is 62.96 % and the genome length is 5.61 Mbp.

**Description of *Candidatus Halapricum cacopitudo* sp. nov.**

*Candidatus Halapricum cacopitudo* (NL. fem. n. *cacopitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halapricum sp009741825*. The type genome for the species is the GenBank assembly RS\_GCF\_009741825.1. The GC content of the type genome is 66.19 % and the genome length is 2.97 Mbp.

**Description of *Candidatus Halegenticoccus nutabibra* sp. nov.**

*Candidatus Halegenticoccus nutabibra* (NL. fem. n. *nutabibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halegenticoccus sp004116405*. The type genome for the species is the GenBank assembly RS\_GCF\_004116405.1. The GC content of the type genome is 64.72 % and the genome length is 4.89 Mbp.

**Description of *Candidatus Haloarcula cacomisca* sp. nov.**

*Candidatus Haloarcula cacomisca* (NL. fem. n. *cacomisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloarcula sp005406125*. The type genome for the species is the GenBank assembly RS\_GCF\_005406125.1. The GC content of the type genome is 62.08 % and the genome length is 4.22 Mbp.

**Description of *Candidatus Haloarcula gasifax* sp. nov.**

*Candidatus Haloarcula gasifax* (NL. fem. n. *gasifax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloarcula sp001485575*. The type genome for the species is the GenBank assembly RS\_GCF\_001485575.1. The GC content of the type genome is 60.95 % and the genome length is 4.36 Mbp. The isolation source for the NCBI BioSample



associated with the type genome is described as "solar salt".

**Description of *Candidatus Haloarcula sanabitio* sp. nov.**

*Candidatus Haloarcula sanabitio* (NL. fem. n. *sanabitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloarcula* sp008729015. The type genome for the species is the GenBank assembly RS\_GCF\_008729015.1. The GC content of the type genome is 61.58 % and the genome length is 4.05 Mbp.

**Description of *Candidatus Halobacterium bipalastra* sp. nov.**

*Candidatus Halobacterium bipalastra* (NL. fem. n. *bipalastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobacterium* sp009741975. The type genome for the species is the GenBank assembly RS\_GCF\_009741975.1. The GC content of the type genome is 68.15 % and the genome length is 2.73 Mbp.

**Description of *Candidatus Halobacterium culigastra* sp. nov.**

*Candidatus Halobacterium culigastra* (NL. fem. n. *culigastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobacterium* sp000230955. The type genome for the species is the GenBank assembly RS\_GCF\_000230955.2. The GC content of the type genome is 66.43 % and the genome length is 3.16 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "not provided; submitted under MIGS 2.1".

**Description of *Candidatus Halobacterium galacitica* sp. nov.**

*Candidatus Halobacterium galacitica* (NL. fem. n. *galacitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobacterium* sp011734195. The type genome for the species is the GenBank assembly RS\_GCF\_011734195.1. The GC content of the type genome is 67.94 % and the genome length is 2.98 Mbp.

#### **Description of *Candidatus Halobacterium metapugo* sp. nov.**

*Candidatus Halobacterium metapugo* (NL. fem. n. *metapugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobacterium* sp009831555. The type genome for the species is the GenBank assembly RS\_GCF\_009831555.1. The GC content of the type genome is 66.78 % and the genome length is 3.5 Mbp.

#### **Description of *Candidatus Halobacterium sicubago* sp. nov.**

*Candidatus Halobacterium sicubago* (NL. fem. n. *sicubago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobacterium* sp001485535. The type genome for the species is the GenBank assembly RS\_GCF\_001485535.1. The GC content of the type genome is 65.95 % and the genome length is 3.01 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "solar salt".

#### **Description of *Candidatus Halobaculum codififorma* sp. nov.**

*Candidatus Halobaculum codififorma* (NL. fem. n. *codififorma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobaculum* sp013402875. The type genome for the species is the GenBank assembly RS\_GCF\_013402875.1. The GC content of the type genome is 68.65 % and the genome length is 4.26 Mbp.

#### **Description of *Candidatus Halobaculum denorousia* sp. nov.**

*Candidatus Halobaculum denorousia* (NL. fem. n. *denorousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobaculum* sp009831625. The type genome for the species is the GenBank assembly RS\_GCF\_009831625.1. The GC content of the type genome is 67.62 % and the genome length is 3.78 Mbp.

#### **Description of *Candidatus Halobaculum detenedo* sp. nov.**

*Candidatus Halobaculum detenedo* (NL. fem. n. *detenedo* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobaculum sp003020945*. The type genome for the species is the GenBank assembly GCA\_003020945.1. The GC content of the type genome is 70.91 % and the genome length is 2.65 Mbp.

**Description of *Candidatus Halobaculum divorastra* sp. nov.**

*Candidatus Halobaculum divorastra* (NL. fem. n. *divorastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobaculum sp013401515*. The type genome for the species is the GenBank assembly RS\_GCF\_013401515.1. The GC content of the type genome is 67.2 % and the genome length is 4.28 Mbp.

**Description of *Candidatus Halobellus deculimonia* sp. nov.**

*Candidatus Halobellus deculimonia* (NL. fem. n. *deculimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobellus sp003665925*. The type genome for the species is the GenBank assembly RS\_GCF\_003665925.1. The GC content of the type genome is 63.56 % and the genome length is 3.87 Mbp.

**Description of *Candidatus Halobellus dilemiforma* sp. nov.**

*Candidatus Halobellus dilemiforma* (NL. fem. n. *dilemiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobellus sp014212355*. The type genome for the species is the GenBank assembly RS\_GCF\_014212355.1. The GC content of the type genome is 66.46 % and the genome length is 3.49 Mbp.

**Description of *Candidatus Halobellus verecilenta* sp. nov.**

*Candidatus Halobellus verecilenta* (NL. fem. n. *verecilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halobellus sp003665935*. The type genome for the species is the GenBank assembly RS\_GCF\_003665935.1. The GC content of the type genome is 66.32 % and the genome length is 3.55 Mbp.

**Description of *Candidatus Halococcus cinipimonas* sp. nov.**

*Candidatus Halococcus cinipimonas* (NL. fem. n. *cinipimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halococcus sp003022925*. The type genome for the species is the GenBank assembly GCA\_003022925.1. The GC content of the type genome is 65.19 % and the genome length is 3.28 Mbp.

**Description of *Candidatus Halococcus desonentia* sp. nov.**

*Candidatus Halococcus desonentia* (NL. fem. n. *desonentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halococcus sp003022685*. The type genome for the species is the GenBank assembly GCA\_003022685.1. The GC content of the type genome is 66.96 % and the genome length is 2.17 Mbp.

**Description of *Candidatus Halococcus detecago* sp. nov.**

*Candidatus Halococcus detecago* (NL. fem. n. *detecago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halococcus sp003021705*. The type genome for the species is the GenBank assembly GCA\_003021705.1. The GC content of the type genome is 64.08 % and the genome length is 2.83 Mbp.

**Description of *Candidatus Halococcus divulgatura* sp. nov.**

*Candidatus Halococcus divulgatura* (NL. fem. n. *divulgatura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halococcus sp003021045*. The type genome for the species is the GenBank assembly GCA\_003021045.1. The GC content of the type genome is 69.36 % and the genome length is 2.57 Mbp.

### **Description of *Candidatus Halococcus monopago* sp. nov.**

*Candidatus Halococcus monopago* (NL. fem. n. *monopago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halococcus* sp003021725. The type genome for the species is the GenBank assembly GCA\_003021725.1. The GC content of the type genome is 64.87 % and the genome length is 3.05 Mbp.

### **Description of *Candidatus Halococcus recoriforma* sp. nov.**

*Candidatus Halococcus recoriforma* (NL. fem. n. *recoriforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halococcus* sp003021235. The type genome for the species is the GenBank assembly GCA\_003021235.1. The GC content of the type genome is 64.65 % and the genome length is 3.6 Mbp.

### **Description of *Candidatus Haloferax capabedo* sp. nov.**

*Candidatus Haloferax capabedo* (NL. fem. n. *capabedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloferax* sp001482285. The type genome for the species is the GenBank assembly RS\_GCF\_001482285.1. The GC content of the type genome is 65.06 % and the genome length is 3.98 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "salt mine".

### **Description of *Candidatus Haloferax cucurisca* sp. nov.**

*Candidatus Haloferax cucurisca* (NL. fem. n. *cucurisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloferax* sp009674625. The type genome for the species is the GenBank assembly RS\_GCF\_008806905.1. The GC content of the type genome is 61.06 % and the genome length is 3.48 Mbp.

### **Description of *Candidatus Haloferax direcigena* sp. nov.**

*Candidatus Haloferax direcigena* (NL. fem. n. *direcigena* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloferax sp009674585*. The type genome for the species is the GenBank assembly RS\_GCF\_009674585.1. The GC content of the type genome is 60.79 % and the genome length is 3.49 Mbp.

#### **Description of *Candidatus Haloferax pericitoga* sp. nov.**

*Candidatus Haloferax pericitoga* (NL. fem. n. *pericitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloferax sp001469875*. The type genome for the species is the GenBank assembly RS\_GCF\_001469875.2. The GC content of the type genome is 65.66 % and the genome length is 3.9 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "brine-seawater interface".

#### **Description of *Candidatus Haloferax repagessa* sp. nov.**

*Candidatus Haloferax repagessa* (NL. fem. n. *repagessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloferax sp001469865*. The type genome for the species is the GenBank assembly RS\_GCF\_001469865.1. The GC content of the type genome is 60.85 % and the genome length is 3.83 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "brine-seawater interface".

#### **Description of *Candidatus Haloferax secunentia* sp. nov.**

*Candidatus Haloferax secunentia* (NL. fem. n. *secunentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloferax sp009674605*. The type genome for the species is the GenBank assembly RS\_GCF\_008806815.1. The GC content of the type genome is 61.69 % and the genome length is 3.56 Mbp.

#### **Description of *Candidatus Halohasta dilecedo* sp. nov.**

*Candidatus Halohasta dilecedo* (NL. fem. n. *dilecedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halohasta sp001563795*. The type genome for the species is the GenBank assembly GCA\_001563795.1. The GC content of the type genome is 57.8 % and the genome length is 2.37 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample B1-Br-g2; brine of Lake Bitter-1".

**Description of *Candidatus Halohasta mutabilenta* sp. nov.**

*Candidatus Halohasta mutabilenta* (NL. fem. n. *mutabilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halohasta sp003554115*. The type genome for the species is the GenBank assembly GCA\_003554115.1. The GC content of the type genome is 58.82 % and the genome length is 1.51 Mbp.

**Description of *Candidatus Halolamina cuticago* sp. nov.**

*Candidatus Halolamina cuticago* (NL. fem. n. *cuticago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halolamina sp000224475*. The type genome for the species is the GenBank assembly RS\_GCF\_000224475.1. The GC content of the type genome is 62.38 % and the genome length is 3.64 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "not provided; submitted under MIGS 2.1".

**Description of *Candidatus Halolamina lapicigena* sp. nov.**

*Candidatus Halolamina lapicigena* (NL. fem. n. *lapicigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halolamina sp002025255*. The type genome for the species is the GenBank assembly RS\_GCF\_002025255.2. The GC content of the type genome is 66.75 % and the genome length is 3.47 Mbp.

**Description of *Candidatus Halomarina benepastra* sp. nov.**

*Candidatus Halomarina benepastra* (NL. fem. n. *benepastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halomarina sp003021975*. The type genome for the species is the GenBank assembly GCA\_003021975.1. The GC content of the type genome is 70.52 % and the genome length is 2.61 Mbp.

**Description of *Candidatus Halomicroarcula recogitia* sp. nov.**

*Candidatus Halomicroarcula recogitia* (NL. fem. n. *recogitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halomicroarcula sp003020925*. The type genome for the species is the GenBank assembly GCA\_003020925.1. The GC content of the type genome is 64.66 % and the genome length is 2.2 Mbp.

**Description of *Candidatus Halomicroarcula veliviforma* sp. nov.**

*Candidatus Halomicroarcula veliviforma* (NL. fem. n. *veliviforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halomicroarcula sp003021755*. The type genome for the species is the GenBank assembly GCA\_003021755.1. The GC content of the type genome is 66.83 % and the genome length is 1.73 Mbp.

**Description of *Candidatus Halomicroarcula venucibra* sp. nov.**

*Candidatus Halomicroarcula venucibra* (NL. fem. n. *venucibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halomicroarcula sp004681185*. The type genome for the species is the GenBank assembly RS\_GCF\_004681185.1. The GC content of the type genome is 62.0 % and the genome length is 5.04 Mbp.

**Description of *Candidatus Halomicrobium luculicella* sp. nov.**

*Candidatus Halomicrobium luculicella* (NL. fem. n. *luculicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halomicrobium sp003021685*. The type genome for the species is the GenBank assembly GCA\_003021685.1. The GC content of the type genome is 61.94 %



and the genome length is 2.64 Mbp.

**Description of *Candidatus Halomicrobium perexitoga* sp. nov.**

*Candidatus Halomicrobium perexitoga* (NL. fem. n. *perexitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halomicrobium sp009617995*. The type genome for the species is the GenBank assembly RS\_GCF\_012726095.1. The GC content of the type genome is 65.65 % and the genome length is 3.4 Mbp.

**Description of *Candidatus Halonotius decenatio* sp. nov.**

*Candidatus Halonotius decenatio* (NL. fem. n. *decenatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halonotius sp003605575*. The type genome for the species is the GenBank assembly RS\_GCF\_003605575.1. The GC content of the type genome is 61.22 % and the genome length is 2.47 Mbp.

**Description of *Candidatus Halonotius dicibicula* sp. nov.**

*Candidatus Halonotius dicibicula* (NL. fem. n. *dicibicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halonotius sp000496215*. The type genome for the species is the GenBank assembly GCA\_000496215.1. The GC content of the type genome is 63.14 % and the genome length is 2.39 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "hypersaline water sample from Lake Tyrrell".

**Description of *Candidatus Haloquadratum velifimonas* sp. nov.**

*Candidatus Haloquadratum velifimonas* (NL. fem. n. *velifimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloquadratum sp000416005*. The type genome for the species is the GenBank assembly GCA\_000416005.1. The GC content of the type genome is 50.68 % and the genome length is 3.02 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "filtered surface water from Lake

Tyrrell".

**Description of *Candidatus Halorhabdus depetitoga* sp. nov.**

*Candidatus Halorhabdus depetitoga* (NL. fem. n. *depetitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorhabdus sp009690625*. The type genome for the species is the GenBank assembly RS\_GCF\_009797925.1. The GC content of the type genome is 62.42 % and the genome length is 2.62 Mbp.

**Description of *Candidatus Halorhabdus duponibula* sp. nov.**

*Candidatus Halorhabdus duponibula* (NL. fem. n. *duponibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorhabdus sp004944975*. The type genome for the species is the GenBank assembly RS\_GCF\_004944975.1. The GC content of the type genome is 62.1 % and the genome length is 3.46 Mbp.

**Description of *Candidatus Halorhabdus hibisitia* sp. nov.**

*Candidatus Halorhabdus hibisitia* (NL. fem. n. *hibisitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorhabdus sp013839425*. The type genome for the species is the GenBank assembly RS\_GCF\_013839425.1. The GC content of the type genome is 61.51 % and the genome length is 2.86 Mbp.

**Description of *Candidatus Halorientalis biparatio* sp. nov.**

*Candidatus Halorientalis biparatio* (NL. fem. n. *biparatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorientalis sp004118325*. The type genome for the species is the GenBank assembly RS\_GCF\_004118325.1. The GC content of the type genome is 65.7 % and the genome length is 4.09 Mbp.

**Description of *Candidatus Halorientalis homolibula* sp. nov.**

*Candidatus Halorientalis homolibula* (NL. fem. n. *homolibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorientalis sp005049285*. The type genome for the species is the GenBank assembly RS\_GCF\_005049285.1. The GC content of the type genome is 64.24 % and the genome length is 3.66 Mbp.

**Description of *Candidatus Halorientalis recoritica* sp. nov.**

*Candidatus Halorientalis recoritica* (NL. fem. n. *recoritica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorientalis sp001989615*. The type genome for the species is the GenBank assembly RS\_GCF\_001989615.1. The GC content of the type genome is 65.58 % and the genome length is 3.78 Mbp.

**Description of *Candidatus Halorubellus vepalivita* sp. nov.**

*Candidatus Halorubellus vepalivita* (NL. fem. n. *vepalivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubellus sp011440375*. The type genome for the species is the GenBank assembly RS\_GCF\_011440375.1. The GC content of the type genome is 68.12 % and the genome length is 3.76 Mbp.

**Description of *Candidatus Halorubrum bicorimonas* sp. nov.**

*Candidatus Halorubrum bicorimonas* (NL. fem. n. *bicorimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp002252755*. The type genome for the species is the GenBank assembly RS\_GCF\_002252925.1. The GC content of the type genome is 67.65 % and the genome length is 3.74 Mbp.

**Description of *Candidatus Halorubrum bifaritudo* sp. nov.**

*Candidatus Halorubrum bifaritudo* (NL. fem. n. *bifaritudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp000746205*. The type genome for the species is the GenBank assembly RS\_GCF\_000746205.1. The GC content of the type genome is 66.01 % and the genome length is 2.77 Mbp.

**Description of *Candidatus Halorubrum cacalilenta* sp. nov.**

*Candidatus Halorubrum cacalilenta* (NL. fem. n. *cacalilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp002286985*. The type genome for the species is the GenBank assembly RS\_GCF\_002286985.1. The GC content of the type genome is 67.4 % and the genome length is 3.51 Mbp.

**Description of *Candidatus Halorubrum calipax* sp. nov.**

*Candidatus Halorubrum calipax* (NL. fem. n. *calipax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp003990725*. The type genome for the species is the GenBank assembly RS\_GCF\_003990725.2. The GC content of the type genome is 66.64 % and the genome length is 3.04 Mbp.

**Description of *Candidatus Halorubrum decapetta* sp. nov.**

*Candidatus Halorubrum decapetta* (NL. fem. n. *decapetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp003287355*. The type genome for the species is the GenBank assembly RS\_GCF\_003287355.1. The GC content of the type genome is 66.11 % and the genome length is 3.58 Mbp.

**Description of *Candidatus Halorubrum defeticella* sp. nov.**

*Candidatus Halorubrum defeticella* (NL. fem. n. *defeticella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp003023405*. The type genome for the species is the GenBank assembly GCA\_003023405.1. The GC content of the type genome is 67.71 %

and the genome length is 2.44 Mbp.

**Description of *Candidatus Halorubrum deforitica* sp. nov.**

*Candidatus Halorubrum deforitica* (NL. fem. n. *deforitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum* sp009806985. The type genome for the species is the GenBank assembly RS\_GCF\_009806985.1. The GC content of the type genome is 68.36 % and the genome length is 3.11 Mbp.

**Description of *Candidatus Halorubrum doxolimonas* sp. nov.**

*Candidatus Halorubrum doxolimonas* (NL. fem. n. *doxolimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum* sp003781945. The type genome for the species is the GenBank assembly RS\_GCF\_003781945.1. The GC content of the type genome is 66.47 % and the genome length is 3.72 Mbp.

**Description of *Candidatus Halorubrum fetulugo* sp. nov.**

*Candidatus Halorubrum fetulugo* (NL. fem. n. *fetulugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum* sp003721435. The type genome for the species is the GenBank assembly RS\_GCF\_003721435.2. The GC content of the type genome is 67.66 % and the genome length is 3.58 Mbp.

**Description of *Candidatus Halorubrum hecaticula* sp. nov.**

*Candidatus Halorubrum hecaticula* (NL. fem. n. *hecaticula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum* sp000296615. The type genome for the species is the GenBank assembly RS\_GCF\_000296615.1. The GC content of the type genome is 68.48 % and the genome length is 3.17 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "solar saltern from Mohei salt mine".

**Description of *Candidatus Halorubrum maxumimonia* sp. nov.**

*Candidatus Halorubrum maxumimonia* (NL. fem. n. *maxumimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp003666015*. The type genome for the species is the GenBank assembly RS\_GCF\_003666015.1. The GC content of the type genome is 66.47 % and the genome length is 4.14 Mbp.

**Description of *Candidatus Halorubrum menapastra* sp. nov.**

*Candidatus Halorubrum menapastra* (NL. fem. n. *menapastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp001261915*. The type genome for the species is the GenBank assembly RS\_GCF\_001261915.1. The GC content of the type genome is 67.56 % and the genome length is 3.25 Mbp.

**Description of *Candidatus Halorubrum nefanatio* sp. nov.**

*Candidatus Halorubrum nefanatio* (NL. fem. n. *nefanatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp005435165*. The type genome for the species is the GenBank assembly RS\_GCF\_005435165.1. The GC content of the type genome is 67.39 % and the genome length is 3.32 Mbp.

**Description of *Candidatus Halorubrum notabitus* sp. nov.**

*Candidatus Halorubrum notabitus* (NL. fem. n. *notabitus* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp001564205*. The type genome for the species is the GenBank assembly GCA\_001564005.1. The GC content of the type genome is 64.48 % and the genome length is 1.48 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample PL-Br10; brine of Picturesque Lake".

**Description of *Candidatus Halorubrum pepenivita* sp. nov.**

*Candidatus Halorubrum pepenivita* (NL. fem. n. *pepenivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp003554605*. The type genome for the species is the GenBank assembly GCA\_003551525.1. The GC content of the type genome is 66.73 % and the genome length is 1.11 Mbp.

**Description of *Candidatus Halorubrum petulax* sp. nov.**

*Candidatus Halorubrum petulax* (NL. fem. n. *petulax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp004114375*. The type genome for the species is the GenBank assembly RS\_GCF\_004114375.1. The GC content of the type genome is 65.89 % and the genome length is 3.67 Mbp.

**Description of *Candidatus Halorubrum rudecousia* sp. nov.**

*Candidatus Halorubrum rudecousia* (NL. fem. n. *rudecousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp003697845*. The type genome for the species is the GenBank assembly RS\_GCF\_003697845.1. The GC content of the type genome is 66.1 % and the genome length is 3.59 Mbp.

**Description of *Candidatus Halorubrum sanabimonia* sp. nov.**

*Candidatus Halorubrum sanabimonia* (NL. fem. n. *sanabimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum sp000496175*. The type genome for the species is the GenBank assembly GCA\_000496175.1. The GC content of the type genome is 67.15 % and the genome length is 2.89 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "hypersaline water sample from Lake Tyrrell".

**Description of *Candidatus Halorubrum vocamigena* sp. nov.**

*Candidatus Halorubrum vocamigena* (NL. fem. n. *vocamigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorubrum* sp009742825. The type genome for the species is the GenBank assembly RS\_GCF\_009742825.1. The GC content of the type genome is 65.8 % and the genome length is 3.23 Mbp.

**Description of *Candidatus Halorussus detecitica* sp. nov.**

*Candidatus Halorussus detecitica* (NL. fem. n. *detecitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorussus* sp010747475. The type genome for the species is the GenBank assembly RS\_GCF\_010747475.1. The GC content of the type genome is 64.95 % and the genome length is 4.41 Mbp.

**Description of *Candidatus Halorussus monacimonas* sp. nov.**

*Candidatus Halorussus monacimonas* (NL. fem. n. *monacimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorussus* sp003023465. The type genome for the species is the GenBank assembly GCA\_003023465.1. The GC content of the type genome is 65.22 % and the genome length is 2.51 Mbp.

**Description of *Candidatus Halorussus morigentia* sp. nov.**

*Candidatus Halorussus morigentia* (NL. fem. n. *morigentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorussus* sp005239435. The type genome for the species is the GenBank assembly RS\_GCF\_005239435.1. The GC content of the type genome is 63.29 % and the genome length is 5.15 Mbp.

**Description of *Candidatus Halorussus nubeciforma* sp. nov.**

*Candidatus Halorussus nubeciforma* (NL. fem. n. *nubeciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorussus* sp004765795. The type genome for the species is the GenBank assembly RS\_GCF\_004521895.1. The GC content of the type genome is 67.11 % and the genome length is 3.23 Mbp.



% and the genome length is 3.62 Mbp.

**Description of *Candidatus Halorussus rumifousia* sp. nov.**

*Candidatus Halorussus rumifousia* (NL. fem. n. *rumifousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorussus* sp004087835. The type genome for the species is the GenBank assembly RS\_GCF\_004087835.1. The GC content of the type genome is 63.77 % and the genome length is 3.49 Mbp.

**Description of *Candidatus Halorussus solipitura* sp. nov.**

*Candidatus Halorussus solipitura* (NL. fem. n. *solipitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorussus* sp008831545. The type genome for the species is the GenBank assembly RS\_GCF\_008831545.1. The GC content of the type genome is 61.52 % and the genome length is 4.45 Mbp.

**Description of *Candidatus Halorussus viragitio* sp. nov.**

*Candidatus Halorussus viragitio* (NL. fem. n. *viragitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halorussus* sp004765805. The type genome for the species is the GenBank assembly RS\_GCF\_004765805.1. The GC content of the type genome is 67.27 % and the genome length is 3.93 Mbp.

**Description of *Candidatus Halosimplex cenotitudo* sp. nov.**

*Candidatus Halosimplex cenotitudo* (NL. fem. n. *cenotitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halosimplex* sp004698125. The type genome for the species is the GenBank assembly RS\_GCF\_004698125.1. The GC content of the type genome is 69.99 % and the genome length is 4.47 Mbp.

**Description of *Candidatus Halosimplex cepurugo* sp. nov.**

*Candidatus Halosimplex cepurugo* (NL. fem. n. *cepurugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halosimplex sp003730195*. The type genome for the species is the GenBank assembly RS\_GCF\_003730195.1. The GC content of the type genome is 66.81 % and the genome length is 5.07 Mbp.

**Description of *Candidatus Halosimplex molecousia* sp. nov.**

*Candidatus Halosimplex molecousia* (NL. fem. n. *molecousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halosimplex sp003023165*. The type genome for the species is the GenBank assembly GCA\_003022045.1. The GC content of the type genome is 67.27 % and the genome length is 2.18 Mbp.

**Description of *Candidatus Halostagnicola loceledo* sp. nov.**

*Candidatus Halostagnicola loceledo* (NL. fem. n. *loceledo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halostagnicola sp000691505*. The type genome for the species is the GenBank assembly RS\_GCF\_000691505.1. The GC content of the type genome is 60.78 % and the genome length is 3.18 Mbp.

**Description of *Candidatus Halostella gemebousia* sp. nov.**

*Candidatus Halostella gemebousia* (NL. fem. n. *gemebousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halostella sp003675875*. The type genome for the species is the GenBank assembly RS\_GCF\_003675875.1. The GC content of the type genome is 67.18 % and the genome length is 4.12 Mbp.

**Description of *Candidatus Halostella totidastra* sp. nov.**

*Candidatus Halostella totidastra* (NL. fem. n. *totidastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halostella sp003023565*. The type genome for the species is the GenBank assembly GCA\_003023565.1. The GC content of the type genome is 68.11 % and the genome length is 2.88 Mbp.

**Description of *Candidatus Haloterrigena homagitia* sp. nov.**

*Candidatus Haloterrigena homagitia* (NL. fem. n. *homagitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Haloterrigena sp013342135*. The type genome for the species is the GenBank assembly RS\_GCF\_013342135.1. The GC content of the type genome is 65.59 % and the genome length is 4.99 Mbp.

**Description of *Candidatus Halovenus decinitas* sp. nov.**

*Candidatus Halovenus decinitas* (NL. fem. n. *decinitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp003021335*. The type genome for the species is the GenBank assembly GCA\_003021335.1. The GC content of the type genome is 67.46 % and the genome length is 1.49 Mbp.

**Description of *Candidatus Halovenus dilogitica* sp. nov.**

*Candidatus Halovenus dilogitica* (NL. fem. n. *dilogitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp003022725*. The type genome for the species is the GenBank assembly GCA\_003022725.1. The GC content of the type genome is 65.37 % and the genome length is 2.63 Mbp.

**Description of *Candidatus Halovenus funivilega* sp. nov.**

*Candidatus Halovenus funivilega* (NL. fem. n. *funivilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp001564135*. The type genome for the species is the GenBank assembly GCA\_001564135.1. The GC content of the type genome is 54.95 %

and the genome length is 2.1 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample Tc-Br; brine of Tanatar trona crystallizer".

**Description of *Candidatus Halovenus homuliforma* sp. nov.**

*Candidatus Halovenus homuliforma* (NL. fem. n. *homuliforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp003551265*. The type genome for the species is the GenBank assembly GCA\_003551265.1. The GC content of the type genome is 59.52 % and the genome length is 2.91 Mbp.

**Description of *Candidatus Halovenus lupanifica* sp. nov.**

*Candidatus Halovenus lupanifica* (NL. fem. n. *lupanifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp003022085*. The type genome for the species is the GenBank assembly GCA\_003022085.1. The GC content of the type genome is 65.67 % and the genome length is 1.55 Mbp.

**Description of *Candidatus Halovenus malivisca* sp. nov.**

*Candidatus Halovenus malivisca* (NL. fem. n. *malivisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp003021015*. The type genome for the species is the GenBank assembly GCA\_003023415.1. The GC content of the type genome is 65.9 % and the genome length is 2.23 Mbp.

**Description of *Candidatus Halovenus pinacimonas* sp. nov.**

*Candidatus Halovenus pinacimonas* (NL. fem. n. *pinacimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp009831575*. The type genome for the species is the GenBank assembly RS\_GCF\_009831575.1. The GC content of the type genome is 63.97 % and the genome length is 3.25 Mbp.

#### **Description of *Candidatus Halovenus relapax* sp. nov.**

*Candidatus Halovenus relapax* (NL. fem. n. *relapax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp003022845*. The type genome for the species is the GenBank assembly GCA\_003022845.1. The GC content of the type genome is 66.0 % and the genome length is 2.28 Mbp.

#### **Description of *Candidatus Halovenus relenifica* sp. nov.**

*Candidatus Halovenus relenifica* (NL. fem. n. *relenifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp003021285*. The type genome for the species is the GenBank assembly GCA\_003021285.1. The GC content of the type genome is 64.73 % and the genome length is 1.96 Mbp.

#### **Description of *Candidatus Halovenus rumifitica* sp. nov.**

*Candidatus Halovenus rumifitica* (NL. fem. n. *rumifitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp003551945*. The type genome for the species is the GenBank assembly GCA\_003551945.1. The GC content of the type genome is 54.83 % and the genome length is 2.43 Mbp.

#### **Description of *Candidatus Halovenus seposibra* sp. nov.**

*Candidatus Halovenus seposibra* (NL. fem. n. *seposibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp000416085*. The type genome for the species is the GenBank assembly GCA\_000416085.1. The GC content of the type genome is 64.06 % and the genome length is 2.98 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "filtered surface water from Lake Tyrrell".

#### **Description of *Candidatus Halovenus vociforma* sp. nov.**

*Candidatus* Halovenus vociforma (NL. fem. n. *vociforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovenus sp004015825*. The type genome for the species is the GenBank assembly RS\_GCF\_004015825.1. The GC content of the type genome is 58.96 % and the genome length is 3.76 Mbp.

#### **Description of *Candidatus* Halovivax saxifitia sp. nov.**

*Candidatus* Halovivax saxifitia (NL. fem. n. *saxifitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovivax sp007119345*. The type genome for the species is the GenBank assembly GCA\_007119345.1. The GC content of the type genome is 68.64 % and the genome length is 3.86 Mbp.

#### **Description of *Candidatus* Halovivax supelatio sp. nov.**

*Candidatus* Halovivax supelatio (NL. fem. n. *supelatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Halovivax sp007135505*. The type genome for the species is the GenBank assembly GCA\_007135505.1. The GC content of the type genome is 64.45 % and the genome length is 2.44 Mbp.

#### **Description of *Candidatus* Halucarcha hirunastra sp. nov.**

*Candidatus* Halucarcha hirunastra (NL. fem. n. *hirunastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QS-1-68-17 sp003021105*. The type genome for the species is the GenBank assembly GCA\_003021105.1. The GC content of the type genome is 68.32 % and the genome length is 2.07 Mbp.

#### **Description of *Candidatus* Halucarcha gen. nov.**

*Candidatus* Halucarcha (NL. fem. n. *Halucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QS-1-68-17*. The type species for the genus is *Candidatus Halucarcha hironastra*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Haricarcha cenobago* sp. nov.**

*Candidatus Haricarcha cenobago* (NL. fem. n. *cenobago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SpSt-971 sp011334385*. The type genome for the species is the GenBank assembly GCA\_011334385.1. The GC content of the type genome is 34.11 % and the genome length is 0.46 Mbp.

#### **Description of *Candidatus Haricarcha* gen. nov.**

*Candidatus Haricarcha* (NL. fem. n. *Haricarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SpSt-971*. The type species for the genus is *Candidatus Haricarcha cenobago*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SCSR01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cucurarchaceae*.

#### **Description of *Candidatus Hecatarcha conopricula* sp. nov.**

*Candidatus Hecatarcha conopricula* (NL. fem. n. *conopricula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10452 sp009665115*. The type genome for the species is the GenBank assembly GCA\_009665115.1. The GC content of the type genome is 39.3 % and the genome length is 2.54 Mbp.

#### **Description of *Candidatus Hecatarcha* gen. nov.**

*Candidatus Hecatarcha* (NL. fem. n. *Hecatarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this genus is *UBA10452*. The type species for the genus is *Candidatus Hecatarcha conopricula* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Hecatarcha loceletta* sp. nov.**

*Candidatus Hecatarcha loceletta* (NL. fem. n. *loceletta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10452 sp003176995*. The type genome for the species is the GenBank assembly GCA\_003176995.1. The GC content of the type genome is 38.89 % and the genome length is 3.97 Mbp.

#### **Description of *Candidatus Hecatarcha ratifitura* sp. nov.**

*Candidatus Hecatarcha ratifitura* (NL. fem. n. *ratifitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10452 sp002501855*. The type genome for the species is the GenBank assembly GCA\_002501935.1. The GC content of the type genome is 38.86 % and the genome length is 3.05 Mbp.

#### **Description of *Candidatus Hecatarcha venuniforma* sp. nov.**

*Candidatus Hecatarcha venuniforma* (NL. fem. n. *venuniforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10452 sp009898475*. The type genome for the species is the GenBank assembly RS\_GCF\_009898475.1. The GC content of the type genome is 38.92 % and the genome length is 2.34 Mbp.

#### **Description of *Candidatus Hegumarcha* gen. nov.**

*Candidatus Hegumarcha* (NL. fem. n. *Hegumarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTBJ01*. The type species for the genus is *Candidatus Hegumarcha marinus\_A* .

According to GTDB R06-RS202, this genus belongs to the family .



### **Description of *Candidatus Hemidarcha buxifimonia* sp. nov.**

*Candidatus Hemidarcha buxifimonia* (NL. fem. n. *buxifimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA460 sp013166775*. The type genome for the species is the GenBank assembly GCA\_013166775.1. The GC content of the type genome is 32.91 % and the genome length is 3.85 Mbp.

### **Description of *Candidatus Hemidarcha* gen. nov.**

*Candidatus Hemidarcha* (NL. fem. n. *Hemidarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA460*. The type species for the genus is *Candidatus Hemidarcha buxifimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA460*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Hemidarchaceae*.

### **Description of *Candidatus Hemidarchaceae* fam. nov.**

*Candidatus Hemidarchaceae* (NL. fem. n. *Hemidarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA460*. The type genus for the taxon is *Candidatus Hemidarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA460*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Hemidarchales*.

### **Description of *Candidatus Hemidarchales* ord. nov.**

*Candidatus Hemidarchales* (NL. fem. n. *Hemidarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA460*. The type genus for the taxon is *Candidatus Hemidarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Heimdallarchaeia*.

### **Description of *Candidatus Hemidarcha defetax* sp. nov.**

*Candidatus Hemidarcha defetax* (NL. fem. n. *defetax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA460 sp001940755*. The type genome for the species is the GenBank assembly GCA\_001940755.1. The GC content of the type genome is 33.36 % and the genome length is 2.28 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Marine sediment".

#### **Description of *Candidatus Hemidarcha dicibitudo* sp. nov.**

*Candidatus Hemidarcha dicibitudo* (NL. fem. n. *dicibitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA460 sp002505645*. The type genome for the species is the GenBank assembly GCA\_002505645.1. The GC content of the type genome is 33.41 % and the genome length is 2.83 Mbp.

#### **Description of *Candidatus Hemitarcha didacigena* sp. nov.**

*Candidatus Hemitarcha didacigena* (NL. fem. n. *didacigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BAL sp001399805*. The type genome for the species is the GenBank assembly GCA\_001399805.1. The GC content of the type genome is 47.09 % and the genome length is 1.93 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Formation waters from coalbed methane well".

#### **Description of *Candidatus Hemitarcha* gen. nov.**

*Candidatus Hemitarcha* (NL. fem. n. *Hemitarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BAL*. The type species for the genus is *Candidatus Hemitarcha didacigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *BAL*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Hemitarchaceae*.

#### **Description of *Candidatus Hemitarchaceae* fam. nov.**

*Candidatus* Hemitarchaceae (NL. fem. n. *Hemitarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *BAl*. The type genus for the taxon is *Candidatus* Hemitarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Remularchales.

### **Description of *Candidatus* Herinarcha direcitia sp. nov.**

*Candidatus* Herinarcha direcitia (NL. fem. n. *direcitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO2 sp004347865*. The type genome for the species is the GenBank assembly GCA\_011332835.1. The GC content of the type genome is 45.85 % and the genome length is 1.52 Mbp.

### **Description of *Candidatus* Herinarcha gen. nov.**

*Candidatus* Herinarcha (NL. fem. n. *Herinarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WYZ-LMO2*. The type species for the genus is *Candidatus* Herinarcha direcitia .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus* Herinarcha refacibula sp. nov.**

*Candidatus* Herinarcha refacibula (NL. fem. n. *refacibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO2 sp004347825*. The type genome for the species is the GenBank assembly GCA\_004347845.1. The GC content of the type genome is 43.93 % and the genome length is 1.57 Mbp.

### **Description of *Candidatus* Herinarcha vinulugo sp. nov.**

*Candidatus* Herinarcha vinulugo (NL. fem. n. *vinulugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO2 sp011361745*. The type genome for the species is the GenBank assembly GCA\_011329185.1. The GC content of the type genome is 47.09 % and the genome length is 1.32 Mbp.

#### **Description of *Candidatus Herinarcha volucastra* sp. nov.**

*Candidatus Herinarcha volucastra* (NL. fem. n. *volucastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO2 sp011605865*. The type genome for the species is the GenBank assembly GCA\_011605865.1. The GC content of the type genome is 41.68 % and the genome length is 1.27 Mbp.

#### **Description of *Candidatus Hexagarcha ceroficula* sp. nov.**

*Candidatus Hexagarcha ceroficula* (NL. fem. n. *ceroficula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SURF-65 sp003599055*. The type genome for the species is the GenBank assembly GCA\_003599055.1. The GC content of the type genome is 51.52 % and the genome length is 1.15 Mbp.

#### **Description of *Candidatus Hexagarcha* gen. nov.**

*Candidatus Hexagarcha* (NL. fem. n. *Hexagarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SURF-65*. The type species for the genus is *Candidatus Hexagarcha ceroficula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS49*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Terebarchaceae*.

#### **Description of *Candidatus Hexamarcha defenentia* sp. nov.**

*Candidatus Hexamarcha defenentia* (NL. fem. n. *defenentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2688035 sp002688035*. The type genome for the species is the GenBank assembly GCA\_002688035.1. The GC content of the type genome is 41.28 % and the genome length is 0.75 Mbp.

#### **Description of *Candidatus Hexamarcha* gen. nov.**

*Candidatus Hexamarcha* (NL. fem. n. *Hexamarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2688035*. The type species for the genus is *Candidatus Hexamarcha defenentia* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-2688035*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Hexamarchaceae*.

#### **Description of *Candidatus Hexamarchaceae* fam. nov.**

*Candidatus Hexamarchaceae* (NL. fem. n. *Hexamarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GCA-2688035*. The type genus for the taxon is *Candidatus Hexamarcha* .

According to GTDB R06-RS202, this family belongs to the order *Iainarchaeales*.

#### **Description of *Candidatus Hexaparcha tegumisca* sp. nov.**

*Candidatus Hexaparcha tegumisca* (NL. fem. n. *tegumisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIVED01 sp903904885*. The type genome for the species is the GenBank assembly GCA\_903904885.1. The GC content of the type genome is 42.49 % and the genome length is 1.31 Mbp.

#### **Description of *Candidatus Hexaparcha* gen. nov.**

*Candidatus Hexaparcha* (NL. fem. n. *Hexaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this genus is *CAIVED01*. The type species for the genus is *Candidatus Hexaparcha tegumisca*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CAIVOO01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Timefarchaceae*.

#### **Description of *Candidatus Hibisarcha vehicetta* sp. nov.**

*Candidatus Hibisarcha vehicetta* (NL. fem. n. *vehicetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *1-14-0-10-37-12 sp002762795*. The type genome for the species is the GenBank assembly GCA\_002762795.1. The GC content of the type genome is 36.82 % and the genome length is 1.35 Mbp.

#### **Description of *Candidatus Hibisarcha* gen. nov.**

*Candidatus Hibisarcha* (NL. fem. n. *Hibisarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *1-14-0-10-37-12*. The type species for the genus is *Candidatus Hibisarcha vehicetta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS49*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Terebarchaceae*.

#### **Description of *Candidatus Hirudarcha bipinax* sp. nov.**

*Candidatus Hirudarcha bipinax* (NL. fem. n. *bipinax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOKP01 sp013375475*. The type genome for the species is the GenBank assembly GCA\_013375475.1. The GC content of the type genome is 32.54 % and the genome length is 3.92 Mbp.

#### **Description of *Candidatus Hirudarcha* gen. nov.**

*Candidatus Hirudarcha* (NL. fem. n. *Hirudarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SOKP01*. The type species for the genus is *Candidatus Hirudarcha bipinax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SOKP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Hirudarchaceae*.

#### **Description of *Candidatus Hirudarchaceae* fam. nov.**

*Candidatus Hirudarchaceae* (NL. fem. n. *Hirudarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SOKP01*. The type genus for the taxon is *Candidatus Hirudarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *CR-4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Lametarchales*.

#### **Description of *Candidatus Hirudarcha canacago* sp. nov.**

*Candidatus Hirudarcha canacago* (NL. fem. n. *canacago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOKP01 sp013375485*. The type genome for the species is the GenBank assembly GCA\_013375485.1. The GC content of the type genome is 29.93 % and the genome length is 4.6 Mbp.

#### **Description of *Candidatus Hirudarcha cerevitudo* sp. nov.**

*Candidatus Hirudarcha cerevitudo* (NL. fem. n. *cerevitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOKP01 sp005222975*. The type genome for the species is the GenBank assembly GCA\_005222975.1. The GC content of the type genome is 31.51 % and the genome length is 3.52 Mbp.

#### **Description of *Candidatus Hirudarcha cicatilega* sp. nov.**

*Candidatus Hirudarcha cicatilega* (NL. fem. n. *cicatilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOKP01 sp011364925*. The type genome for the species is the GenBank assembly GCA\_011364925.1. The GC content of the type genome is 32.98 % and the genome length is 3.92 Mbp.

**Description of *Candidatus Hirudarcha decupousia* sp. nov.**

*Candidatus* Hirudarcha decupousia (NL. fem. n. *decupousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOKP01 sp004524725*. The type genome for the species is the GenBank assembly GCA\_004524725.1. The GC content of the type genome is 32.08 % and the genome length is 2.41 Mbp.

**Description of *Candidatus Hirudarcha deforatio* sp. nov.**

*Candidatus* Hirudarcha deforatio (NL. fem. n. *deforatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOKP01 sp013375495*. The type genome for the species is the GenBank assembly GCA\_013375495.1. The GC content of the type genome is 32.3 % and the genome length is 4.24 Mbp.

**Description of *Candidatus Hirudarcha laculastra* sp. nov.**

*Candidatus* Hirudarcha laculastra (NL. fem. n. *laculastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOKP01 sp004375715*. The type genome for the species is the GenBank assembly GCA\_004375715.1. The GC content of the type genome is 32.3 % and the genome length is 3.07 Mbp.

**Description of *Candidatus Hirudarcha ludibitudo* sp. nov.**

*Candidatus* Hirudarcha ludibitudo (NL. fem. n. *ludibitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOKP01 sp005223125*. The type genome for the species is the GenBank assembly GCA\_005223125.1. The GC content of the type genome is 29.85 %



and the genome length is 4.13 Mbp.

**Description of *Candidatus Hirudarcha veriditio* sp. nov.**

*Candidatus* Hirudarcha veriditio (NL. fem. n. *veriditio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOKP01 sp011364975*. The type genome for the species is the GenBank assembly GCA\_011364975.1. The GC content of the type genome is 30.62 % and the genome length is 3.74 Mbp.

**Description of *Candidatus Hirunarcha cululitoga* sp. nov.**

*Candidatus* Hirunarcha cululitoga (NL. fem. n. *cululitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARK-15 sp009758405*. The type genome for the species is the GenBank assembly GCA\_009758305.1. The GC content of the type genome is 35.95 % and the genome length is 1.4 Mbp.

**Description of *Candidatus Hirunarcha* gen. nov.**

*Candidatus* Hirunarcha (NL. fem. n. *Hirunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARK-15*. The type species for the genus is *Candidatus* Hirunarcha cululitoga .

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARK-15*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Hirunarchaceae.

**Description of *Candidatus Hirunarchaceae* fam. nov.**

*Candidatus* Hirunarchaceae (NL. fem. n. *Hirunarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *ARK-15*. The type genus for the taxon is *Candidatus* Hirunarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *ARK-15*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Hirunarchales.

### **Description of *Candidatus* Hirunarchales ord. nov.**

*Candidatus* Hirunarchales (NL. fem. n. *Hirunarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *ARK-15*. The type genus for the taxon is *Candidatus* Hirunarcha .

According to the GTDB R06-RS202, this order belongs to the class *Thermoplasmata*.

### **Description of *Candidatus* Hirunarcha remulitrix sp. nov.**

*Candidatus* Hirunarcha remulitrix (NL. fem. n. *remulitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARK-15 sp002878135*. The type genome for the species is the GenBank assembly GCA\_002878135.1. The GC content of the type genome is 41.01 % and the genome length is 1.37 Mbp.

### **Description of *Candidatus* Holisarcha caduratica sp. nov.**

*Candidatus* Holisarcha caduratica (NL. fem. n. *caduratica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B20-G17 sp003650785*. The type genome for the species is the GenBank assembly GCA\_003650785.1. The GC content of the type genome is 39.15 % and the genome length is 1.45 Mbp.

### **Description of *Candidatus* Holisarcha gen. nov.**

*Candidatus* Holisarcha (NL. fem. n. *Holisarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B20-G17*. The type species for the genus is *Candidatus* Holisarcha caduratica .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B20-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Holisarchaceae.

### **Description of *Candidatus* Holisarchaceae fam. nov.**

*Candidatus* Holisarchaceae (NL. fem. n. *Holisarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B20-G17*. The type genus for the taxon is *Candidatus* Holisarcha .

According to GTDB R06-RS202, this family belongs to the order *Thermofilales*.

#### **Description of *Candidatus* Holovarcha vicecilega sp. nov.**

*Candidatus* Holovarcha vicecilega (NL. fem. n. *vicecilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA587 sp002504725*. The type genome for the species is the GenBank assembly GCA\_002504725.1. The GC content of the type genome is 37.1 % and the genome length is 2.01 Mbp.

#### **Description of *Candidatus* Holovarcha gen. nov.**

*Candidatus* Holovarcha (NL. fem. n. *Holovarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA587*. The type species for the genus is *Candidatus* Holovarcha vicecilega .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Homagarcha gen. nov.**

*Candidatus* Homagarcha (NL. fem. n. *Homagarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARK-14*. The type species for the genus is *Candidatus* Homagarcha fontis\_A .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Homagarcha seposigena sp. nov.**

*Candidatus* Homagarcha seposigena (NL. fem. n. *seposigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARK-14 sp002899805*. The type genome for the species is the GenBank assembly GCA\_002899805.1. The GC content of the type genome is 43.83 % and the genome length is 1.46 Mbp.

**Description of *Candidatus Homicarcha ceromago* sp. nov.**

*Candidatus Homicarcha ceromago* (NL. fem. n. *ceromago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QENH01 sp013139985*. The type genome for the species is the GenBank assembly GCA\_013139985.1. The GC content of the type genome is 42.88 % and the genome length is 2.13 Mbp.

**Description of *Candidatus Homicarcha* gen. nov.**

*Candidatus Homicarcha* (NL. fem. n. *Homicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QENH01*. The type species for the genus is *Candidatus Homicarcha ceromago*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ANME-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Loriparchaceae*.

**Description of *Candidatus Homicarcha depubousia* sp. nov.**

*Candidatus Homicarcha depubousia* (NL. fem. n. *depubousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QENH01 sp009903405*. The type genome for the species is the GenBank assembly GCA\_009903405.1. The GC content of the type genome is 42.76 % and the genome length is 1.53 Mbp.

**Description of *Candidatus Homicarcha masocitrix* sp. nov.**

*Candidatus Homicarcha masocitrix* (NL. fem. n. *masocitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QENH01 sp013180565*. The type genome for the species is the GenBank assembly GCA\_013180565.1. The GC content of the type genome is 42.03 % and the genome length is 2.73 Mbp.

**Description of *Candidatus Homicarcha tomogifica* sp. nov.**

*Candidatus Homicarcha tomogifica* (NL. fem. n. *tomogifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QENH01 sp003336485*. The type genome for the species is the GenBank assembly GCA\_003336485.1. The GC content of the type genome is 42.89 % and the genome length is 3.18 Mbp.

**Description of *Candidatus Homilarcha cilibigena* sp. nov.**

*Candidatus Homilarcha cilibigena* (NL. fem. n. *cilibigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B63 sp003601695*. The type genome for the species is the GenBank assembly GCA\_003601695.1. The GC content of the type genome is 42.73 % and the genome length is 1.26 Mbp.

**Description of *Candidatus Homilarcha* gen. nov.**

*Candidatus Homilarcha* (NL. fem. n. *Homilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B63*. The type species for the genus is *Candidatus Homilarcha cilibigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Remularchaceae*.

**Description of *Candidatus Homilarcha funiventia* sp. nov.**

*Candidatus Homilarcha funiventia* (NL. fem. n. *funiventia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *B63 sp003601725*. The type genome for the species is the GenBank assembly GCA\_003601725.1. The GC content of the type genome is 44.83 % and the genome length is 1.2 Mbp.

**Description of *Candidatus Homilarcha murilimonas* sp. nov.**

*Candidatus Homilarcha murilimonas* (NL. fem. n. *murilimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B63 sp003661975*. The type genome for the species is the GenBank assembly GCA\_003661975.1. The GC content of the type genome is 45.65 % and the genome length is 1.78 Mbp.

**Description of *Candidatus Homilarcha tomacigena* sp. nov.**

*Candidatus Homilarcha tomacigena* (NL. fem. n. *tomacigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B63 sp001593845*. The type genome for the species is the GenBank assembly GCA\_001593845.1. The GC content of the type genome is 53.87 % and the genome length is 0.86 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "marine sediment sample collected by push cores at a deep sea vent site during cruise AT15-25 on Alvin dive 4358; sediment was oily and the sediment surface was covered with a white microbial mat".

**Description of *Candidatus Homogarcha recorimonas* sp. nov.**

*Candidatus Homogarcha recorimonas* (NL. fem. n. *recorimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PXYB01 sp003352285*. The type genome for the species is the GenBank assembly GCA\_003352285.1. The GC content of the type genome is 35.55 % and the genome length is 1.69 Mbp.

**Description of *Candidatus Homogarcha* gen. nov.**

*Candidatus Homogarcha* (NL. fem. n. *Homogarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PXYB01*. The type species for the genus is *Candidatus Homogarcha recorimonas*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Homogarcha rubeciforma* sp. nov.**

*Candidatus Homogarcha rubeciforma* (NL. fem. n. *rubeciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PXYB01 sp014078545*. The type genome for the species is the GenBank assembly RS\_GCF\_014078545.1. The GC content of the type genome is 35.78 % and the genome length is 1.79 Mbp.

**Description of *Candidatus Homolarcha detumentia* sp. nov.**

*Candidatus Homolarcha detumentia* (NL. fem. n. *detumentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR11 sp12027u*. The type genome for the species is the GenBank assembly GCA\_013330865.1. The GC content of the type genome is 56.32 % and the genome length is 1.23 Mbp.

**Description of *Candidatus Homolarcha* gen. nov.**

*Candidatus Homolarcha* (NL. fem. n. *Homolarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GW2011-AR11*. The type species for the genus is *Candidatus Homolarcha detumentia* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Dehonarchaceae*.

**Description of *Candidatus Homularcha depupiforma* sp. nov.**

*Candidatus Homularcha depupiforma* (NL. fem. n. *depupiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B17-G15 sp003649495*. The type genome for the species is the GenBank assembly GCA\_003649375.1. The GC content of the type genome is 57.88 %

and the genome length is 2.16 Mbp.

**Description of *Candidatus Homularcha* gen. nov.**

*Candidatus Homularcha* (NL. fem. n. *Homularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B17-G15*. The type species for the genus is *Candidatus Homularcha depupiforma*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Homunarcha gemebastra* sp. nov.**

*Candidatus Homunarcha gemebastra* (NL. fem. n. *gemebastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAZWY01 sp014240455*. The type genome for the species is the GenBank assembly GCA\_014240455.1. The GC content of the type genome is 35.12 % and the genome length is 0.46 Mbp.

**Description of *Candidatus Homunarcha* gen. nov.**

*Candidatus Homunarcha* (NL. fem. n. *Homunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAAZWY01*. The type species for the genus is *Candidatus Homunarcha gemebastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS21*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Relecarchaceae*.

**Description of *Candidatus Horomarcha voragax* sp. nov.**

*Candidatus Horomarcha voragax* (NL. fem. n. *voragax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMZG01 sp003663045*. The type genome for the species is the GenBank assembly GCA\_011042275.1. The GC content of the type genome is 39.11 % and the genome length is 0.79 Mbp.



### **Description of *Candidatus Horomarcha* gen. nov.**

*Candidatus Horomarcha* (NL. fem. n. *Horomarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMZG01*. The type species for the genus is *Candidatus Horomarcha voragax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZM01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugivarchaceae*.

### **Description of *Candidatus Humecarcha bicalastra* sp. nov.**

*Candidatus Humecarcha bicalastra* (NL. fem. n. *bicalastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-204 sp003661745*. The type genome for the species is the GenBank assembly GCA\_003661745.1. The GC content of the type genome is 44.07 % and the genome length is 1.08 Mbp.

### **Description of *Candidatus Humecarcha* gen. nov.**

*Candidatus Humecarcha* (NL. fem. n. *Humecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-204*. The type species for the genus is *Candidatus Humecarcha bicalastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *NBVN01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Redunarchaceae*.

### **Description of *Candidatus Humecarcha detesitas* sp. nov.**

*Candidatus Humecarcha detesitas* (NL. fem. n. *detesitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-204 sp002255065*. The type genome for the species is the GenBank assembly GCA\_002255065.1. The GC content of the type genome is 50.15 % and the genome length is 0.93 Mbp.

### **Description of *Candidatus Ignicoccus divorigena* sp. nov.**

*Candidatus Ignicoccus divorigena* (NL. fem. n. *divorigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Ignicoccus\_A sp013154085*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_013154085.1. The GC content of the type genome is 58.18 % and the genome length is 1.18 Mbp.

### **Description of *Candidatus Korarchaeum peropifica* sp. nov.**

*Candidatus Korarchaeum peropifica* (NL. fem. n. *peropifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Korarchaeum sp011056255*. The type genome for the species is the GenBank assembly GCA\_011056255.1. The GC content of the type genome is 47.85 % and the genome length is 1.54 Mbp.

### **Description of *Candidatus Korarchaeum retectitia* sp. nov.**

*Candidatus Korarchaeum retectitia* (NL. fem. n. *retectitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Korarchaeum sp003344655*. The type genome for the species is the GenBank assembly GCA\_003344655.1. The GC content of the type genome is 56.65 % and the genome length is 1.37 Mbp.

### **Description of *Candidatus Labecarcha bugilimonia* sp. nov.**

*Candidatus Labecarcha bugilimonia* (NL. fem. n. *bugilimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Tc-Br11 sp001564275*. The type genome for the species is the GenBank assembly GCA\_001564275.1. The GC content of the type genome is 63.6 % and the genome length is 3.16 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample Tc-Br; brine of Tanatar trona crystallizer".

### **Description of *Candidatus Labecarcha* gen. nov.**

*Candidatus Labecarcha* (NL. fem. n. *Labecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *Tc-Br11*. The type species for the genus is *Candidatus Labecarcha bugilimonia*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Labecarcha cufericula* sp. nov.**

*Candidatus Labecarcha cufericula* (NL. fem. n. *cufericula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Tc-Br11 sp003552325*. The type genome for the species is the GenBank assembly GCA\_003552325.1. The GC content of the type genome is 60.93 % and the genome length is 2.33 Mbp.

### **Description of *Candidatus Labecarcha velifilega* sp. nov.**

*Candidatus Labecarcha velifilega* (NL. fem. n. *velifilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Tc-Br11 sp001564285*. The type genome for the species is the GenBank assembly GCA\_001564285.1. The GC content of the type genome is 60.83 % and the genome length is 2.33 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample Tc-Br; brine of Tanatar trona crystallizer".

### **Description of *Candidatus Lacinarcha homunilega* sp. nov.**

*Candidatus Lacinarcha homunilega* (NL. fem. n. *homunilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B9-G16 sp003660965*. The type genome for the species is the GenBank assembly GCA\_003660965.1. The GC content of the type genome is 47.63 % and the genome length is 0.81 Mbp.

### **Description of *Candidatus Lacinarcha* gen. nov.**

*Candidatus* Lacinarcha (NL. fem. n. *Lacinarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B9-G16*. The type species for the genus is *Candidatus* Lacinarcha homunilega .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B9-G16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Lacinarchaceae.

### **Description of *Candidatus* Lacinarchaceae fam. nov.**

*Candidatus* Lacinarchaceae (NL. fem. n. *Lacinarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B9-G16*. The type genus for the taxon is *Candidatus* Lacinarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *B9-G16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Lacinarchales.

### **Description of *Candidatus* Lacinarchales ord. nov.**

*Candidatus* Lacinarchales (NL. fem. n. *Lacinarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B9-G16*. The type genus for the taxon is *Candidatus* Lacinarcha .

According to the GTDB R06-RS202, this order belongs to the class *Micrarchaeia*.

### **Description of *Candidatus* Lacularcha holisessa sp. nov.**

*Candidatus* Lacularcha holisessa (NL. fem. n. *holisessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GLR112 sp013139905*. The type genome for the species is the GenBank assembly GCA\_013139905.1. The GC content of the type genome is 32.76 % and the genome length is 1.31 Mbp.

### **Description of *Candidatus* Lacularcha gen. nov.**

*Candidatus* Lacularcha (NL. fem. n. *Lacularcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GLR112*. The type species for the genus is *Candidatus Lacularcha holisessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B79-G9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Vinacarchaceae*.

### **Description of *Candidatus Lametarcha dicimugo* sp. nov.**

*Candidatus Lametarcha dicimugo* (NL. fem. n. *dicimugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CR-4 sp001940655*. The type genome for the species is the GenBank assembly GCA\_001940655.1. The GC content of the type genome is 45.06 % and the genome length is 4.33 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 13ft depth".

### **Description of *Candidatus Lametarcha* gen. nov.**

*Candidatus Lametarcha* (NL. fem. n. *Lametarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CR-4*. The type species for the genus is *Candidatus Lametarcha dicimugo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CR-4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Lametarchaceae*.

### **Description of *Candidatus Lametarchaceae* fam. nov.**

*Candidatus Lametarchaceae* (NL. fem. n. *Lametarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CR-4*. The type genus for the taxon is *Candidatus Lametarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *CR-4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Lametarchales*.

### **Description of *Candidatus* Lametarchales ord. nov.**

*Candidatus* Lametarchales (NL. fem. n. *Lametarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CR-4*. The type genus for the taxon is *Candidatus* Lametarcha .

According to the GTDB R06-RS202, this order belongs to the class *Lokiarchaeia*.

### **Description of *Candidatus* Lanifarcha toluticella sp. nov.**

*Candidatus* Lanifarcha toluticella (NL. fem. n. *toluticella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SCGC-AAA011-G17 sp000402515*. The type genome for the species is the GenBank assembly GCA\_000380905.1. The GC content of the type genome is 31.95 % and the genome length is 1.16 Mbp.

### **Description of *Candidatus* Lanifarcha gen. nov.**

*Candidatus* Lanifarcha (NL. fem. n. *Lanifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SCGC-AAA011-G17*. The type species for the genus is *Candidatus* Lanifarcha toluticella .

According to the original version of GTDB R06-RS202, this genus belongs to the family *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Lanifarchaceae.

### **Description of *Candidatus* Lanifarchaceae fam. nov.**

*Candidatus* Lanifarchaceae (NL. fem. n. *Lanifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SCGC-AAA011-G17*. The type genus for the taxon is *Candidatus* Lanifarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Lanifarchales.

### **Description of *Candidatus Lanifarchales* ord. nov.**

*Candidatus Lanifarchales* (NL. fem. n. *Lanifarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SCGC-AAA011-G17*. The type genus for the taxon is *Candidatus Lanifarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Nanoarchaeia*.

### **Description of *Candidatus Lanigarcha baditilega* sp. nov.**

*Candidatus Lanigarcha baditilega* (NL. fem. n. *baditilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWKY01 sp003553085*. The type genome for the species is the GenBank assembly GCA\_003553355.1. The GC content of the type genome is 45.99 % and the genome length is 1.82 Mbp.

### **Description of *Candidatus Lanigarcha* gen. nov.**

*Candidatus Lanigarcha* (NL. fem. n. *Lanigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PWKY01*. The type species for the genus is *Candidatus Lanigarcha baditilega*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *PWKY01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Lanigarchaceae*.

### **Description of *Candidatus Lanigarchaceae* fam. nov.**

*Candidatus Lanigarchaceae* (NL. fem. n. *Lanigarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PWKY01*. The type genus for the taxon is *Candidatus Lanigarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *PWKY01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Lanifarchales*.

### **Description of *Candidatus Lanigarchales* ord. nov.**

*Candidatus Lanigarchales* (NL. fem. n. *Lanigarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PWKY01*. The type genus for the taxon is *Candidatus Lanigarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Thermoplasmata*.

### **Description of *Candidatus Lanigarcha defaricella* sp. nov.**

*Candidatus Lanigarcha defaricella* (NL. fem. n. *defaricella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWKY01 sp007133925*. The type genome for the species is the GenBank assembly GCA\_007133925.1. The GC content of the type genome is 50.04 % and the genome length is 1.38 Mbp.

### **Description of *Candidatus Lanigarcha mirifousia* sp. nov.**

*Candidatus Lanigarcha mirifousia* (NL. fem. n. *mirifousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWKY01 sp003560595*. The type genome for the species is the GenBank assembly GCA\_003560595.1. The GC content of the type genome is 43.15 % and the genome length is 1.89 Mbp.

### **Description of *Candidatus Lanugarcha reduvibra* sp. nov.**

*Candidatus Lanugarcha reduvibra* (NL. fem. n. *reduvibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PL-Br10-E2g29 sp001563965*. The type genome for the species is the GenBank assembly GCA\_001563965.1. The GC content of the type genome is 62.21 % and the genome length is 1.28 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample PL-Br10; brine of Pictou Lake".

### **Description of *Candidatus Lanugarcha* gen. nov.**

*Candidatus Lanugarcha* (NL. fem. n. *Lanugarcha* a name created arbitrarily, while



preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PL-Br10-E2g29*. The type species for the genus is *Candidatus Lanugarcha reduvibra* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Lapicarcha verecibra* sp. nov.**

*Candidatus Lapicarcha verecibra* (NL. fem. n. *verecibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HRBIN01 sp002898355*. The type genome for the species is the GenBank assembly GCA\_002898355.1. The GC content of the type genome is 52.58 % and the genome length is 1.76 Mbp.

#### **Description of *Candidatus Lapicarcha* gen. nov.**

*Candidatus Lapicarcha* (NL. fem. n. *Lapicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *HRBIN01*. The type species for the genus is *Candidatus Lapicarcha verecibra* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Lapilarcha monodivita* sp. nov.**

*Candidatus Lapilarcha monodivita* (NL. fem. n. *monodivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADGB01 sp013152575*. The type genome for the species is the GenBank assembly GCA\_013152575.1. The GC content of the type genome is 49.83 % and the genome length is 0.98 Mbp.

#### **Description of *Candidatus Lapilarcha* gen. nov.**

*Candidatus Lapilarcha* (NL. fem. n. *Lapilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADGB01*. The type species for the genus is *Candidatus* Lapilarcha monodivita .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Latibarcha latibilenta sp. nov.**

*Candidatus* Latibarcha latibilenta (NL. fem. n. *latibilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA97 sp001871595*. The type genome for the species is the GenBank assembly GCA\_001871595.1. The GC content of the type genome is 54.75 % and the genome length is 1.19 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "groundwater filtered through a 3.0 um filter and then through a 0.2 um filter".

#### **Description of *Candidatus* Latibarcha gen. nov.**

*Candidatus* Latibarcha (NL. fem. n. *Latibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA97*. The type species for the genus is *Candidatus* Latibarcha latibilenta .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA97*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Latibarchaceae.

#### **Description of *Candidatus* Latibarchaceae fam. nov.**

*Candidatus* Latibarchaceae (NL. fem. n. *Latibarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA97*. The type genus for the taxon is *Candidatus* Latibarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA8480*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Colubarchales.

#### **Description of *Candidatus* Lavabarcha conamax sp. nov.**

*Candidatus* Lavabarcha conamax (NL. fem. n. *conamax* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SDNM01 sp004524535*. The type genome for the species is the GenBank assembly GCA\_004524535.1. The GC content of the type genome is 30.4 % and the genome length is 3.66 Mbp.

#### **Description of *Candidatus Lavabarcha* gen. nov.**

*Candidatus Lavabarcha* (NL. fem. n. *Lavabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SDNM01*. The type species for the genus is *Candidatus Lavabarcha conamax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SOKP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Hirudarchaceae*.

#### **Description of *Candidatus Lavabarcha fetulisca* sp. nov.**

*Candidatus Lavabarcha fetulisca* (NL. fem. n. *fetulisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SDNM01 sp004524385*. The type genome for the species is the GenBank assembly GCA\_004524385.1. The GC content of the type genome is 30.48 % and the genome length is 1.84 Mbp.

#### **Description of *Candidatus Lavabarcha sonivisca* sp. nov.**

*Candidatus Lavabarcha sonivisca* (NL. fem. n. *sonivisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SDNM01 sp004524515*. The type genome for the species is the GenBank assembly GCA\_004524515.1. The GC content of the type genome is 30.41 % and the genome length is 3.11 Mbp.

#### **Description of *Candidatus Lavabarcha turifitura* sp. nov.**

*Candidatus Lavabarcha turifitura* (NL. fem. n. *turifitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SDNM01 sp004524425*. The type genome for the species is the GenBank assembly GCA\_004524425.1. The GC content of the type genome is 32.46 % and the genome length is 2.97 Mbp.

#### **Description of *Candidatus Lavacarcha defesitica* sp. nov.**

*Candidatus Lavacarcha defesitica* (NL. fem. n. *defesitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWHR01 sp003551675*. The type genome for the species is the GenBank assembly GCA\_003551675.1. The GC content of the type genome is 43.92 % and the genome length is 2.29 Mbp.

#### **Description of *Candidatus Lavacarcha* gen. nov.**

*Candidatus Lavacarcha* (NL. fem. n. *Lavacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PWHR01*. The type species for the genus is *Candidatus Lavacarcha defesitica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *PWKY01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Lanigarchaceae*.

#### **Description of *Candidatus Lavacarcha tenilimonas* sp. nov.**

*Candidatus Lavacarcha tenilimonas* (NL. fem. n. *tenilimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWHR01 sp003554965*. The type genome for the species is the GenBank assembly GCA\_003554965.1. The GC content of the type genome is 42.73 % and the genome length is 2.33 Mbp.

#### **Description of *Candidatus Lavacarcha vinolifica* sp. nov.**

*Candidatus Lavacarcha vinolifica* (NL. fem. n. *vinolifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWHR01 sp003555395*. The type genome for the species is the GenBank assembly GCA\_003555395.1. The GC content of the type genome is 44.54 % and the genome length is 2.03 Mbp.

**Description of *Candidatus Laxitarcha lavacigena* sp. nov.**

*Candidatus Laxitarcha lavacigena* (NL. fem. n. *lavacigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRVD01 sp011371765*. The type genome for the species is the GenBank assembly GCA\_011371765.1. The GC content of the type genome is 37.45 % and the genome length is 0.53 Mbp.

**Description of *Candidatus Laxitarcha* gen. nov.**

*Candidatus Laxitarcha* (NL. fem. n. *Laxitarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRVD01*. The type species for the genus is *Candidatus Laxitarcha lavacigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DRVD01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Laxitarchaceae*.

**Description of *Candidatus Laxitarchaceae* fam. nov.**

*Candidatus Laxitarchaceae* (NL. fem. n. *Laxitarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DRVD01*. The type genus for the taxon is *Candidatus Laxitarcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

**Description of *Candidatus Legifarcha cimititura* sp. nov.**

*Candidatus Legifarcha cimititura* (NL. fem. n. *cimititura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *WOR-SMI-SCG-A* sp001723845. The type genome for the species is the GenBank assembly GCA\_001723845.1. The GC content of the type genome is 37.12 % and the genome length is 2.55 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "single cell amplified by MDA; Methane-rich estuary sediments 72-75 cm".

#### **Description of *Candidatus Legifarcha* gen. nov.**

*Candidatus Legifarcha* (NL. fem. n. *Legifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WOR-SMI-SCG-A*. The type species for the genus is *Candidatus Legifarcha cimititura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *WOR-SMI-SCG*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Citiparchaceae*.

#### **Description of *Candidatus Lenimarcha debucitio* sp. nov.**

*Candidatus Lenimarcha debucitio* (NL. fem. n. *debucitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9653* sp9653u. The type genome for the species is the GenBank assembly GCA\_013329135.1. The GC content of the type genome is 60.23 % and the genome length is 1.71 Mbp.

#### **Description of *Candidatus Lenimarcha* gen. nov.**

*Candidatus Lenimarcha* (NL. fem. n. *Lenimarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA9653*. The type species for the genus is *Candidatus Lenimarcha debucitio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10834*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cilotarchaceae*.

#### **Description of *Candidatus Lenimarcha semapifica* sp. nov.**

*Candidatus Lenimarcha semapifica* (NL. fem. n. *semapifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9653 sp011391345*. The type genome for the species is the GenBank assembly GCA\_011391345.1. The GC content of the type genome is 60.59 % and the genome length is 1.08 Mbp.

#### **Description of *Candidatus Lenocarcha fetutastra* sp. nov.**

*Candidatus Lenocarcha fetutastra* (NL. fem. n. *fetutastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA581 sp002501775*. The type genome for the species is the GenBank assembly GCA\_002501775.1. The GC content of the type genome is 47.44 % and the genome length is 0.97 Mbp.

#### **Description of *Candidatus Lenocarcha* gen. nov.**

*Candidatus Lenocarcha* (NL. fem. n. *Lenocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA581*. The type species for the genus is *Candidatus Lenocarcha fetutastra*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Lenunarcha recumitudo* sp. nov.**

*Candidatus Lenunarcha recumitudo* (NL. fem. n. *recumitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAISDH01 sp903884115*. The type genome for the species is the GenBank assembly GCA\_903884115.1. The GC content of the type genome is 50.05 % and the genome length is 1.02 Mbp.

#### **Description of *Candidatus Lenunarcha* gen. nov.**

*Candidatus Lenunarcha* (NL. fem. n. *Lenunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAISDH01*. The type species for the genus is *Candidatus Lenunarcha*

recumitudo .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Letifarcha cerucetta* sp. nov.**

*Candidatus Letifarcha cerucetta* (NL. fem. n. *cerucetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKNY01 sp007118975*. The type genome for the species is the GenBank assembly GCA\_007118975.1. The GC content of the type genome is 60.0 % and the genome length is 3.43 Mbp.

### **Description of *Candidatus Letifarcha* gen. nov.**

*Candidatus Letifarcha* (NL. fem. n. *Letifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SKNY01*. The type species for the genus is *Candidatus Letifarcha cerucetta* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *SKNY01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Letifarchaceae*.

### **Description of *Candidatus Letifarchaceae* fam. nov.**

*Candidatus Letifarchaceae* (NL. fem. n. *Letifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SKNY01*. The type genus for the taxon is *Candidatus Letifarcha* .

According to GTDB R06-RS202, this family belongs to the order *Halobacteriales*.

### **Description of *Candidatus Letifarcha delacitio* sp. nov.**

*Candidatus Letifarcha delacitio* (NL. fem. n. *delacitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKNY01 sp007123105*. The type genome for the species is the GenBank assembly GCA\_007123105.1. The GC content of the type genome is 61.08 %



and the genome length is 1.88 Mbp.

**Description of *Candidatus Levidarcha manomitia* sp. nov.**

*Candidatus Levidarcha manomitia* (NL. fem. n. *manomitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIXOA01 sp903920925*. The type genome for the species is the GenBank assembly GCA\_903920925.1. The GC content of the type genome is 55.51 % and the genome length is 0.9 Mbp.

**Description of *Candidatus Levidarcha* gen. nov.**

*Candidatus Levidarcha* (NL. fem. n. *Levidarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIXOA01*. The type species for the genus is *Candidatus Levidarcha manomitia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Volubarchaceae*.

**Description of *Candidatus Levidarcha sitelibra* sp. nov.**

*Candidatus Levidarcha sitelibra* (NL. fem. n. *sitelibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIXOA01 sp013425455*. The type genome for the species is the GenBank assembly GCA\_013425455.1. The GC content of the type genome is 54.13 % and the genome length is 0.99 Mbp.

**Description of *Candidatus Levifarcha deforedo* sp. nov.**

*Candidatus Levifarcha deforedo* (NL. fem. n. *deforedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *VBQP01 sp008297795*. The type genome for the species is the GenBank assembly GCA\_008297795.1. The GC content of the type genome is 43.83 % and the genome length is 0.79 Mbp.

### **Description of *Candidatus Levifarcha* gen. nov.**

*Candidatus Levifarcha* (NL. fem. n. *Levifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *VBQP01*. The type species for the genus is *Candidatus Levifarcha deforedo* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *DSCA01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Diritarchaceae*.

### **Description of *Candidatus Licenarcha bovicibula* sp. nov.**

*Candidatus Licenarcha bovicibula* (NL. fem. n. *bovicibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B29-G15 sp903915225*. The type genome for the species is the GenBank assembly GCA\_903915225.1. The GC content of the type genome is 45.54 % and the genome length is 1.69 Mbp.

### **Description of *Candidatus Licenarcha* gen. nov.**

*Candidatus Licenarcha* (NL. fem. n. *Licenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B29-G15*. The type species for the genus is *Candidatus Licenarcha bovicibula* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B29-G15*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Licenarchaceae*.

### **Description of *Candidatus Licenarchaceae* fam. nov.**

*Candidatus Licenarchaceae* (NL. fem. n. *Licenarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B29-G15*. The type genus for the taxon is *Candidatus Licenarcha* .

According to GTDB R06-RS202, this family belongs to the order *Woeseearchaeales*.

### **Description of *Candidatus Licenarcha hemitimonia* sp. nov.**

*Candidatus Licenarcha hemitimonia* (NL. fem. n. *hemitimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B29-G15 sp003650585*. The type genome for the species is the GenBank assembly GCA\_003650585.1. The GC content of the type genome is 43.81 % and the genome length is 1.03 Mbp.

### **Description of *Candidatus Locelarcha notacitura* sp. nov.**

*Candidatus Locelarcha notacitura* (NL. fem. n. *notacitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MFWN01 sp001786395*. The type genome for the species is the GenBank assembly GCA\_001786395.1. The GC content of the type genome is 35.56 % and the genome length is 1.59 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 13ft depth".

### **Description of *Candidatus Locelarcha* gen. nov.**

*Candidatus Locelarcha* (NL. fem. n. *Locelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MFWN01*. The type species for the genus is *Candidatus Locelarcha notacitura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *MFWN01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Locelarchaceae*.

### **Description of *Candidatus Locelarchaceae* fam. nov.**

*Candidatus Locelarchaceae* (NL. fem. n. *Locelarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *MFWN01*. The type genus for the taxon is *Candidatus Locelarcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

### **Description of *Candidatus Lorararcha resupetta* sp. nov.**

*Candidatus Lorararcha resupetta* (NL. fem. n. *resupetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIKOD01 sp903819595*. The type genome for the species is the GenBank assembly GCA\_903914655.1. The GC content of the type genome is 50.45 % and the genome length is 2.2 Mbp.

### **Description of *Candidatus Lorararcha* gen. nov.**

*Candidatus Lorararcha* (NL. fem. n. *Lorararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIKOD01*. The type species for the genus is *Candidatus Lorararcha resupetta*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Lorararcha tetenentia* sp. nov.**

*Candidatus Lorararcha tetenentia* (NL. fem. n. *tetenentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIKOD01 sp903828975*. The type genome for the species is the GenBank assembly GCA\_903828975.1. The GC content of the type genome is 49.59 % and the genome length is 2.58 Mbp.

### **Description of *Candidatus Lubenarcha peridedo* sp. nov.**

*Candidatus Lubenarcha peridedo* (NL. fem. n. *peridedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-71 sp002254395*. The type genome for the species is the GenBank assembly GCA\_002254395.1. The GC content of the type genome is 35.36 % and the genome length is 0.38 Mbp.

### **Description of *Candidatus Lubenarcha* gen. nov.**

*Candidatus Lubenarcha* (NL. fem. n. *Lubenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-71*. The type species for the genus is *Candidatus* Lubenarcha peridedo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Deseparchaceae.

#### **Description of *Candidatus* Lucelarcha bicapitio sp. nov.**

*Candidatus* Lucelarcha bicapitio (NL. fem. n. *bicapitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B40-G2 sp003649615*. The type genome for the species is the GenBank assembly GCA\_003649615.1. The GC content of the type genome is 49.12 % and the genome length is 1.58 Mbp.

#### **Description of *Candidatus* Lucelarcha gen. nov.**

*Candidatus* Lucelarcha (NL. fem. n. *Lucelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B40-G2*. The type species for the genus is *Candidatus* Lucelarcha bicapitio .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B40-G2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Lucelarchaceae.

#### **Description of *Candidatus* Lucelarchaceae fam. nov.**

*Candidatus* Lucelarchaceae (NL. fem. n. *Lucelarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B40-G2*. The type genus for the taxon is *Candidatus* Lucelarcha .

According to GTDB R06-RS202, this family belongs to the order *Nezhaarchaeales*.

#### **Description of *Candidatus* Lucerarcha voragitio sp. nov.**

*Candidatus* Lucerarcha voragitio (NL. fem. n. *voragitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PIYN01 sp003601775*. The type genome for the species is the GenBank assembly GCA\_003601775.1. The GC content of the type genome is 58.43 % and the genome length is 1.53 Mbp.

#### **Description of *Candidatus Lucerarcha* gen. nov.**

*Candidatus Lucerarcha* (NL. fem. n. *Lucerarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PIYN01*. The type species for the genus is *Candidatus Lucerarcha voragitis*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *TCS64*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tegumarchaceae*.

#### **Description of *Candidatus Lucifarcha bipinetta* sp. nov.**

*Candidatus Lucifarcha bipinetta* (NL. fem. n. *bipinetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-N1 sp002170775*. The type genome for the species is the GenBank assembly GCA\_002170775.2. The GC content of the type genome is 49.39 % and the genome length is 1.44 Mbp.

#### **Description of *Candidatus Lucifarcha* gen. nov.**

*Candidatus Lucifarcha* (NL. fem. n. *Lucifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIb-N1*. The type species for the genus is *Candidatus Lucifarcha bipinetta*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Lucifarcha canacitura* sp. nov.**

*Candidatus Lucifarcha canacitura* (NL. fem. n. *canacitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N1 sp002497295*. The type genome for the species is the GenBank assembly GCA\_002497295.1. The GC content of the type genome is 49.19 % and the genome length is 1.34 Mbp.

**Description of *Candidatus Lucifarcha demagibra* sp. nov.**

*Candidatus Lucifarcha demagibra* (NL. fem. n. *demagibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N1 sp002495675*. The type genome for the species is the GenBank assembly GCA\_002495675.1. The GC content of the type genome is 50.11 % and the genome length is 1.37 Mbp.

**Description of *Candidatus Lucifarcha diludiforma* sp. nov.**

*Candidatus Lucifarcha diludiforma* (NL. fem. n. *diludiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N1 sp002505695*. The type genome for the species is the GenBank assembly GCA\_002685735.1. The GC content of the type genome is 49.87 % and the genome length is 1.31 Mbp.

**Description of *Candidatus Lucifarcha diluvitudo* sp. nov.**

*Candidatus Lucifarcha diluvitudo* (NL. fem. n. *diluvitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N1 sp002712645*. The type genome for the species is the GenBank assembly GCA\_002712645.1. The GC content of the type genome is 49.62 % and the genome length is 1.55 Mbp.

**Description of *Candidatus Lucifarcha funivitoga* sp. nov.**

*Candidatus Lucifarcha funivitoga* (NL. fem. n. *funivitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N1 sp011523055*. The type genome for the species is the GenBank assembly GCA\_011523055.1. The GC content of the type genome is 52.62 %

and the genome length is 1.45 Mbp.

**Description of *Candidatus Lucifarcha ludimitia* sp. nov.**

*Candidatus Lucifarcha ludimitia* (NL. fem. n. *ludimitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N1 sp002717835*. The type genome for the species is the GenBank assembly GCA\_002717835.1. The GC content of the type genome is 48.03 % and the genome length is 1.21 Mbp.

**Description of *Candidatus Lucifarcha mahelitudo* sp. nov.**

*Candidatus Lucifarcha mahelitudo* (NL. fem. n. *mahelitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N1 sp002505455*. The type genome for the species is the GenBank assembly GCA\_002686775.1. The GC content of the type genome is 50.85 % and the genome length is 1.07 Mbp.

**Description of *Candidatus Lucifarcha mirifisca* sp. nov.**

*Candidatus Lucifarcha mirifisca* (NL. fem. n. *mirifisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N1 sp002504845*. The type genome for the species is the GenBank assembly GCA\_003672595.1. The GC content of the type genome is 49.46 % and the genome length is 1.06 Mbp.

**Description of *Candidatus Lucifarcha semivicula* sp. nov.**

*Candidatus Lucifarcha semivicula* (NL. fem. n. *semivicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-N1 sp002499585*. The type genome for the species is the GenBank assembly GCA\_002502565.1. The GC content of the type genome is 48.64 % and the genome length is 1.4 Mbp.

**Description of *Candidatus Lucifarcha supelimonas* sp. nov.**



*Candidatus* Lucifarcha supelimonas (NL. fem. n. *supelimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIib-N1 sp002507175*. The type genome for the species is the GenBank assembly GCA\_002507175.1. The GC content of the type genome is 49.76 % and the genome length is 1.44 Mbp.

#### **Description of *Candidatus* Lucubarcha nubecedo sp. nov.**

*Candidatus* Lucubarcha nubecedo (NL. fem. n. *nubecedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B8-G13 sp003649745*. The type genome for the species is the GenBank assembly GCA\_003649745.1. The GC content of the type genome is 36.09 % and the genome length is 0.76 Mbp.

#### **Description of *Candidatus* Lucubarcha gen. nov.**

*Candidatus* Lucubarcha (NL. fem. n. *Lucubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B8-G13*. The type species for the genus is *Candidatus* Lucubarcha nubecedo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B8-G13*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Lucubarchaceae.

#### **Description of *Candidatus* Lucubarchaceae fam. nov.**

*Candidatus* Lucubarchaceae (NL. fem. n. *Lucubarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B8-G13*. The type genus for the taxon is *Candidatus* Lucubarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *DHVEG-I*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Pedifarchales.

#### **Description of *Candidatus* Lucularcha vitigousia sp. nov.**

*Candidatus* Lucularcha vitigousia (NL. fem. n. *vitigousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-48-13 sp001775995*. The type genome for the species is the GenBank assembly GCA\_001775995.1. The GC content of the type genome is 48.14 % and the genome length is 0.85 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 16ft depth".

#### **Description of *Candidatus* Lucularcha gen. nov.**

*Candidatus* Lucularcha (NL. fem. n. *Lucularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *RBG-16-48-13*. The type species for the genus is *Candidatus* Lucularcha vitigousia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *RBG-16-48-13*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Lucularchaceae.

#### **Description of *Candidatus* Lucularchaceae fam. nov.**

*Candidatus* Lucularchaceae (NL. fem. n. *Lucularchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *RBG-16-48-13*. The type genus for the taxon is *Candidatus* Lucularcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *RBG-16-48-13*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Lucularchales.

#### **Description of *Candidatus* Lucularchales ord. nov.**

*Candidatus* Lucularchales (NL. fem. n. *Lucularchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *RBG-16-48-13*. The type genus for the taxon is *Candidatus* Lucularcha .

According to the GTDB R06-RS202, this order belongs to the class *Bathyarchaeia*.

### **Description of *Candidatus Ludibarcha luculitudo* sp. nov.**

*Candidatus Ludibarcha luculitudo* (NL. fem. n. *luculitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTBS01 sp011366705*. The type genome for the species is the GenBank assembly GCA\_011366705.1. The GC content of the type genome is 40.71 % and the genome length is 0.64 Mbp.

### **Description of *Candidatus Ludibarcha* gen. nov.**

*Candidatus Ludibarcha* (NL. fem. n. *Ludibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTBS01*. The type species for the genus is *Candidatus Ludibarcha luculitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTBS01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Ludibarchaceae*.

### **Description of *Candidatus Ludibarchaceae* fam. nov.**

*Candidatus Ludibarchaceae* (NL. fem. n. *Ludibarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTBS01*. The type genus for the taxon is *Candidatus Ludibarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *DTBS01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Ludibarchales*.

### **Description of *Candidatus Ludibarchales* ord. nov.**

*Candidatus Ludibarchales* (NL. fem. n. *Ludibarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTBS01*. The type genus for the taxon is *Candidatus Ludibarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Nanoarchaeia*.

### **Description of *Candidatus Ludifarcha bimotetta* sp. nov.**

*Candidatus* Ludifarcha bimotetta (NL. fem. n. *bimotetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACIWB01 sp014361195*. The type genome for the species is the GenBank assembly GCA\_014361195.1. The GC content of the type genome is 34.78 % and the genome length is 1.25 Mbp.

#### **Description of *Candidatus* Ludifarcha gen. nov.**

*Candidatus* Ludifarcha (NL. fem. n. *Ludifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JACIWB01*. The type species for the genus is *Candidatus* Ludifarcha bimotetta .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JdFR-43*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pimenarchaceae.

#### **Description of *Candidatus* Ludifarcha caduricula sp. nov.**

*Candidatus* Ludifarcha caduricula (NL. fem. n. *caduricula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACIWB01 sp014361245*. The type genome for the species is the GenBank assembly GCA\_014361245.1. The GC content of the type genome is 34.76 % and the genome length is 1.48 Mbp.

#### **Description of *Candidatus* Ludimarcha decitessa sp. nov.**

*Candidatus* Ludimarcha decitessa (NL. fem. n. *decitessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HEL-GB-B sp005191425*. The type genome for the species is the GenBank assembly GCA\_005191425.1. The GC content of the type genome is 28.04 % and the genome length is 3.54 Mbp.

#### **Description of *Candidatus* Ludimarcha gen. nov.**

*Candidatus* Ludimarcha (NL. fem. n. *Ludimarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *HEL-GB-B*. The type species for the genus is *Candidatus Ludimarcha decitessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *HEL-GB-B*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Ludimarchaceae*.

#### **Description of *Candidatus Ludimarchaceae* fam. nov.**

*Candidatus Ludimarchaceae* (NL. fem. n. *Ludimarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *HEL-GB-B*. The type genus for the taxon is *Candidatus Ludimarcha*.

According to GTDB R06-RS202, this family belongs to the order *Helarchaeales*.

#### **Description of *Candidatus Lugubarcha biveritia* sp. nov.**

*Candidatus Lugubarcha biveritia* (NL. fem. n. *biveritia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMVU01 sp003661365*. The type genome for the species is the GenBank assembly GCA\_003661365.1. The GC content of the type genome is 43.56 % and the genome length is 1.82 Mbp.

#### **Description of *Candidatus Lugubarcha* gen. nov.**

*Candidatus Lugubarcha* (NL. fem. n. *Lugubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMVU01*. The type species for the genus is *Candidatus Lugubarcha biveritia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMVU01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Lugubarchaceae*.

#### **Description of *Candidatus Lugubarchaceae* fam. nov.**

*Candidatus Lugubarchaceae* (NL. fem. n. *Lugubarchaceae* a name created from the name

of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMVU01*. The type genus for the taxon is *Candidatus* Lugubarcha .

According to GTDB R06-RS202, this family belongs to the order *Korarchaeales*.

#### **Description of *Candidatus* Lugubarcha mirabivita sp. nov.**

*Candidatus* Lugubarcha mirabivita (NL. fem. n. *mirabivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMVU01 sp003661265*. The type genome for the species is the GenBank assembly GCA\_003661265.1. The GC content of the type genome is 46.86 % and the genome length is 1.49 Mbp.

#### **Description of *Candidatus* Lupanarcha metapentia sp. nov.**

*Candidatus* Lupanarcha metapentia (NL. fem. n. *metapentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B3-G16 sp003649665*. The type genome for the species is the GenBank assembly GCA\_003649665.1. The GC content of the type genome is 40.21 % and the genome length is 1.4 Mbp.

#### **Description of *Candidatus* Lupanarcha gen. nov.**

*Candidatus* Lupanarcha (NL. fem. n. *Lupanarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B3-G16*. The type species for the genus is *Candidatus* Lupanarcha metapentia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMSL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Tametarchaceae.

#### **Description of *Candidatus* Luticarcha binocatio sp. nov.**

*Candidatus* Luticarcha binocatio (NL. fem. n. *binocatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMZY01 sp003663415*. The type genome for the species is the GenBank assembly GCA\_003663475.1. The GC content of the type genome is 37.7 % and the genome length is 0.87 Mbp.

**Description of *Candidatus Luticarcha* gen. nov.**

*Candidatus Luticarcha* (NL. fem. n. *Luticarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMZY01*. The type species for the genus is *Candidatus Luticarcha binocatio* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Detorarchaceae*.

**Description of *Candidatus Lutularcha necopitrix* sp. nov.**

*Candidatus Lutularcha necopitrix* (NL. fem. n. *necopitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CADDZR01 sp902812495*. The type genome for the species is the GenBank assembly RS\_GCF\_902812495.1. The GC content of the type genome is 44.13 % and the genome length is 1.34 Mbp.

**Description of *Candidatus Lutularcha* gen. nov.**

*Candidatus Lutularcha* (NL. fem. n. *Lutularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CADDZR01*. The type species for the genus is *Candidatus Lutularcha necopitrix* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA183*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tenebarchaceae*.

**Description of *Candidatus Luxurarcha dececifica* sp. nov.**

*Candidatus Luxurarcha dececifica* (NL. fem. n. *dececifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WUQU01 sp009889605*. The type genome for the species is the GenBank assembly GCA\_009889605.1. The GC content of the type genome is 42.25 % and the genome length is 2.35 Mbp.

#### **Description of *Candidatus Luxurarcha* gen. nov.**

*Candidatus Luxurarcha* (NL. fem. n. *Luxurarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WUQU01*. The type species for the genus is *Candidatus Luxurarcha dececifica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

#### **Description of *Candidatus Macilarcha coticugo* sp. nov.**

*Candidatus Macilarcha coticugo* (NL. fem. n. *coticugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIXRF01 sp903921825*. The type genome for the species is the GenBank assembly GCA\_903921825.1. The GC content of the type genome is 58.51 % and the genome length is 1.25 Mbp.

#### **Description of *Candidatus Macilarcha* gen. nov.**

*Candidatus Macilarcha* (NL. fem. n. *Macilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIXRF01*. The type species for the genus is *Candidatus Macilarcha coticugo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTNL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nivomarchaceae*.

#### **Description of *Candidatus Mahelarcha munifedo* sp. nov.**

*Candidatus Mahelarcha munifedo* (NL. fem. n. *munifedo* a species epithet created



arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSZJ01 sp011367145*. The type genome for the species is the GenBank assembly GCA\_011367145.1. The GC content of the type genome is 55.81 % and the genome length is 0.57 Mbp.

#### **Description of *Candidatus Mahelarcha* gen. nov.**

*Candidatus Mahelarcha* (NL. fem. n. *Mahelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSZJ01*. The type species for the genus is *Candidatus Mahelarcha munifedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DSZJ01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Mahelarchaceae*.

#### **Description of *Candidatus Mahelarchaceae* fam. nov.**

*Candidatus Mahelarchaceae* (NL. fem. n. *Mahelarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DSZJ01*. The type genus for the taxon is *Candidatus Mahelarcha*.

According to GTDB R06-RS202, this family belongs to the order *Hadarchaeales*.

#### **Description of *Candidatus Mahelarcha mutabiforma* sp. nov.**

*Candidatus Mahelarcha mutabiforma* (NL. fem. n. *mutabiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSZJ01 sp011361855*. The type genome for the species is the GenBank assembly GCA\_011361855.1. The GC content of the type genome is 58.31 % and the genome length is 1.01 Mbp.

#### **Description of *Candidatus Mahemarcha benififica* sp. nov.**

*Candidatus Mahemarcha benififica* (NL. fem. n. *benififica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMCJ01 sp902384585*. The type genome for the species is the GenBank assembly GCA\_902384585.1. The GC content of the type genome is 50.33 % and the genome length is 1.33 Mbp.

**Description of *Candidatus Mahemarcha* gen. nov.**

*Candidatus Mahemarcha* (NL. fem. n. *Mahemarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMCJ01*. The type species for the genus is *Candidatus Mahemarcha benificia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10161*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Siligarchaceae*.

**Description of *Candidatus Malagarcha desomiforma* sp. nov.**

*Candidatus Malagarcha desomiforma* (NL. fem. n. *desomiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA164 sp009903795*. The type genome for the species is the GenBank assembly GCA\_009903795.1. The GC content of the type genome is 37.84 % and the genome length is 1.36 Mbp.

**Description of *Candidatus Malagarcha* gen. nov.**

*Candidatus Malagarcha* (NL. fem. n. *Malagarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA164*. The type species for the genus is *Candidatus Malagarcha desomiforma*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA164*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Malagarchaceae*.

**Description of *Candidatus Malagarchaceae* fam. nov.**

*Candidatus Malagarchaceae* (NL. fem. n. *Malagarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA164*. The type genus for the taxon is *Candidatus* Malagarcha .

According to GTDB R06-RS202, this family belongs to the order *Conexivisphaerales*.

#### **Description of *Candidatus* Malagarcha pavimibra sp. nov.**

*Candidatus* Malagarcha pavimibra (NL. fem. n. *pavimibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA164 sp002499005*. The type genome for the species is the GenBank assembly GCA\_002499005.1. The GC content of the type genome is 49.0 % and the genome length is 1.19 Mbp.

#### **Description of *Candidatus* Malagarcha siminibra sp. nov.**

*Candidatus* Malagarcha siminibra (NL. fem. n. *siminibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA164 sp002506605*. The type genome for the species is the GenBank assembly GCA\_002506605.1. The GC content of the type genome is 36.72 % and the genome length is 0.85 Mbp.

#### **Description of *Candidatus* Maledarcha panifago sp. nov.**

*Candidatus* Maledarcha panifago (NL. fem. n. *panifago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B-DKE sp011334705*. The type genome for the species is the GenBank assembly GCA\_011334705.1. The GC content of the type genome is 45.75 % and the genome length is 1.48 Mbp.

#### **Description of *Candidatus* Maledarcha gen. nov.**

*Candidatus* Maledarcha (NL. fem. n. *Maledarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B-DKE*. The type species for the genus is *Candidatus* Maledarcha panifago .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Maledarcha vatilitoga* sp. nov.**

*Candidatus Maledarcha vatilitoga* (NL. fem. n. *vatilitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B-DKE sp002204705*. The type genome for the species is the GenBank assembly GCA\_002204705.1. The GC content of the type genome is 44.47 % and the genome length is 1.91 Mbp.

**Description of *Candidatus Malifarcha cimitilenta* sp. nov.**

*Candidatus Malifarcha cimitilenta* (NL. fem. n. *cimitilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *N1521 sp005543295*. The type genome for the species is the GenBank assembly RS\_GCF\_005543295.1. The GC content of the type genome is 58.37 % and the genome length is 3.42 Mbp.

**Description of *Candidatus Malifarcha* gen. nov.**

*Candidatus Malifarcha* (NL. fem. n. *Malifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *N1521*. The type species for the genus is *Candidatus Malifarcha cimitilenta* .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Malifarcha medimitio* sp. nov.**

*Candidatus Malifarcha medimitio* (NL. fem. n. *medimitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *N1521 sp005239175*. The type genome for the species is the GenBank assembly RS\_GCF\_005239175.1. The GC content of the type genome is 59.02 % and the genome length is 3.36 Mbp.

### **Description of *Candidatus Malifarcha semivitrix* sp. nov.**

*Candidatus Malifarcha semivitrix* (NL. fem. n. *semivitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *N1521 sp003551725*. The type genome for the species is the GenBank assembly RS\_GCF\_013342525.1. The GC content of the type genome is 51.45 % and the genome length is 3.19 Mbp.

### **Description of *Candidatus Maligarcha daducatio* sp. nov.**

*Candidatus Maligarcha daducatio* (NL. fem. n. *daducatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTQF01 sp011332735*. The type genome for the species is the GenBank assembly GCA\_011332735.1. The GC content of the type genome is 36.11 % and the genome length is 0.7 Mbp.

### **Description of *Candidatus Maligarcha* gen. nov.**

*Candidatus Maligarcha* (NL. fem. n. *Maligarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTQF01*. The type species for the genus is *Candidatus Maligarcha daducatio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CABMEP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Coniparchaceae.

### **Description of *Candidatus Malivarcha monogetta* sp. nov.**

*Candidatus Malivarcha monogetta* (NL. fem. n. *monogetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K2 sp002719395*. The type genome for the species is the GenBank assembly GCA\_002695145.1. The GC content of the type genome is 43.07 % and the genome length is 1.83 Mbp.

### **Description of *Candidatus Malivarcha* gen. nov.**

*Candidatus* Malivarcha (NL. fem. n. *Malivarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIa-K2*. The type species for the genus is *Candidatus* Malivarcha monogetta .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Malivarcha volubicella sp. nov.**

*Candidatus* Malivarcha volubicella (NL. fem. n. *volubicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K2 sp002699425*. The type genome for the species is the GenBank assembly GCA\_002699425.1. The GC content of the type genome is 41.54 % and the genome length is 1.91 Mbp.

#### **Description of *Candidatus* Manibarcha cenobicella sp. nov.**

*Candidatus* Manibarcha cenobicella (NL. fem. n. *cenobicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B87-G9 sp003649695*. The type genome for the species is the GenBank assembly GCA\_003649695.1. The GC content of the type genome is 55.15 % and the genome length is 1.35 Mbp.

#### **Description of *Candidatus* Manibarcha gen. nov.**

*Candidatus* Manibarcha (NL. fem. n. *Manibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B87-G9*. The type species for the genus is *Candidatus* Manibarcha cenobicella .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B87-G9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Manibarchaceae.

#### **Description of *Candidatus* Manibarchaceae fam. nov.**

*Candidatus* Manibarchaceae (NL. fem. n. *Manibarchaceae* a name created from the name

of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B87-G9*. The type genus for the taxon is *Candidatus* Manibarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *B87-G9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Manibarchales.

#### **Description of *Candidatus* Manibarchales ord. nov.**

*Candidatus* Manibarchales (NL. fem. n. *Manibarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B87-G9*. The type genus for the taxon is *Candidatus* Manibarcha .

According to the GTDB R06-RS202, this order belongs to the class *Thermoplasmata*.

#### **Description of *Candidatus* Manomarcha colapilega sp. nov.**

*Candidatus* Manomarcha colapilega (NL. fem. n. *colapilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRVV01 sp011373895*. The type genome for the species is the GenBank assembly GCA\_011388725.1. The GC content of the type genome is 43.7 % and the genome length is 1.56 Mbp.

#### **Description of *Candidatus* Manomarcha gen. nov.**

*Candidatus* Manomarcha (NL. fem. n. *Manomarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRVV01*. The type species for the genus is *Candidatus* Manomarcha colapilega .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Nugacarchaceae.

#### **Description of *Candidatus* Manomarcha sotulesa sp. nov.**

*Candidatus* Manomarcha sotulesa (NL. fem. n. *sotulesa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRVV01 sp011373445*. The type genome for the species is the GenBank assembly GCA\_011046575.1. The GC content of the type genome is 43.95 % and the genome length is 1.45 Mbp.

#### **Description of *Candidatus Manubarcha lucerentia* sp. nov.**

*Candidatus Manubarcha lucerentia* (NL. fem. n. *lucerentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADEY01 sp013153145*. The type genome for the species is the GenBank assembly GCA\_013153145.1. The GC content of the type genome is 58.4 % and the genome length is 1.19 Mbp.

#### **Description of *Candidatus Manubarcha* gen. nov.**

*Candidatus Manubarcha* (NL. fem. n. *Manubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADEY01*. The type species for the genus is *Candidatus Manubarcha lucerentia*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Manufarcha decomimonia* sp. nov.**

*Candidatus Manufarcha decomimonia* (NL. fem. n. *decomimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRUK01 sp011370995*. The type genome for the species is the GenBank assembly GCA\_011370995.1. The GC content of the type genome is 47.7 % and the genome length is 1.39 Mbp.

#### **Description of *Candidatus Manufarcha* gen. nov.**

*Candidatus Manufarcha* (NL. fem. n. *Manufarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRUK01*. The type species for the genus is *Candidatus Manufarcha*



decomimonia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Nugacarchaceae.

#### **Description of *Candidatus* Manuparcha ludimicula sp. nov.**

*Candidatus* Manuparcha ludimicula (NL. fem. n. *ludimicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIKMX01 sp903828655*. The type genome for the species is the GenBank assembly GCA\_903828655.1. The GC content of the type genome is 35.75 % and the genome length is 0.99 Mbp.

#### **Description of *Candidatus* Manuparcha gen. nov.**

*Candidatus* Manuparcha (NL. fem. n. *Manuparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIKMX01*. The type species for the genus is *Candidatus* Manuparcha ludimicula .

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1160*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Navicarchaceae.

#### **Description of *Candidatus* Masocarcha curotimonas sp. nov.**

*Candidatus* Masocarcha curotimonas (NL. fem. n. *curotimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAOZP01 sp011363915*. The type genome for the species is the GenBank assembly GCA\_011363915.1. The GC content of the type genome is 41.31 % and the genome length is 1.3 Mbp.

#### **Description of *Candidatus* Masocarcha gen. nov.**

*Candidatus* Masocarcha (NL. fem. n. *Masocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this genus is *JAAOZP01*. The type species for the genus is *Candidatus Masocarcha curotimonas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAAOZP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Masocarchaceae*.

#### **Description of *Candidatus Masocarchaceae* fam. nov.**

*Candidatus Masocarchaceae* (NL. fem. n. *Masocarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAAOZP01*. The type genus for the taxon is *Candidatus Masocarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-205*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Bovicarchales*.

#### **Description of *Candidatus Masocarcha gasifitrix* sp. nov.**

*Candidatus Masocarcha gasifitrix* (NL. fem. n. *gasifitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAOZP01 sp011605725*. The type genome for the species is the GenBank assembly GCA\_011605725.1. The GC content of the type genome is 46.43 % and the genome length is 2.23 Mbp.

#### **Description of *Candidatus Masocarcha giganilenta* sp. nov.**

*Candidatus Masocarcha giganilenta* (NL. fem. n. *giganilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAOZP01 sp011362045*. The type genome for the species is the GenBank assembly GCA\_011362045.1. The GC content of the type genome is 45.05 % and the genome length is 1.48 Mbp.

#### **Description of *Candidatus Masocarcha negotitoga* sp. nov.**

*Candidatus Masocarcha negotitoga* (NL. fem. n. *negotitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAOZP01 sp011389375*. The type genome for the species is the GenBank assembly GCA\_011389375.1. The GC content of the type genome is 45.01 % and the genome length is 1.79 Mbp.

#### **Description of *Candidatus Mavorarcha figilessa* sp. nov.**

*Candidatus Mavorarcha figilessa* (NL. fem. n. *figilessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *NM3 sp004212155*. The type genome for the species is the GenBank assembly GCA\_004212155.1. The GC content of the type genome is 55.16 % and the genome length is 1.49 Mbp.

#### **Description of *Candidatus Mavorarcha* gen. nov.**

*Candidatus Mavorarcha* (NL. fem. n. *Mavorarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *NM3*. The type species for the genus is *Candidatus Mavorarcha figilessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *NM3*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Mavorarchaceae*.

#### **Description of *Candidatus Mavorarchaceae* fam. nov.**

*Candidatus Mavorarchaceae* (NL. fem. n. *Mavorarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *NM3*. The type genus for the taxon is *Candidatus Mavorarcha*.

According to GTDB R06-RS202, this family belongs to the order *Methanofastidiosales*.

#### **Description of *Candidatus Mavorarcha patibitica* sp. nov.**

*Candidatus Mavorarcha patibitica* (NL. fem. n. *patibitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *NM3 sp011372835*. The type genome for the species is the GenBank

assembly GCA\_011372835.1. The GC content of the type genome is 55.8 % and the genome length is 1.11 Mbp.

**Description of *Candidatus Maxilarcha catecitas* sp. nov.**

*Candidatus* Maxilarcha catecitas (NL. fem. n. *catecitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA431 sp002505525*. The type genome for the species is the GenBank assembly GCA\_002505525.1. The GC content of the type genome is 36.72 % and the genome length is 1.31 Mbp.

**Description of *Candidatus Maxilarcha* gen. nov.**

*Candidatus* Maxilarcha (NL. fem. n. *Maxilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA431*. The type species for the genus is *Candidatus* Maxilarcha catecitas .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA583*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Filifarchaceae.

**Description of *Candidatus Maxumarcha teniledo* sp. nov.**

*Candidatus* Maxumarcha teniledo (NL. fem. n. *teniledo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TEKIR-14 sp004524445*. The type genome for the species is the GenBank assembly GCA\_004524445.1. The GC content of the type genome is 44.58 % and the genome length is 2.79 Mbp.

**Description of *Candidatus Maxumarcha* gen. nov.**

*Candidatus* Maxumarcha (NL. fem. n. *Maxumarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *TEKIR-14*. The type species for the genus is *Candidatus* Maxumarcha teniledo .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Medimarcha dehinigena* sp. nov.**

*Candidatus Medimarcha dehinigena* (NL. fem. n. *dehinigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADCY01 sp013154205*. The type genome for the species is the GenBank assembly GCA\_013154205.1. The GC content of the type genome is 43.47 % and the genome length is 1.85 Mbp.

### **Description of *Candidatus Medimarcha* gen. nov.**

*Candidatus Medimarcha* (NL. fem. n. *Medimarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADCY01*. The type species for the genus is *Candidatus Medimarcha dehinigena*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Megalarcha duricitura* sp. nov.**

*Candidatus Megalarcha duricitura* (NL. fem. n. *duricitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B109-G9 sp003661525*. The type genome for the species is the GenBank assembly GCA\_003661525.1. The GC content of the type genome is 38.17 % and the genome length is 0.8 Mbp.

### **Description of *Candidatus Megalarcha* gen. nov.**

*Candidatus Megalarcha* (NL. fem. n. *Megalarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B109-G9*. The type species for the genus is *Candidatus Megalarcha duricitura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JDFR-13*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Semunarchaceae*.

### **Description of *Candidatus Megalarcha gasifitio* sp. nov.**

*Candidatus* Megalarcha gasifitio (NL. fem. n. *gasifitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B109-G9 sp003661505*. The type genome for the species is the GenBank assembly GCA\_003661505.1. The GC content of the type genome is 36.91 % and the genome length is 1.03 Mbp.

#### **Description of *Candidatus* Melilarcha bicinago sp. nov.**

*Candidatus* Melilarcha bicinago (NL. fem. n. *bicinago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACIVX01 sp014361295*. The type genome for the species is the GenBank assembly GCA\_014361295.1. The GC content of the type genome is 45.98 % and the genome length is 2.29 Mbp.

#### **Description of *Candidatus* Melilarcha gen. nov.**

*Candidatus* Melilarcha (NL. fem. n. *Melilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JACIVX01*. The type species for the genus is *Candidatus* Melilarcha bicinago .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JACIVX01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Melilarchaceae.

#### **Description of *Candidatus* Melilarchaceae fam. nov.**

*Candidatus* Melilarchaceae (NL. fem. n. *Melilarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JACIVX01*. The type genus for the taxon is *Candidatus* Melilarcha .

According to GTDB R06-RS202, this family belongs to the order *Methanomassiliicoccales*.

#### **Description of *Candidatus* Melilarcha daducentia sp. nov.**

*Candidatus* Melilarcha daducentia (NL. fem. n. *daducentia* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACIVX01 sp011334735*. The type genome for the species is the GenBank assembly GCA\_011334735.1. The GC content of the type genome is 44.28 % and the genome length is 1.55 Mbp.

#### **Description of *Candidatus Meloparcha corocitura* sp. nov.**

*Candidatus Meloparcha corocitura* (NL. fem. n. *corocitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QBUR01 sp013374385*. The type genome for the species is the GenBank assembly GCA\_013374385.1. The GC content of the type genome is 46.27 % and the genome length is 1.17 Mbp.

#### **Description of *Candidatus Meloparcha* gen. nov.**

*Candidatus Meloparcha* (NL. fem. n. *Meloparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QBUR01*. The type species for the genus is *Candidatus Meloparcha corocitura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *HRI*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Buxanarchaceae*.

#### **Description of *Candidatus Menaparcha fiducimonas* sp. nov.**

*Candidatus Menaparcha fiducimonas* (NL. fem. n. *fiducimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *1-14-0-10-44-13 sp002762985*. The type genome for the species is the GenBank assembly GCA\_002762985.1. The GC content of the type genome is 44.41 % and the genome length is 1.52 Mbp.

#### **Description of *Candidatus Menaparcha* gen. nov.**

*Candidatus Menaparcha* (NL. fem. n. *Menaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *1-14-0-10-44-13*. The type species for the genus is *Candidatus Menaparcha fiducimonas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA12501*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cocibarchaceae*.

#### **Description of *Candidatus Meridarcha malivessa* sp. nov.**

*Candidatus Meridarcha malivessa* (NL. fem. n. *malivessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAYNL01 sp012520845*. The type genome for the species is the GenBank assembly GCA\_012520845.1. The GC content of the type genome is 60.72 % and the genome length is 1.38 Mbp.

#### **Description of *Candidatus Meridarcha* gen. nov.**

*Candidatus Meridarcha* (NL. fem. n. *Meridarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAAYNL01*. The type species for the genus is *Candidatus Meridarcha malivessa*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Metabarcha luticitudo* sp. nov.**

*Candidatus Metabarcha luticitudo* (NL. fem. n. *luticitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTNV01 sp011358415*. The type genome for the species is the GenBank assembly GCA\_011358415.1. The GC content of the type genome is 37.4 % and the genome length is 0.78 Mbp.

#### **Description of *Candidatus Metabarcha* gen. nov.**

*Candidatus Metabarcha* (NL. fem. n. *Metabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy



Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTNV01*. The type species for the genus is *Candidatus Metabarcha luticitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTNV01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Metabarchaceae*.

#### **Description of *Candidatus Metabarchaceae* fam. nov.**

*Candidatus Metabarchaceae* (NL. fem. n. *Metabarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTNV01*. The type genus for the taxon is *Candidatus Metabarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA8480*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Colubarchales*.

#### **Description of *Candidatus Metaparcha cuticugo* sp. nov.**

*Candidatus Metaparcha cuticugo* (NL. fem. n. *cuticugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *HARCEL1 sp003058365*. The type genome for the species is the GenBank assembly RS\_GCF\_003058365.1. The GC content of the type genome is 65.74 % and the genome length is 2.72 Mbp.

#### **Description of *Candidatus Metaparcha* gen. nov.**

*Candidatus Metaparcha* (NL. fem. n. *Metaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *HARCEL1*. The type species for the genus is *Candidatus Metaparcha cuticugo*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Methanimicrococcus citipifica* sp. nov.**

*Candidatus Methanimicrococcus citipifica* (NL. fem. n. *citipifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanimicrococcus sp009776675*. The type genome for the species is the GenBank assembly GCA\_009776675.1. The GC content of the type genome is 39.61 % and the genome length is 1.4 Mbp.

**Description of *Candidatus Methanimicrococcus musulimonia* sp. nov.**

*Candidatus Methanimicrococcus musulimonia* (NL. fem. n. *musulimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanimicrococcus sp012518265*. The type genome for the species is the GenBank assembly GCA\_012518265.1. The GC content of the type genome is 34.39 % and the genome length is 1.51 Mbp.

**Description of *Candidatus Methanimicrococcus sarabatio* sp. nov.**

*Candidatus Methanimicrococcus sarabatio* (NL. fem. n. *sarabatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanimicrococcus sp009784005*. The type genome for the species is the GenBank assembly GCA\_009784005.1. The GC content of the type genome is 45.53 % and the genome length is 1.69 Mbp.

**Description of *Candidatus Methanimicrococcus turiledo* sp. nov.**

*Candidatus Methanimicrococcus turiledo* (NL. fem. n. *turiledo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanimicrococcus sp009783635*. The type genome for the species is the GenBank assembly GCA\_009783635.1. The GC content of the type genome is 45.95 % and the genome length is 1.33 Mbp.

**Description of *Candidatus Methanobacterium cacalago* sp. nov.**

*Candidatus Methanobacterium cacalago* (NL. fem. n. *cacalago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium sp013403005*. The type genome for the species is the GenBank assembly GCA\_013403005.1. The GC content of the type genome is 38.08 % and the genome length is 1.33 Mbp.

% and the genome length is 2.37 Mbp.

**Description of *Candidatus Methanobacterium fetutentia* sp. nov.**

*Candidatus Methanobacterium fetutentia* (NL. fem. n. *fetutentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium* sp000499765. The type genome for the species is the GenBank assembly RS\_GCF\_000499765.1. The GC content of the type genome is 39.74 % and the genome length is 2.03 Mbp.

**Description of *Candidatus Methanobacterium gabinimonas* sp. nov.**

*Candidatus Methanobacterium gabinimonas* (NL. fem. n. *gabinimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium* sp012838205. The type genome for the species is the GenBank assembly GCA\_012838205.1. The GC content of the type genome is 36.5 % and the genome length is 1.87 Mbp.

**Description of *Candidatus Methanobacterium monimessa* sp. nov.**

*Candidatus Methanobacterium monimessa* (NL. fem. n. *monimessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium* sp000309865. The type genome for the species is the GenBank assembly GCA\_000309865.1. The GC content of the type genome is 38.59 % and the genome length is 2.42 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sub-cultured for isolation from anaerobic microbial enrichment culture derived from a coal seam gas formation water sample".

**Description of *Candidatus Methanobacterium periditia* sp. nov.**

*Candidatus Methanobacterium periditia* (NL. fem. n. *periditia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium* sp003491305. The type genome for the species is the GenBank assembly GCA\_003491305.1. The GC content of the type genome is 41.4 % and the genome length is 2.42 Mbp.

### **Description of *Candidatus Methanobacterium saxopimonia* sp. nov.**

*Candidatus Methanobacterium saxopimonia* (NL. fem. n. *saxopimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium* sp002067065. The type genome for the species is the GenBank assembly GCA\_002067065.1. The GC content of the type genome is 38.06 % and the genome length is 2.49 Mbp.

### **Description of *Candidatus Methanobacterium timefedo* sp. nov.**

*Candidatus Methanobacterium timefedo* (NL. fem. n. *timefedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium* sp002496805. The type genome for the species is the GenBank assembly GCA\_012842025.1. The GC content of the type genome is 36.48 % and the genome length is 1.45 Mbp.

### **Description of *Candidatus Methanobacterium cibarastra* sp. nov.**

*Candidatus Methanobacterium cibarastra* (NL. fem. n. *cibarastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_A* sp002495625. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002504505.1. The GC content of the type genome is 40.77 % and the genome length is 2.34 Mbp.

### **Description of *Candidatus Methanobacterium conubimonas* sp. nov.**

*Candidatus Methanobacterium conubimonas* (NL. fem. n. *conubimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_A* sp003166335. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003168635.1. The GC content of the type genome is 32.43 % and the genome length is 2.23 Mbp.

#### **Description of *Candidatus Methanobacterium curacousia* sp. nov.**

*Candidatus Methanobacterium curacousia* (NL. fem. n. *curacousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_A sp002494495*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002497655.1. The GC content of the type genome is 37.65 % and the genome length is 1.84 Mbp.

#### **Description of *Candidatus Methanobacterium nefanitas* sp. nov.**

*Candidatus Methanobacterium nefanitas* (NL. fem. n. *nefanitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_A sp003161815*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003161815.1. The GC content of the type genome is 33.27 % and the genome length is 1.89 Mbp.

#### **Description of *Candidatus Methanobacterium negotiforma* sp. nov.**

*Candidatus Methanobacterium negotiforma* (NL. fem. n. *negotiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_A sp011620845*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_011620845.1. The GC content of the type genome is 41.16 % and the genome length is 1.87 Mbp.

#### **Description of *Candidatus Methanobacterium negotilega* sp. nov.**

*Candidatus Methanobacterium negotilega* (NL. fem. n. *negotilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_A sp002067325*. Although GTDB has assigned a

genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002067325.1. The GC content of the type genome is 40.74 % and the genome length is 2.17 Mbp.

**Description of *Candidatus Methanobacterium peropousia* sp. nov.**

*Candidatus Methanobacterium peropousia* (NL. fem. n. *peropousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_A sp002502855*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002502855.1. The GC content of the type genome is 40.25 % and the genome length is 2.12 Mbp.

**Description of *Candidatus Methanobacterium vavasago* sp. nov.**

*Candidatus Methanobacterium vavasago* (NL. fem. n. *vavasago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_A sp002067565*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002067565.1. The GC content of the type genome is 36.63 % and the genome length is 1.8 Mbp.

**Description of *Candidatus Methanobacterium cimelitia* sp. nov.**

*Candidatus Methanobacterium cimelitia* (NL. fem. n. *cimelitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_B sp003162115*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003161875.1. The GC content of the type genome is 33.8 % and the genome length is 2.1 Mbp.

**Description of *Candidatus Methanobacterium citocitio* sp. nov.**

*Candidatus Methanobacterium citocitio* (NL. fem. n. *citocitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_B sp000744455*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly RS\_GCF\_000744455.1. The GC content of the type genome is 32.57 % and the genome length is 2.49 Mbp.

#### **Description of *Candidatus Methanobacterium defulifica* sp. nov.**

*Candidatus Methanobacterium defulifica* (NL. fem. n. *defulifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_B sp003151535*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003151535.1. The GC content of the type genome is 32.5 % and the genome length is 3.16 Mbp.

#### **Description of *Candidatus Methanobacterium peropricula* sp. nov.**

*Candidatus Methanobacterium peropricula* (NL. fem. n. *peropricula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_B sp003162655*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003162655.1. The GC content of the type genome is 34.87 % and the genome length is 1.62 Mbp.

#### **Description of *Candidatus Methanobacterium telegicula* sp. nov.**

*Candidatus Methanobacterium telegicula* (NL. fem. n. *telegicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_B sp003164415*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003164415.1.

The GC content of the type genome is 32.42 % and the genome length is 2.33 Mbp.

**Description of *Candidatus Methanobacterium vicecitia* sp. nov.**

*Candidatus Methanobacterium vicecitia* (NL. fem. n. *vicecitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_B sp003158115*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003158115.1. The GC content of the type genome is 32.07 % and the genome length is 2.29 Mbp.

**Description of *Candidatus Methanobacterium vitabitus* sp. nov.**

*Candidatus Methanobacterium vitabitus* (NL. fem. n. *vitabitus* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_B sp009712615*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_009712615.1. The GC content of the type genome is 39.77 % and the genome length is 2.18 Mbp.

**Description of *Candidatus Methanobacterium galacilenta* sp. nov.**

*Candidatus Methanobacterium galacilenta* (NL. fem. n. *galacilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_C sp002498385*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002503125.1. The GC content of the type genome is 38.16 % and the genome length is 2.14 Mbp.

**Description of *Candidatus Methanobacterium levidigena* sp. nov.**

*Candidatus Methanobacterium levidigena* (NL. fem. n. *levidigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this species is *Methanobacterium\_D sp002509665*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002509665.1. The GC content of the type genome is 32.96 % and the genome length is 2.94 Mbp.

**Description of *Candidatus Methanobacterium minurugo* sp. nov.**

*Candidatus Methanobacterium minurugo* (NL. fem. n. *minurugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_D sp002505765*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002505765.1. The GC content of the type genome is 33.83 % and the genome length is 2.27 Mbp.

**Description of *Candidatus Methanobacterium pedepetta* sp. nov.**

*Candidatus Methanobacterium pedepetta* (NL. fem. n. *pedepetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobacterium\_D sp002494885*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002494885.1. The GC content of the type genome is 33.09 % and the genome length is 2.27 Mbp.

**Description of *Candidatus Methanobrevibacter decucitrix* sp. nov.**

*Candidatus Methanobrevibacter decucitrix* (NL. fem. n. *decucitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter sp902774685*. The type genome for the species is the GenBank assembly GCA\_902774685.1. The GC content of the type genome is 32.42 % and the genome length is 2.07 Mbp.

**Description of *Candidatus Methanobrevibacter milificula* sp. nov.**

*Candidatus Methanobrevibacter milificula* (NL. fem. n. *milificula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter* sp902769175. The type genome for the species is the GenBank assembly GCA\_902769175.1. The GC content of the type genome is 30.9 % and the genome length is 3.12 Mbp.

**Description of *Candidatus Methanobrevibacter semivisca* sp. nov.**

*Candidatus Methanobrevibacter semivisca* (NL. fem. n. *semivisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter* sp900321995. The type genome for the species is the GenBank assembly GCA\_900321995.1. The GC content of the type genome is 30.47 % and the genome length is 1.9 Mbp.

**Description of *Candidatus Methanobrevibacter vitifastra* sp. nov.**

*Candidatus Methanobrevibacter vitifastra* (NL. fem. n. *vitifastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter* sp900314635. The type genome for the species is the GenBank assembly GCA\_902777105.1. The GC content of the type genome is 33.87 % and the genome length is 1.82 Mbp.

**Description of *Candidatus Methanobrevibacter xeropilenta* sp. nov.**

*Candidatus Methanobrevibacter xeropilenta* (NL. fem. n. *xeropilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter* sp902784195. The type genome for the species is the GenBank assembly GCA\_902765275.1. The GC content of the type genome is 32.35 % and the genome length is 1.69 Mbp.

**Description of *Candidatus Methanobrevibacter bicodimonas* sp. nov.**

*Candidatus Methanobrevibacter bicodimonas* (NL. fem. n. *bicodimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter*\_A sp902772665. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into

a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902772665.1. The GC content of the type genome is 33.57 % and the genome length is 2.23 Mbp.

**Description of *Candidatus Methanobrevibacter biparitoga* sp. nov.**

*Candidatus Methanobrevibacter biparitoga* (NL. fem. n. *biparitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900314695*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002509015.1. The GC content of the type genome is 32.88 % and the genome length is 2.3 Mbp.

**Description of *Candidatus Methanobrevibacter cadavousia* sp. nov.**

*Candidatus Methanobrevibacter cadavousia* (NL. fem. n. *cadavousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900313645*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_900313645.1. The GC content of the type genome is 36.1 % and the genome length is 1.42 Mbp.

**Description of *Candidatus Methanobrevibacter cenobimonas* sp. nov.**

*Candidatus Methanobrevibacter cenobimonas* (NL. fem. n. *cenobimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902768765*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_900313245.1. The GC content of the type genome is 30.83 % and the genome length is 1.77 Mbp.

**Description of *Candidatus Methanobrevibacter cepuledo* sp. nov.**

*Candidatus Methanobrevibacter cepuledo* (NL. fem. n. *cepuledo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902764015*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902764015.1. The GC content of the type genome is 40.54 % and the genome length is 1.98 Mbp.

**Description of *Candidatus Methanobrevibacter cerarisca* sp. nov.**

*Candidatus Methanobrevibacter cerarisca* (NL. fem. n. *cerarisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900319985*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902758075.1. The GC content of the type genome is 33.88 % and the genome length is 2.22 Mbp.

**Description of *Candidatus Methanobrevibacter cohorax* sp. nov.**

*Candidatus Methanobrevibacter cohorax* (NL. fem. n. *cohorax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902764455*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902764455.1. The GC content of the type genome is 32.57 % and the genome length is 2.75 Mbp.

**Description of *Candidatus Methanobrevibacter dapificula* sp. nov.**

*Candidatus Methanobrevibacter dapificula* (NL. fem. n. *dapificula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902801725*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902801725.1. The GC content of the type genome is 34.45 % and the genome length is 2.16 Mbp.

### **Description of *Candidatus Methanobrevibacter decunousia* sp. nov.**

*Candidatus Methanobrevibacter decunousia* (NL. fem. n. *decunousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp002496065*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002496065.1. The GC content of the type genome is 34.8 % and the genome length is 1.3 Mbp.

### **Description of *Candidatus Methanobrevibacter derunitudo* sp. nov.**

*Candidatus Methanobrevibacter derunitudo* (NL. fem. n. *derunitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900319535*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902771225.1. The GC content of the type genome is 30.76 % and the genome length is 2.36 Mbp.

### **Description of *Candidatus Methanobrevibacter desomax* sp. nov.**

*Candidatus Methanobrevibacter desomax* (NL. fem. n. *desomax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902782595*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902782595.1. The GC content of the type genome is 35.19 % and the genome length is 1.86 Mbp.

### **Description of *Candidatus Methanobrevibacter detenousia* sp. nov.**

*Candidatus Methanobrevibacter detenousia* (NL. fem. n. *detenousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900320515*. Although GTDB has assigned a

genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_900313195.1. The GC content of the type genome is 37.32 % and the genome length is 1.6 Mbp.

**Description of *Candidatus Methanobrevibacter dilogastra* sp. nov.**

*Candidatus Methanobrevibacter dilogastra* (NL. fem. n. *dilogastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902774605*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902774605.1. The GC content of the type genome is 38.99 % and the genome length is 2.14 Mbp.

**Description of *Candidatus Methanobrevibacter domabisca* sp. nov.**

*Candidatus Methanobrevibacter domabisca* (NL. fem. n. *domabisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902770715*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902770715.1. The GC content of the type genome is 34.42 % and the genome length is 2.12 Mbp.

**Description of *Candidatus Methanobrevibacter holovigena* sp. nov.**

*Candidatus Methanobrevibacter holovigena* (NL. fem. n. *holovigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900766745*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly RS\_GCF\_900766745.1. The GC content of the type genome is 32.65 % and the genome length is 2.15 Mbp.

**Description of *Candidatus Methanobrevibacter lameticella* sp. nov.**

*Candidatus Methanobrevibacter lameticella* (NL. fem. n. *lameticella* a species epithet

created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900769095*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly RS\_GCF\_900769095.1. The GC content of the type genome is 31.48 % and the genome length is 1.59 Mbp.

#### **Description of *Candidatus Methanobrevibacter lanigentia* sp. nov.**

*Candidatus Methanobrevibacter lanigentia* (NL. fem. n. *lanigentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp001548675*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly RS\_GCF\_001548675.1. The GC content of the type genome is 34.25 % and the genome length is 2.27 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "pooled rumen fluid".

#### **Description of *Candidatus Methanobrevibacter lubeniforma* sp. nov.**

*Candidatus Methanobrevibacter lubeniforma* (NL. fem. n. *lubeniforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900316895*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_900316895.1. The GC content of the type genome is 36.49 % and the genome length is 1.91 Mbp.

#### **Description of *Candidatus Methanobrevibacter mavoredo* sp. nov.**

*Candidatus Methanobrevibacter mavoredo* (NL. fem. n. *mavoredo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902789505*. Although GTDB has assigned a

genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902789505.1. The GC content of the type genome is 35.06 % and the genome length is 1.89 Mbp.

**Description of *Candidatus Methanobrevibacter melilentia* sp. nov.**

*Candidatus Methanobrevibacter melilentia* (NL. fem. n. *melilentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902785855*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902785855.1. The GC content of the type genome is 28.97 % and the genome length is 2.16 Mbp.

**Description of *Candidatus Methanobrevibacter molecicella* sp. nov.**

*Candidatus Methanobrevibacter molecicella* (NL. fem. n. *molecicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900314615*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902758945.1. The GC content of the type genome is 34.1 % and the genome length is 2.43 Mbp.

**Description of *Candidatus Methanobrevibacter paropilenta* sp. nov.**

*Candidatus Methanobrevibacter paropilenta* (NL. fem. n. *paropilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902783085*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902783085.1. The GC content of the type genome is 29.38 % and the genome length is 1.55 Mbp.

**Description of *Candidatus Methanobrevibacter patibastra* sp. nov.**

*Candidatus Methanobrevibacter patibastra* (NL. fem. n. *patibastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a



noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902777885*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902777885.1. The GC content of the type genome is 32.85 % and the genome length is 1.77 Mbp.

#### **Description of *Candidatus Methanobrevibacter repuritrix* sp. nov.**

*Candidatus Methanobrevibacter repuritrix* (NL. fem. n. *reputrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902763935*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902763935.1. The GC content of the type genome is 31.12 % and the genome length is 2.25 Mbp.

#### **Description of *Candidatus Methanobrevibacter sonipisca* sp. nov.**

*Candidatus Methanobrevibacter sonipisca* (NL. fem. n. *sonipisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902771435*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902771435.1. The GC content of the type genome is 35.45 % and the genome length is 2.18 Mbp.

#### **Description of *Candidatus Methanobrevibacter subofax* sp. nov.**

*Candidatus Methanobrevibacter subofax* (NL. fem. n. *subofax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900318035*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902759475.1. The GC content of the type genome is 35.15 % and the genome length is 2.29 Mbp.

### **Description of *Candidatus Methanobrevibacter tegumax* sp. nov.**

*Candidatus Methanobrevibacter tegumax* (NL. fem. n. *tegumax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902796575*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902796575.1. The GC content of the type genome is 32.32 % and the genome length is 1.97 Mbp.

### **Description of *Candidatus Methanobrevibacter venabibra* sp. nov.**

*Candidatus Methanobrevibacter venabibra* (NL. fem. n. *venabibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902794475*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902794475.1. The GC content of the type genome is 35.86 % and the genome length is 2.27 Mbp.

### **Description of *Candidatus Methanobrevibacter vicativita* sp. nov.**

*Candidatus Methanobrevibacter vicativita* (NL. fem. n. *vicativita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900320955*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_900320955.1. The GC content of the type genome is 32.65 % and the genome length is 2.29 Mbp.

### **Description of *Candidatus Methanobrevibacter viripentia* sp. nov.**

*Candidatus Methanobrevibacter viripentia* (NL. fem. n. *viripentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp900317865*. Although GTDB has assigned a

genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902799005.1. The GC content of the type genome is 31.08 % and the genome length is 3.58 Mbp.

**Description of *Candidatus Methanobrevibacter voragugo* sp. nov.**

*Candidatus Methanobrevibacter voragugo* (NL. fem. n. *voragugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_A sp902788255*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902788255.1. The GC content of the type genome is 35.74 % and the genome length is 2.2 Mbp.

**Description of *Candidatus Methanobrevibacter cuferastra* sp. nov.**

*Candidatus Methanobrevibacter cuferastra* (NL. fem. n. *cuferastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_B sp002208625*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly RS\_GCF\_002208625.1. The GC content of the type genome is 24.41 % and the genome length is 1.92 Mbp.

**Description of *Candidatus Methanobrevibacter rurigitas* sp. nov.**

*Candidatus Methanobrevibacter rurigitas* (NL. fem. n. *rurigitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_B sp900314605*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_902759335.1. The GC content of the type genome is 25.87 % and the genome length is 2.39 Mbp.

**Description of *Candidatus Methanobrevibacter catililenta* sp. nov.**

*Candidatus Methanobrevibacter catililenta* (NL. fem. n. *catililenta* a species epithet

created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_C sp009777005*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_009777005.1. The GC content of the type genome is 25.46 % and the genome length is 2.88 Mbp.

#### **Description of *Candidatus Methanobrevibacter culilitrix* sp. nov.**

*Candidatus Methanobrevibacter culilitrix* (NL. fem. n. *culilitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_C sp009776495*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_009776495.1. The GC content of the type genome is 27.02 % and the genome length is 1.53 Mbp.

#### **Description of *Candidatus Methanobrevibacter halucivita* sp. nov.**

*Candidatus Methanobrevibacter halucivita* (NL. fem. n. *halucivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_C sp003315655*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003315655.1. The GC content of the type genome is 25.26 % and the genome length is 1.91 Mbp.

#### **Description of *Candidatus Methanobrevibacter viginousia* sp. nov.**

*Candidatus Methanobrevibacter viginousia* (NL. fem. n. *viginousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanobrevibacter\_C sp009784145*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_009784145.1.

The GC content of the type genome is 25.54 % and the genome length is 1.51 Mbp.

**Description of *Candidatus Methanocalculus colepedo* sp. nov.**

*Candidatus Methanocalculus colepedo* (NL. fem. n. *colepedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocalculus sp003838185*. The type genome for the species is the GenBank assembly GCA\_003552845.1. The GC content of the type genome is 52.67 % and the genome length is 1.72 Mbp.

**Description of *Candidatus Methanocalculus malifica* sp. nov.**

*Candidatus Methanocalculus malifica* (NL. fem. n. *malifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocalculus sp002496395*. The type genome for the species is the GenBank assembly GCA\_002496395.1. The GC content of the type genome is 51.7 % and the genome length is 2.07 Mbp.

**Description of *Candidatus Methanocalculus monopitrix* sp. nov.**

*Candidatus Methanocalculus monopitrix* (NL. fem. n. *monopitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocalculus sp9912u*. The type genome for the species is the GenBank assembly GCA\_001508455.1. The GC content of the type genome is 51.9 % and the genome length is 1.97 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "oil reservoir sample SB1".

**Description of *Candidatus Methanocalculus morigimonia* sp. nov.**

*Candidatus Methanocalculus morigimonia* (NL. fem. n. *morigimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocalculus sp007130455*. The type genome for the species is the GenBank assembly GCA\_007130455.1. The GC content of the type genome is 54.45 % and the genome length is 1.45 Mbp.

**Description of *Candidatus Methanocalculus vatilifica* sp. nov.**

*Candidatus Methanocalculus vatilifica* (NL. fem. n. *vatilifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocalculus sp003838065*. The type genome for the species is the GenBank assembly GCA\_003550375.1. The GC content of the type genome is 50.46 % and the genome length is 1.87 Mbp.

**Description of *Candidatus Methanocaldococcus bigematio* sp. nov.**

*Candidatus Methanocaldococcus bigematio* (NL. fem. n. *bigematio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocaldococcus sp013153845*. The type genome for the species is the GenBank assembly GCA\_013153845.1. The GC content of the type genome is 31.27 % and the genome length is 1.43 Mbp.

**Description of *Candidatus Methanocaldococcus lenocilega* sp. nov.**

*Candidatus Methanocaldococcus lenocilega* (NL. fem. n. *lenocilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocaldococcus sp000025525*. The type genome for the species is the GenBank assembly RS\_GCF\_000025525.1. The GC content of the type genome is 32.04 % and the genome length is 1.77 Mbp.

**Description of *Candidatus Methanocella bigaritas* sp. nov.**

*Candidatus Methanocella bigaritas* (NL. fem. n. *bigaritas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocella\_A sp002067315*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002067315.1. The GC content of the type genome is 59.83 % and the genome length is 3.24 Mbp.

**Description of *Candidatus Methanococcoides linigax* sp. nov.**

*Candidatus Methanococcoides linigax* (NL. fem. n. *linigax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanococcoides sp900774055*. The type genome for the species is the GenBank assembly RS\_GCF\_900774055.1. The GC content of the type genome is 42.66 % and the genome length is 2.48 Mbp.

**Description of *Candidatus Methanocorpusculum hexagatio* sp. nov.**

*Candidatus Methanocorpusculum hexagatio* (NL. fem. n. *hexagatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocorpusculum sp002498375*. The type genome for the species is the GenBank assembly GCA\_002498375.1. The GC content of the type genome is 51.03 % and the genome length is 1.56 Mbp.

**Description of *Candidatus Methanocorpusculum malifatica* sp. nov.**

*Candidatus Methanocorpusculum malifatica* (NL. fem. n. *malifatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocorpusculum sp001940805*. The type genome for the species is the GenBank assembly GCA\_001940805.1. The GC content of the type genome is 52.9 % and the genome length is 1.97 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "feces from Phil the wombat".

**Description of *Candidatus Methanocorpusculum noninata* sp. nov.**

*Candidatus Methanocorpusculum noninata* (NL. fem. n. *noninata* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocorpusculum sp003315675*. The type genome for the species is the GenBank assembly GCA\_003315675.1. The GC content of the type genome is 50.11 % and the genome length is 1.7 Mbp.

**Description of *Candidatus Methanocorpusculum penicousia* sp. nov.**

*Candidatus Methanocorpusculum penicousia* (NL. fem. n. *penicousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanocorpusculum* sp002506085. The type genome for the species is the GenBank assembly GCA\_002506085.1. The GC content of the type genome is 48.08 % and the genome length is 1.81 Mbp.

**Description of *Candidatus Methanoculleus cenotivita* sp. nov.**

*Candidatus Methanoculleus cenotivita* (NL. fem. n. *cenotivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus* sp002839645. The type genome for the species is the GenBank assembly GCA\_002839645.1. The GC content of the type genome is 60.83 % and the genome length is 2.78 Mbp.

**Description of *Candidatus Methanoculleus cinipitia* sp. nov.**

*Candidatus Methanoculleus cinipitia* (NL. fem. n. *cinipitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus* sp002508705. The type genome for the species is the GenBank assembly GCA\_002508705.1. The GC content of the type genome is 60.28 % and the genome length is 2.8 Mbp.

**Description of *Candidatus Methanoculleus conifitudo* sp. nov.**

*Candidatus Methanoculleus conifitudo* (NL. fem. n. *conifitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus* sp002497965. The type genome for the species is the GenBank assembly GCA\_013329555.1. The GC content of the type genome is 59.7 % and the genome length is 1.01 Mbp.

**Description of *Candidatus Methanoculleus cuferiforma* sp. nov.**

*Candidatus Methanoculleus cuferiforma* (NL. fem. n. *cuferiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus* sp012797575. The type genome for the species is the GenBank assembly GCA\_013201385.1. The GC content of the type genome is 59.04 % and the genome length is 2.04 Mbp.



**Description of *Candidatus Methanoculleus delubax* sp. nov.**

*Candidatus Methanoculleus delubax* (NL. fem. n. *delubax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp012521035*. The type genome for the species is the GenBank assembly GCA\_012521035.1. The GC content of the type genome is 59.47 % and the genome length is 2.24 Mbp.

**Description of *Candidatus Methanoculleus depetitia* sp. nov.**

*Candidatus Methanoculleus depetitia* (NL. fem. n. *depetitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp001896715*. The type genome for the species is the GenBank assembly GCA\_001896715.1. The GC content of the type genome is 60.25 % and the genome length is 2.69 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sludge from a mesophilic anaerobic wastewater digester enriched on phosphite and carbon dioxide".

**Description of *Candidatus Methanoculleus docibilenta* sp. nov.**

*Candidatus Methanoculleus docibilenta* (NL. fem. n. *docibilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp012510335*. The type genome for the species is the GenBank assembly GCA\_012510335.1. The GC content of the type genome is 59.47 % and the genome length is 1.84 Mbp.

**Description of *Candidatus Methanoculleus locupivita* sp. nov.**

*Candidatus Methanoculleus locupivita* (NL. fem. n. *locupivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp002506585*. The type genome for the species is the GenBank assembly GCA\_002506585.1. The GC content of the type genome is 61.96 % and the genome length is 2.72 Mbp.

**Description of *Candidatus Methanoculleus lucubibula* sp. nov.**

*Candidatus Methanoculleus lucubibula* (NL. fem. n. *lucubibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp012511245*. The type genome for the species is the GenBank assembly GCA\_012511245.1. The GC content of the type genome is 59.82 % and the genome length is 2.22 Mbp.

**Description of *Candidatus Methanoculleus necubigena* sp. nov.**

*Candidatus Methanoculleus necubigena* (NL. fem. n. *necubigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp002499455*. The type genome for the species is the GenBank assembly GCA\_002499455.1. The GC content of the type genome is 63.33 % and the genome length is 2.31 Mbp.

**Description of *Candidatus Methanoculleus nefanimonas* sp. nov.**

*Candidatus Methanoculleus nefanimonas* (NL. fem. n. *nefanimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp002839575*. The type genome for the species is the GenBank assembly GCA\_002839575.1. The GC content of the type genome is 61.51 % and the genome length is 2.55 Mbp.

**Description of *Candidatus Methanoculleus penicetta* sp. nov.**

*Candidatus Methanoculleus penicetta* (NL. fem. n. *penicetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp002498065*. The type genome for the species is the GenBank assembly GCA\_002498065.1. The GC content of the type genome is 62.35 % and the genome length is 2.41 Mbp.

**Description of *Candidatus Methanoculleus peropisca* sp. nov.**

*Candidatus Methanoculleus peropisca* (NL. fem. n. *peropisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp000691865*. The type genome for the species is the GenBank assembly RS\_GCF\_000691865.1. The GC content of the type genome is 61.44 % and the genome length is 2.54 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sediment associated with methane hydrate from Krishna Godavari Basin".

**Description of *Candidatus Methanoculleus semipitio* sp. nov.**

*Candidatus Methanoculleus semipitio* (NL. fem. n. *semipitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp002501655*. The type genome for the species is the GenBank assembly GCA\_002501655.1. The GC content of the type genome is 60.85 % and the genome length is 2.67 Mbp.

**Description of *Candidatus Methanoculleus voragedo* sp. nov.**

*Candidatus Methanoculleus voragedo* (NL. fem. n. *voragedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoculleus sp012510295*. The type genome for the species is the GenBank assembly GCA\_012510295.1. The GC content of the type genome is 59.45 % and the genome length is 1.9 Mbp.

**Description of *Candidatus Methanofastidiosum cocolitica* sp. nov.**

*Candidatus Methanofastidiosum cocolitica* (NL. fem. n. *cocolitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanofastidiosum sp003558335*. The type genome for the species is the GenBank assembly GCA\_003558335.1. The GC content of the type genome is 33.8 % and the genome length is 1.39 Mbp.

**Description of *Candidatus Methanofastidiosum desucibra* sp. nov.**

*Candidatus Methanofastidiosum desucibra* (NL. fem. n. *desucibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *Methanofastidiosum* sp001587715. The type genome for the species is the GenBank assembly GCA\_001587715.1. The GC content of the type genome is 35.38 % and the genome length is 1.99 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Methanogenic purified terephthalic acid process wastewater treatment bioreactor".

**Description of *Candidatus Methanofastidiosum ficedimonia* sp. nov.**

*Candidatus Methanofastidiosum ficedimonia* (NL. fem. n. *ficedimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanofastidiosum* sp012799835. The type genome for the species is the GenBank assembly GCA\_012799835.1. The GC content of the type genome is 33.81 % and the genome length is 1.94 Mbp.

**Description of *Candidatus Methanofastidiosum paropago* sp. nov.**

*Candidatus Methanofastidiosum paropago* (NL. fem. n. *paropago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanofastidiosum* sp9950u. The type genome for the species is the GenBank assembly GCA\_013329085.1. The GC content of the type genome is 35.52 % and the genome length is 1.57 Mbp.

**Description of *Candidatus Methanofastidiosum pinificella* sp. nov.**

*Candidatus Methanofastidiosum pinificella* (NL. fem. n. *pinificella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanofastidiosum* sp013178285. The type genome for the species is the GenBank assembly GCA\_013178285.1. The GC content of the type genome is 34.53 % and the genome length is 2.12 Mbp.

**Description of *Candidatus Methanofastidiosum rudicivita* sp. nov.**

*Candidatus Methanofastidiosum rudicivita* (NL. fem. n. *rudicivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanofastidiosum* sp001587595. The type genome for the species is the GenBank assembly GCA\_001587635.1. The GC content of the type genome is 33.31 % and the genome length is 1.99 Mbp.

% and the genome length is 1.48 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Urbana Champaign Sanitary District anaerobic digester sludge".

**Description of *Candidatus Methanofastidiosum tenebatica* sp. nov.**

*Candidatus Methanofastidiosum tenebatica* (NL. fem. n. *tenebatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanofastidiosum* sp001587675. The type genome for the species is the GenBank assembly GCA\_012797645.1. The GC content of the type genome is 33.72 % and the genome length is 1.72 Mbp.

**Description of *Candidatus Methanofastidiosum tubicitia* sp. nov.**

*Candidatus Methanofastidiosum tubicitia* (NL. fem. n. *tubicitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanofastidiosum* sp001587575. The type genome for the species is the GenBank assembly GCA\_001587575.1. The GC content of the type genome is 34.49 % and the genome length is 1.56 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Methanogenic purified terephthalic acid process wastewater treatment bioreactor".

**Description of *Candidatus Methanofervidicoccus denorax* sp. nov.**

*Candidatus Methanofervidicoccus denorax* (NL. fem. n. *denorax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanofervidicoccus* sp003351865. The type genome for the species is the GenBank assembly RS\_GCF\_003351865.1. The GC content of the type genome is 35.1 % and the genome length is 1.5 Mbp.

**Description of *Candidatus Methanofollis cimitessa* sp. nov.**

*Candidatus Methanofollis cimitessa* (NL. fem. n. *cimitessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanofollis* sp002498315. The type genome for the species is the GenBank assembly GCA\_002498315.1. The GC content of the type genome is 60.87 %

and the genome length is 2.34 Mbp.

**Description of *Candidatus Methanofollis demogentia* sp. nov.**

*Candidatus Methanofollis demogentia* (NL. fem. n. *demogentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanofollis* sp004297185. The type genome for the species is the GenBank assembly RS\_GCF\_004297185.1. The GC content of the type genome is 59.54 % and the genome length is 2.36 Mbp.

**Description of *Candidatus Methanogenium bifarax* sp. nov.**

*Candidatus Methanogenium bifarax* (NL. fem. n. *bifarax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanogenium* sp009914725. The type genome for the species is the GenBank assembly RS\_GCF\_009914725.1. The GC content of the type genome is 50.7 % and the genome length is 2.19 Mbp.

**Description of *Candidatus Methanogenium metapigena* sp. nov.**

*Candidatus Methanogenium metapigena* (NL. fem. n. *metapigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanogenium* sp012523385. The type genome for the species is the GenBank assembly GCA\_012523385.1. The GC content of the type genome is 48.79 % and the genome length is 1.67 Mbp.

**Description of *Candidatus Methanogenium veridibula* sp. nov.**

*Candidatus Methanogenium veridibula* (NL. fem. n. *veridibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanogenium* sp011045995. The type genome for the species is the GenBank assembly GCA\_011045995.1. The GC content of the type genome is 58.06 % and the genome length is 1.57 Mbp.

**Description of *Candidatus Methanohalophilus perexibula* sp. nov.**

*Candidatus* Methanohalophilus perexibula (NL. fem. n. *perexibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanohalophilus* sp003722075. The type genome for the species is the GenBank assembly RS\_GCF\_003722075.1. The GC content of the type genome is 42.56 % and the genome length is 1.97 Mbp.

**Description of *Candidatus* Methanohalophilus tabititoga sp. nov.**

*Candidatus* Methanohalophilus tabititoga (NL. fem. n. *tabititoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanohalophilus* sp004137855. The type genome for the species is the GenBank assembly RS\_GCF\_004137855.1. The GC content of the type genome is 42.69 % and the genome length is 1.83 Mbp.

**Description of *Candidatus* Methanolinea denigiforma sp. nov.**

*Candidatus* Methanolinea denigiforma (NL. fem. n. *denigiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolinea* sp002501965. The type genome for the species is the GenBank assembly GCA\_002501965.1. The GC content of the type genome is 58.18 % and the genome length is 1.43 Mbp.

**Description of *Candidatus* Methanolinea detorugo sp. nov.**

*Candidatus* Methanolinea detorugo (NL. fem. n. *detorugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolinea* sp002067485. The type genome for the species is the GenBank assembly GCA\_002067485.1. The GC content of the type genome is 54.01 % and the genome length is 1.91 Mbp.

**Description of *Candidatus* Methanolinea dimidax sp. nov.**

*Candidatus* Methanolinea dimidax (NL. fem. n. *dimidax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolinea sp002509495*. The type genome for the species is the GenBank assembly GCA\_002509495.1. The GC content of the type genome is 56.33 % and the genome length is 2.2 Mbp.

**Description of *Candidatus Methanolinea figilitoga* sp. nov.**

*Candidatus Methanolinea figilitoga* (NL. fem. n. *figilitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolinea sp11423u*. The type genome for the species is the GenBank assembly GCA\_002067665.1. The GC content of the type genome is 56.67 % and the genome length is 2.09 Mbp.

**Description of *Candidatus Methanolinea homilitia* sp. nov.**

*Candidatus Methanolinea homilitia* (NL. fem. n. *homilitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolinea sp002067095*. The type genome for the species is the GenBank assembly GCA\_002067095.1. The GC content of the type genome is 57.79 % and the genome length is 2.24 Mbp.

**Description of *Candidatus Methanolinea redunago* sp. nov.**

*Candidatus Methanolinea redunago* (NL. fem. n. *redunago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolinea sp002067155*. The type genome for the species is the GenBank assembly GCA\_002067155.1. The GC content of the type genome is 57.8 % and the genome length is 1.96 Mbp.

**Description of *Candidatus Methanolinea relenicella* sp. nov.**

*Candidatus Methanolinea relenicella* (NL. fem. n. *relenicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolinea sp002506105*. The type genome for the species is the GenBank assembly GCA\_002499825.1. The GC content of the type genome is 52.97 %



and the genome length is 2.67 Mbp.

**Description of *Candidatus Methanolinea repecisca* sp. nov.**

*Candidatus Methanolinea repecisca* (NL. fem. n. *repecisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolinea sp002067685*. The type genome for the species is the GenBank assembly GCA\_002067685.1. The GC content of the type genome is 53.63 % and the genome length is 2.21 Mbp.

**Description of *Candidatus Methanoliparum levidilega* sp. nov.**

*Candidatus Methanoliparum levidilega* (NL. fem. n. *levidilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoliparum sp8915u*. The type genome for the species is the GenBank assembly GCA\_013329575.1. The GC content of the type genome is 37.59 % and the genome length is 1.24 Mbp.

**Description of *Candidatus Methanolliviera morigibula* sp. nov.**

*Candidatus Methanolliviera morigibula* (NL. fem. n. *morigibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolliviera sp902158735*. The type genome for the species is the GenBank assembly RS\_GCF\_902158735.1. The GC content of the type genome is 42.58 % and the genome length is 1.7 Mbp.

**Description of *Candidatus Methanolliviera viburatio* sp. nov.**

*Candidatus Methanolliviera viburatio* (NL. fem. n. *viburatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolliviera sp902158745*. The type genome for the species is the GenBank assembly RS\_GCF\_902158745.1. The GC content of the type genome is 42.73 % and the genome length is 1.75 Mbp.

**Description of *Candidatus Methanolobus homagicella* sp. nov.**

*Candidatus Methanolobus homagicella* (NL. fem. n. *homagicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolobus sp002501695*. The type genome for the species is the GenBank assembly GCA\_002501695.1. The GC content of the type genome is 47.23 % and the genome length is 2.31 Mbp.

**Description of *Candidatus Methanolobus mavoretta* sp. nov.**

*Candidatus Methanolobus mavoretta* (NL. fem. n. *mavoretta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolobus sp004745425*. The type genome for the species is the GenBank assembly RS\_GCF\_004745425.1. The GC content of the type genome is 43.58 % and the genome length is 2.59 Mbp.

**Description of *Candidatus Methanolobus maxilago* sp. nov.**

*Candidatus Methanolobus maxilago* (NL. fem. n. *maxilago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolobus sp003565715*. The type genome for the species is the GenBank assembly GCA\_003559435.1. The GC content of the type genome is 40.88 % and the genome length is 2.2 Mbp.

**Description of *Candidatus Methanolobus pinacifica* sp. nov.**

*Candidatus Methanolobus pinacifica* (NL. fem. n. *pinacifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolobus sp002508635*. The type genome for the species is the GenBank assembly GCA\_002508635.1. The GC content of the type genome is 44.22 % and the genome length is 1.97 Mbp.

**Description of *Candidatus Methanolobus repuditio* sp. nov.**

*Candidatus Methanolobus repuditio* (NL. fem. n. *repuditio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanolobus sp002507205*. The type genome for the species is the GenBank assembly GCA\_002507205.1. The GC content of the type genome is 42.29 % and the genome length is 2.33 Mbp.

**Description of *Candidatus Methanomassiliicoccus coturilenta* sp. nov.**

*Candidatus Methanomassiliicoccus coturilenta* (NL. fem. n. *coturilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomassiliicoccus sp012719175*. The type genome for the species is the GenBank assembly GCA\_012719175.1. The GC content of the type genome is 57.14 % and the genome length is 2.42 Mbp.

**Description of *Candidatus Methanomassiliicoccus lucelimonia* sp. nov.**

*Candidatus Methanomassiliicoccus lucelimonia* (NL. fem. n. *lucelimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomassiliicoccus sp002067635*. The type genome for the species is the GenBank assembly GCA\_002067635.1. The GC content of the type genome is 58.8 % and the genome length is 1.53 Mbp.

**Description of *Candidatus Methanomassiliicoccus sonipastra* sp. nov.**

*Candidatus Methanomassiliicoccus sonipastra* (NL. fem. n. *sonipastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomassiliicoccus sp002508545*. The type genome for the species is the GenBank assembly GCA\_002508545.1. The GC content of the type genome is 62.74 % and the genome length is 2.36 Mbp.

**Description of *Candidatus Methanomethylophilus capucicella* sp. nov.**

*Candidatus Methanomethylophilus capucicella* (NL. fem. n. *capucicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylophilus sp000350305*. The type genome for the species is the GenBank assembly RS\_GCF\_000350305.1. The GC content of the type genome is

58.3 % and the genome length is 1.46 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "digesta samples from rumen".

**Description of *Candidatus Methanomethylophilus catecugo* sp. nov.**

*Candidatus Methanomethylophilus catecugo* (NL. fem. n. *catecugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylophilus* sp902787415. The type genome for the species is the GenBank assembly RS\_GCF\_902788915.1. The GC content of the type genome is 59.21 % and the genome length is 1.01 Mbp.

**Description of *Candidatus Methanomethylophilus cilotisca* sp. nov.**

*Candidatus Methanomethylophilus cilotisca* (NL. fem. n. *cilotisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylophilus* sp002495325. The type genome for the species is the GenBank assembly GCA\_002495325.1. The GC content of the type genome is 58.13 % and the genome length is 1.5 Mbp.

**Description of *Candidatus Methanomethylophilus hemidessa* sp. nov.**

*Candidatus Methanomethylophilus hemidessa* (NL. fem. n. *hemidessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylophilus* sp001560915. The type genome for the species is the GenBank assembly RS\_GCF\_902794865.1. The GC content of the type genome is 55.82 % and the genome length is 1.35 Mbp.

**Description of *Candidatus Methanomethylophilus refocugo* sp. nov.**

*Candidatus Methanomethylophilus refocugo* (NL. fem. n. *refocugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylophilus* sp001481295. The type genome for the species is the GenBank assembly GCA\_902777245.1. The GC content of the type genome is 60.97 % and the genome length is 1.54 Mbp.

**Description of *Candidatus Methanomethylophilus relecifica* sp. nov.**

*Candidatus Methanomethylophilus relecifica* (NL. fem. n. *relecifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylophilus* sp902763685. The type genome for the species is the GenBank assembly RS\_GCF\_902763685.1. The GC content of the type genome is 56.15 % and the genome length is 1.54 Mbp.

**Description of *Candidatus Methanomethylophilus sonipago* sp. nov.**

*Candidatus Methanomethylophilus sonipago* (NL. fem. n. *sonipago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylophilus* sp002503545. The type genome for the species is the GenBank assembly GCA\_002503545.1. The GC content of the type genome is 60.12 % and the genome length is 1.25 Mbp.

**Description of *Candidatus Methanomethylovorans bisulitia* sp. nov.**

*Candidatus Methanomethylovorans bisulitia* (NL. fem. n. *bisulitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylovorans* sp001896725. The type genome for the species is the GenBank assembly GCA\_001896725.1. The GC content of the type genome is 42.33 % and the genome length is 2.18 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sludge from a mesophilic anaerobic wastewater digester enriched on phosphite and carbon dioxide".

**Description of *Candidatus Methanomethylovorans nivomousia* sp. nov.**

*Candidatus Methanomethylovorans nivomousia* (NL. fem. n. *nivomousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylovorans* sp002067275. The type genome for the species is the GenBank assembly GCA\_002067275.1. The GC content of the type genome is 44.31 % and the genome length is 2.1 Mbp.

**Description of *Candidatus Methanomethylovorans recomisca* sp. nov.**

*Candidatus* Methanomethylovorans recomisca (NL. fem. n. *recomisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylovorans sp002067265*. The type genome for the species is the GenBank assembly GCA\_002067265.1. The GC content of the type genome is 40.97 % and the genome length is 1.92 Mbp.

**Description of *Candidatus* Methanomethylovorans selecessa sp. nov.**

*Candidatus* Methanomethylovorans selecessa (NL. fem. n. *selecessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylovorans sp014361205*. The type genome for the species is the GenBank assembly GCA\_014361205.1. The GC content of the type genome is 38.12 % and the genome length is 2.15 Mbp.

**Description of *Candidatus* Methanomethylovorans veriditica sp. nov.**

*Candidatus* Methanomethylovorans veriditica (NL. fem. n. *veriditica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanomethylovorans sp002508425*. The type genome for the species is the GenBank assembly GCA\_002508425.1. The GC content of the type genome is 41.12 % and the genome length is 2.47 Mbp.

**Description of *Candidatus* Methanonatronarchaeum rubeficella sp. nov.**

*Candidatus* Methanonatronarchaeum rubeficella (NL. fem. n. *rubeficella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanonatronarchaeum sp004212035*. The type genome for the species is the GenBank assembly GCA\_003555005.1. The GC content of the type genome is 42.52 % and the genome length is 1.46 Mbp.

**Description of *Candidatus* Methanoperedens cacopessa sp. nov.**

*Candidatus* Methanoperedens cacopessa (NL. fem. n. *cacopessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens sp012026835*. The type genome for the species is the GenBank assembly GCA\_012026835.1. The GC content of the type genome is 42.92 % and the genome length is 3.32 Mbp.

**Description of *Candidatus Methanoperedens capililega* sp. nov.**

*Candidatus Methanoperedens capililega* (NL. fem. n. *capililega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens sp003104905*. The type genome for the species is the GenBank assembly GCA\_003104905.1. The GC content of the type genome is 40.81 % and the genome length is 2.91 Mbp.

**Description of *Candidatus Methanoperedens detunedo* sp. nov.**

*Candidatus Methanoperedens detunedo* (NL. fem. n. *detunedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens sp002487355*. The type genome for the species is the GenBank assembly GCA\_008933945.1. The GC content of the type genome is 40.25 % and the genome length is 3.8 Mbp.

**Description of *Candidatus Methanoperedens foricago* sp. nov.**

*Candidatus Methanoperedens foricago* (NL. fem. n. *foricago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens sp902384525*. The type genome for the species is the GenBank assembly GCA\_902384525.1. The GC content of the type genome is 40.43 % and the genome length is 2.92 Mbp.

**Description of *Candidatus Methanoperedens melopessa* sp. nov.**

*Candidatus Methanoperedens melopessa* (NL. fem. n. *melopessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens sp902386115*. The type genome for the species is the GenBank assembly GCA\_902386115.1. The GC content of the type genome is 43.36 % and the genome length is 3.32 Mbp.

% and the genome length is 2.2 Mbp.

**Description of *Candidatus Methanoperedens nidifilenta* sp. nov.**

*Candidatus Methanoperedens nidifilenta* (NL. fem. n. *nidifilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens* sp902386205. The type genome for the species is the GenBank assembly GCA\_902386205.1. The GC content of the type genome is 43.88 % and the genome length is 2.79 Mbp.

**Description of *Candidatus Methanoperedens refinetta* sp. nov.**

*Candidatus Methanoperedens refinetta* (NL. fem. n. *refinetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens* sp902386255. The type genome for the species is the GenBank assembly GCA\_902386255.1. The GC content of the type genome is 43.14 % and the genome length is 2.6 Mbp.

**Description of *Candidatus Methanoperedens sarabax* sp. nov.**

*Candidatus Methanoperedens sarabax* (NL. fem. n. *sarabax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens* sp902386085. The type genome for the species is the GenBank assembly GCA\_902386085.1. The GC content of the type genome is 44.13 % and the genome length is 1.69 Mbp.

**Description of *Candidatus Methanoperedens selibimonas* sp. nov.**

*Candidatus Methanoperedens selibimonas* (NL. fem. n. *selibimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens* sp012026795. The type genome for the species is the GenBank assembly GCA\_012026795.1. The GC content of the type genome is 40.58 % and the genome length is 3.59 Mbp.

**Description of *Candidatus Methanoperedens tegumentia* sp. nov.**



*Candidatus Methanoperedens tegumentia* (NL. fem. n. *tegumentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens sp902386135*. The type genome for the species is the GenBank assembly GCA\_902386135.1. The GC content of the type genome is 44.05 % and the genome length is 3.24 Mbp.

**Description of *Candidatus Methanoperedens bigemitio* sp. nov.**

*Candidatus Methanoperedens bigemitio* (NL. fem. n. *bigemitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoperedens\_A sp002839545*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002839545.1. The GC content of the type genome is 43.15 % and the genome length is 2.0 Mbp.

**Description of *Candidatus Methanoplasma ceromax* sp. nov.**

*Candidatus Methanoplasma ceromax* (NL. fem. n. *ceromax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoplasma sp009776625*. The type genome for the species is the GenBank assembly GCA\_009776625.1. The GC content of the type genome is 61.56 % and the genome length is 1.56 Mbp.

**Description of *Candidatus Methanoplasma demadedo* sp. nov.**

*Candidatus Methanoplasma demadedo* (NL. fem. n. *demadedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoplasma sp009778275*. The type genome for the species is the GenBank assembly GCA\_009778275.1. The GC content of the type genome is 53.02 % and the genome length is 0.85 Mbp.

**Description of *Candidatus Methanoplasma depupago* sp. nov.**

*Candidatus Methanoplasma depupago* (NL. fem. n. *depupago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoplasma sp009778575*. The type genome for the species is the GenBank assembly GCA\_009778575.1. The GC content of the type genome is 52.09 % and the genome length is 1.29 Mbp.

**Description of *Candidatus Methanoplasma rurigilenta* sp. nov.**

*Candidatus Methanoplasma rurigilenta* (NL. fem. n. *rurigilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoplasma sp009786295*. The type genome for the species is the GenBank assembly GCA\_009786295.1. The GC content of the type genome is 50.3 % and the genome length is 1.16 Mbp.

**Description of *Candidatus Methanoplasma solifedo* sp. nov.**

*Candidatus Methanoplasma solifedo* (NL. fem. n. *solifedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoplasma sp009777615*. The type genome for the species is the GenBank assembly GCA\_009777615.1. The GC content of the type genome is 52.26 % and the genome length is 1.62 Mbp.

**Description of *Candidatus Methanopyrus dilicilega* sp. nov.**

*Candidatus Methanopyrus dilicilega* (NL. fem. n. *dilicilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanopyrus sp013154335*. The type genome for the species is the GenBank assembly GCA\_013154335.1. The GC content of the type genome is 62.43 % and the genome length is 1.37 Mbp.

**Description of *Candidatus Methanopyrus pedifitudo* sp. nov.**

*Candidatus Methanopyrus pedifitudo* (NL. fem. n. *pedifitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *Methanopyrus* sp002201895. The type genome for the species is the GenBank assembly RS\_GCF\_002201915.1. The GC content of the type genome is 57.67 % and the genome length is 1.43 Mbp.

**Description of *Candidatus Methanoregula celumitoga* sp. nov.**

*Candidatus Methanoregula celumitoga* (NL. fem. n. *celumitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp012798365. The type genome for the species is the GenBank assembly GCA\_012798365.1. The GC content of the type genome is 55.77 % and the genome length is 2.64 Mbp.

**Description of *Candidatus Methanoregula cenotitrix* sp. nov.**

*Candidatus Methanoregula cenotitrix* (NL. fem. n. *cenotitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp11803u. The type genome for the species is the GenBank assembly GCA\_013331015.1. The GC content of the type genome is 56.12 % and the genome length is 2.18 Mbp.

**Description of *Candidatus Methanoregula corocimonas* sp. nov.**

*Candidatus Methanoregula corocimonas* (NL. fem. n. *corocimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp002502245. The type genome for the species is the GenBank assembly GCA\_002499025.1. The GC content of the type genome is 56.12 % and the genome length is 2.16 Mbp.

**Description of *Candidatus Methanoregula depicibula* sp. nov.**

*Candidatus Methanoregula depicibula* (NL. fem. n. *depicibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp002067035. The type genome for the species is the GenBank assembly GCA\_002067035.1. The GC content of the type genome is 56.47 % and the genome length is 2.9 Mbp.

#### **Description of *Candidatus Methanoregula depopetta* sp. nov.**

*Candidatus Methanoregula depopetta* (NL. fem. n. *depopetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp002508495. The type genome for the species is the GenBank assembly GCA\_002508495.1. The GC content of the type genome is 55.84 % and the genome length is 1.93 Mbp.

#### **Description of *Candidatus Methanoregula fatilousia* sp. nov.**

*Candidatus Methanoregula fatilousia* (NL. fem. n. *fatilousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp002835825. The type genome for the species is the GenBank assembly GCA\_002835825.1. The GC content of the type genome is 56.64 % and the genome length is 2.62 Mbp.

#### **Description of *Candidatus Methanoregula hemitugo* sp. nov.**

*Candidatus Methanoregula hemitugo* (NL. fem. n. *hemitugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp003157895. The type genome for the species is the GenBank assembly GCA\_003157895.1. The GC content of the type genome is 53.77 % and the genome length is 2.03 Mbp.

#### **Description of *Candidatus Methanoregula homolitoga* sp. nov.**

*Candidatus Methanoregula homolitoga* (NL. fem. n. *homolitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp003136075. The type genome for the species is the GenBank assembly GCA\_003136075.1. The GC content of the type genome is 50.55 % and the genome length is 2.16 Mbp.

#### **Description of *Candidatus Methanoregula laculimonia* sp. nov.**

*Candidatus Methanoregula laculimonia* (NL. fem. n. *laculimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a

noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula sp002495065*. The type genome for the species is the GenBank assembly GCA\_002495065.1. The GC content of the type genome is 50.15 % and the genome length is 2.42 Mbp.

**Description of *Candidatus Methanoregula medimilenta* sp. nov.**

*Candidatus Methanoregula medimilenta* (NL. fem. n. *medimilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula sp903832665*. The type genome for the species is the GenBank assembly GCA\_903832665.1. The GC content of the type genome is 52.16 % and the genome length is 2.88 Mbp.

**Description of *Candidatus Methanoregula mirabastra* sp. nov.**

*Candidatus Methanoregula mirabastra* (NL. fem. n. *mirabastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula sp002502735*. The type genome for the species is the GenBank assembly GCA\_002502735.1. The GC content of the type genome is 56.43 % and the genome length is 2.38 Mbp.

**Description of *Candidatus Methanoregula ranunago* sp. nov.**

*Candidatus Methanoregula ranunago* (NL. fem. n. *ranunago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula sp002839675*. The type genome for the species is the GenBank assembly GCA\_002839675.1. The GC content of the type genome is 51.45 % and the genome length is 2.47 Mbp.

**Description of *Candidatus Methanoregula relecedo* sp. nov.**

*Candidatus Methanoregula relecedo* (NL. fem. n. *relecedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *Methanoregula* sp003154335. The type genome for the species is the GenBank assembly GCA\_003153835.1. The GC content of the type genome is 47.91 % and the genome length is 1.92 Mbp.

**Description of *Candidatus Methanoregula satacastra* sp. nov.**

*Candidatus Methanoregula satacastra* (NL. fem. n. *satacastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp003170075. The type genome for the species is the GenBank assembly GCA\_003170075.1. The GC content of the type genome is 54.99 % and the genome length is 1.92 Mbp.

**Description of *Candidatus Methanoregula senacedo* sp. nov.**

*Candidatus Methanoregula senacedo* (NL. fem. n. *senacedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp002497485. The type genome for the species is the GenBank assembly GCA\_002497485.1. The GC content of the type genome is 53.85 % and the genome length is 1.75 Mbp.

**Description of *Candidatus Methanoregula sonabibula* sp. nov.**

*Candidatus Methanoregula sonabibula* (NL. fem. n. *sonabibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp002839605. The type genome for the species is the GenBank assembly GCA\_002839605.1. The GC content of the type genome is 55.31 % and the genome length is 2.59 Mbp.

**Description of *Candidatus Methanoregula turicitura* sp. nov.**

*Candidatus Methanoregula turicitura* (NL. fem. n. *turicitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula* sp002495055. The type genome for the species is the GenBank assembly GCA\_002509345.1. The GC content of the type genome is 47.32 % and the genome length is 2.25 Mbp.

### **Description of *Candidatus Methanoregula venucitudo* sp. nov.**

*Candidatus Methanoregula venucitudo* (NL. fem. n. *venucitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanoregula sp003141335*. The type genome for the species is the GenBank assembly GCA\_003141335.1. The GC content of the type genome is 49.9 % and the genome length is 2.02 Mbp.

### **Description of *Candidatus Methanosalsum cituvousia* sp. nov.**

*Candidatus Methanosalsum cituvousia* (NL. fem. n. *cituvousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosalsum sp007127385*. The type genome for the species is the GenBank assembly GCA\_007127385.1. The GC content of the type genome is 40.49 % and the genome length is 1.33 Mbp.

### **Description of *Candidatus Methanosarcina bicorisca* sp. nov.**

*Candidatus Methanosarcina bicorisca* (NL. fem. n. *bicorisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina sp001714685*. The type genome for the species is the GenBank assembly GCA\_001714685.2. The GC content of the type genome is 40.1 % and the genome length is 4.29 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "enrichment culture inoculated with soil; incubated with H<sub>2</sub>/CO<sub>2</sub> at 20 degrees celsius and monitored for methane production".

### **Description of *Candidatus Methanosarcina bigaritio* sp. nov.**

*Candidatus Methanosarcina bigaritio* (NL. fem. n. *bigaritio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina sp11020u*. The type genome for the species is the GenBank assembly GCA\_013331275.1. The GC content of the type genome is 39.11 % and the genome length is 4.33 Mbp.

### **Description of *Candidatus Methanosarcina bipinitio* sp. nov.**

*Candidatus* Methanosarcina bipinitio (NL. fem. n. *bipinitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina* sp000969965. The type genome for the species is the GenBank assembly RS\_GCF\_000969965.1. The GC content of the type genome is 41.69 % and the genome length is 4.14 Mbp.

**Description of *Candidatus* Methanosarcina bucoletta sp. nov.**

*Candidatus* Methanosarcina bucoletta (NL. fem. n. *bucoletta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina* sp003164755. The type genome for the species is the GenBank assembly GCA\_003164755.1. The GC content of the type genome is 35.74 % and the genome length is 3.47 Mbp.

**Description of *Candidatus* Methanosarcina carecentia sp. nov.**

*Candidatus* Methanosarcina carecentia (NL. fem. n. *carecentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina* sp002505485. The type genome for the species is the GenBank assembly GCA\_002505485.1. The GC content of the type genome is 40.16 % and the genome length is 3.82 Mbp.

**Description of *Candidatus* Methanosarcina celumastra sp. nov.**

*Candidatus* Methanosarcina celumastra (NL. fem. n. *celumastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina* sp003157235. The type genome for the species is the GenBank assembly GCA\_003157235.1. The GC content of the type genome is 35.81 % and the genome length is 2.92 Mbp.

**Description of *Candidatus* Methanosarcina coninugo sp. nov.**

*Candidatus* Methanosarcina coninugo (NL. fem. n. *coninugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).



A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina sp002496565*. The type genome for the species is the GenBank assembly GCA\_002495725.1. The GC content of the type genome is 39.98 % and the genome length is 3.7 Mbp.

**Description of *Candidatus Methanosarcina defenitica* sp. nov.**

*Candidatus Methanosarcina defenitica* (NL. fem. n. *defenitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina sp002509325*. The type genome for the species is the GenBank assembly GCA\_002509325.1. The GC content of the type genome is 41.24 % and the genome length is 2.92 Mbp.

**Description of *Candidatus Methanosarcina depupugo* sp. nov.**

*Candidatus Methanosarcina depupugo* (NL. fem. n. *depupugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina sp002499445*. The type genome for the species is the GenBank assembly GCA\_002506095.1. The GC content of the type genome is 40.47 % and the genome length is 2.58 Mbp.

**Description of *Candidatus Methanosarcina domabivita* sp. nov.**

*Candidatus Methanosarcina domabivita* (NL. fem. n. *domabivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina sp10923u*. The type genome for the species is the GenBank assembly GCA\_013331265.1. The GC content of the type genome is 41.6 % and the genome length is 3.3 Mbp.

**Description of *Candidatus Methanosarcina homolago* sp. nov.**

*Candidatus Methanosarcina homolago* (NL. fem. n. *homolago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina sp8098u*. The type genome for the species is the GenBank assembly GCA\_013330315.1. The GC content of the type genome is 41.41 %

and the genome length is 2.34 Mbp.

**Description of *Candidatus Methanosarcina refacicula* sp. nov.**

*Candidatus Methanosarcina refacicula* (NL. fem. n. *refacicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina* sp000979455. The type genome for the species is the GenBank assembly RS\_GCF\_000979385.1. The GC content of the type genome is 42.93 % and the genome length is 3.91 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sediment".

**Description of *Candidatus Methanosarcina repecifica* sp. nov.**

*Candidatus Methanosarcina repecifica* (NL. fem. n. *repecifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosarcina* sp004099695. The type genome for the species is the GenBank assembly RS\_GCF\_004099695.1. The GC content of the type genome is 42.46 % and the genome length is 3.56 Mbp.

**Description of *Candidatus Methanosphaera benivedo* sp. nov.**

*Candidatus Methanosphaera benivedo* (NL. fem. n. *benivedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera* sp900322125. The type genome for the species is the GenBank assembly GCA\_902782945.1. The GC content of the type genome is 29.72 % and the genome length is 1.71 Mbp.

**Description of *Candidatus Methanosphaera caduredo* sp. nov.**

*Candidatus Methanosphaera caduredo* (NL. fem. n. *caduredo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera* sp002509095. The type genome for the species is the GenBank assembly GCA\_002509095.1. The GC content of the type genome is 29.95 % and the genome length is 1.16 Mbp.

**Description of *Candidatus Methanosphaera cinipigena* sp. nov.**

*Candidatus* Methanosphaera cinipigena (NL. fem. n. *cinipigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera sp003266145*. The type genome for the species is the GenBank assembly GCA\_003266145.1. The GC content of the type genome is 33.0 % and the genome length is 1.86 Mbp.

**Description of *Candidatus* Methanosphaera dapifetta sp. nov.**

*Candidatus* Methanosphaera dapifetta (NL. fem. n. *dapifetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera sp11921u*. The type genome for the species is the GenBank assembly GCA\_013330915.1. The GC content of the type genome is 33.21 % and the genome length is 1.35 Mbp.

**Description of *Candidatus* Methanosphaera dedigastra sp. nov.**

*Candidatus* Methanosphaera dedigastra (NL. fem. n. *dedigastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera sp003266065*. The type genome for the species is the GenBank assembly GCA\_003266065.1. The GC content of the type genome is 34.83 % and the genome length is 2.06 Mbp.

**Description of *Candidatus* Methanosphaera diludicula sp. nov.**

*Candidatus* Methanosphaera diludicula (NL. fem. n. *diludicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera sp003268005*. The type genome for the species is the GenBank assembly RS\_GCF\_003268005.1. The GC content of the type genome is 32.93 % and the genome length is 2.87 Mbp.

**Description of *Candidatus* Methanosphaera dinupitio sp. nov.**

*Candidatus* Methanosphaera dinupitio (NL. fem. n. *dinupitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera sp10242u*. The type genome for the species is the GenBank assembly GCA\_013331465.1. The GC content of the type genome is 31.99 % and the genome length is 1.48 Mbp.

**Description of *Candidatus Methanosphaera fuligiforma* sp. nov.**

*Candidatus Methanosphaera fuligiforma* (NL. fem. n. *fuligiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera sp003266105*. The type genome for the species is the GenBank assembly GCA\_003266105.1. The GC content of the type genome is 32.92 % and the genome length is 1.94 Mbp.

**Description of *Candidatus Methanosphaera hexapastra* sp. nov.**

*Candidatus Methanosphaera hexapastra* (NL. fem. n. *hexapastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera sp902797085*. The type genome for the species is the GenBank assembly GCA\_902797085.1. The GC content of the type genome is 31.93 % and the genome length is 1.77 Mbp.

**Description of *Candidatus Methanosphaera maheliforma* sp. nov.**

*Candidatus Methanosphaera maheliforma* (NL. fem. n. *maheliforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera sp001729965*. The type genome for the species is the GenBank assembly RS\_GCF\_001729965.1. The GC content of the type genome is 27.7 % and the genome length is 1.73 Mbp.

**Description of *Candidatus Methanosphaera pavimivita* sp. nov.**

*Candidatus Methanosphaera pavimivita* (NL. fem. n. *pavimivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera sp003266075*. The type genome for the species is the GenBank assembly GCA\_003266075.1. The GC content of the type genome is 35.52 %

and the genome length is 2.0 Mbp.

**Description of *Candidatus Methanosphaera recomibra* sp. nov.**

*Candidatus Methanosphaera recomibra* (NL. fem. n. *recomibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosphaera* sp003266165. The type genome for the species is the GenBank assembly GCA\_003266165.1. The GC content of the type genome is 35.25 % and the genome length is 1.76 Mbp.

**Description of *Candidatus Methanospirillum desoressa* sp. nov.**

*Candidatus Methanospirillum desoressa* (NL. fem. n. *desoressa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanospirillum* sp012729995. The type genome for the species is the GenBank assembly GCA\_012729995.1. The GC content of the type genome is 42.8 % and the genome length is 2.81 Mbp.

**Description of *Candidatus Methanospirillum funamivita* sp. nov.**

*Candidatus Methanospirillum funamivita* (NL. fem. n. *funamivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanospirillum* sp012520015. The type genome for the species is the GenBank assembly GCA\_012520015.1. The GC content of the type genome is 45.21 % and the genome length is 2.41 Mbp.

**Description of *Candidatus Methanospirillum virecax* sp. nov.**

*Candidatus Methanospirillum virecax* (NL. fem. n. *virecax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanospirillum* sp012729535. The type genome for the species is the GenBank assembly GCA\_012729535.1. The GC content of the type genome is 41.93 % and the genome length is 3.09 Mbp.

**Description of *Candidatus Methanosuratus lutulitudo* sp. nov.**

*Candidatus* Methanosuratus lutulitudo (NL. fem. n. *lutulitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanosuratus* sp014361455. The type genome for the species is the GenBank assembly GCA\_014361455.1. The GC content of the type genome is 53.66 % and the genome length is 1.52 Mbp.

**Description of *Candidatus* Methanothermobacter xenodatio sp. nov.**

*Candidatus* Methanothermobacter xenodatio (NL. fem. n. *xenodatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothermobacter* sp000828575. The type genome for the species is the GenBank assembly RS\_GCF\_000828575.1. The GC content of the type genome is 49.35 % and the genome length is 1.73 Mbp.

**Description of *Candidatus* Methanothermobacter bisacivita sp. nov.**

*Candidatus* Methanothermobacter bisacivita (NL. fem. n. *bisacivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothermobacter* *A* sp003584625. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_012840205.1. The GC content of the type genome is 39.96 % and the genome length is 1.54 Mbp.

**Description of *Candidatus* Methanothermobacter celumetta sp. nov.**

*Candidatus* Methanothermobacter celumetta (NL. fem. n. *celumetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothermobacter* *A* sp001507955. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_014361345.1. The GC content of the type genome is 40.77 % and the genome length is 1.3 Mbp.

**Description of *Candidatus* Methanothermobacter pavimitoga sp. nov.**

*Candidatus* Methanothermobacter pavimitoga (NL. fem. n. *pavimitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothermobacter\_A sp012840175*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_012840175.1. The GC content of the type genome is 42.12 % and the genome length is 1.42 Mbp.

#### **Description of *Candidatus* Methanothermobacter pomifitura sp. nov.**

*Candidatus* Methanothermobacter pomifitura (NL. fem. n. *pomifitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothermobacter\_A sp011370395*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_011370395.1. The GC content of the type genome is 40.69 % and the genome length is 1.29 Mbp.

#### **Description of *Candidatus* Methanotherrix benevitio sp. nov.**

*Candidatus* Methanotherrix benevitio (NL. fem. n. *benevitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanotherrix sp002505805*. The type genome for the species is the GenBank assembly GCA\_002505805.1. The GC content of the type genome is 53.21 % and the genome length is 2.17 Mbp.

#### **Description of *Candidatus* Methanotherrix corocastra sp. nov.**

*Candidatus* Methanotherrix corocastra (NL. fem. n. *corocastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanotherrix sp011620785*. The type genome for the species is the GenBank assembly GCA\_002498745.1. The GC content of the type genome is 52.96 % and the genome length is 2.0 Mbp.

#### **Description of *Candidatus* Methanotherrix decacimonas sp. nov.**

*Candidatus* Methanothrix decacimonas (NL. fem. n. *decacimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix sp903871465*. The type genome for the species is the GenBank assembly GCA\_903840245.1. The GC content of the type genome is 49.63 % and the genome length is 3.23 Mbp.

**Description of *Candidatus* Methanothrix funamitoga sp. nov.**

*Candidatus* Methanothrix funamitoga (NL. fem. n. *funamitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix sp002067705*. The type genome for the species is the GenBank assembly GCA\_002067705.1. The GC content of the type genome is 50.85 % and the genome length is 3.44 Mbp.

**Description of *Candidatus* Methanothrix lucificula sp. nov.**

*Candidatus* Methanothrix lucificula (NL. fem. n. *lucificula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix sp012798025*. The type genome for the species is the GenBank assembly GCA\_012798025.1. The GC content of the type genome is 51.79 % and the genome length is 1.74 Mbp.

**Description of *Candidatus* Methanothrix malagigena sp. nov.**

*Candidatus* Methanothrix malagigena (NL. fem. n. *malagigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix sp003857025*. The type genome for the species is the GenBank assembly GCA\_003857025.1. The GC content of the type genome is 51.0 % and the genome length is 3.16 Mbp.

**Description of *Candidatus* Methanothrix manufetta sp. nov.**

*Candidatus* Methanothrix manufetta (NL. fem. n. *manufetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).



A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix sp002256595*. The type genome for the species is the GenBank assembly GCA\_002256595.1. The GC content of the type genome is 54.81 % and the genome length is 1.47 Mbp.

**Description of *Candidatus Methanothrix metabastra* sp. nov.**

*Candidatus Methanothrix metabastra* (NL. fem. n. *metabastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix sp011391755*. The type genome for the species is the GenBank assembly GCA\_011391755.1. The GC content of the type genome is 51.91 % and the genome length is 1.53 Mbp.

**Description of *Candidatus Methanothrix pulegitoga* sp. nov.**

*Candidatus Methanothrix pulegitoga* (NL. fem. n. *pulegitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix sp002067365*. The type genome for the species is the GenBank assembly GCA\_002067365.1. The GC content of the type genome is 53.33 % and the genome length is 2.78 Mbp.

**Description of *Candidatus Methanothrix recogibula* sp. nov.**

*Candidatus Methanothrix recogibula* (NL. fem. n. *recogibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix sp002067755*. The type genome for the species is the GenBank assembly GCA\_002067755.1. The GC content of the type genome is 51.88 % and the genome length is 2.23 Mbp.

**Description of *Candidatus Methanothrix vitabitrix* sp. nov.**

*Candidatus Methanothrix vitabitrix* (NL. fem. n. *vitabitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix sp902385025*. The type genome for the species is the GenBank assembly GCA\_902385025.1. The GC content of the type genome is 50.51 %

and the genome length is 2.28 Mbp.

**Description of *Candidatus Methanothrix totiditas* sp. nov.**

*Candidatus* Methanothrix totiditas (NL. fem. n. *totiditas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix\_A sp001602645*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002505025.1. The GC content of the type genome is 59.54 % and the genome length is 2.48 Mbp.

**Description of *Candidatus Methanothrix vaciledo* sp. nov.**

*Candidatus* Methanothrix vaciledo (NL. fem. n. *vaciledo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Methanothrix\_A sp9297u*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_013329455.1. The GC content of the type genome is 54.91 % and the genome length is 2.17 Mbp.

**Description of *Candidatus Metucarcha biverigena* sp. nov.**

*Candidatus* Metucarcha biverigena (NL. fem. n. *biverigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SG9 sp009617975*. The type genome for the species is the GenBank assembly RS\_GCF\_009617975.1. The GC content of the type genome is 43.24 % and the genome length is 0.97 Mbp.

**Description of *Candidatus Metucarcha* gen. nov.**

*Candidatus* Metucarcha (NL. fem. n. *Metucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SG9*. The type species for the genus is *Candidatus* Metucarcha biverigena .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Metucarcha bonitentia* sp. nov.**

*Candidatus Metucarcha bonitentia* (NL. fem. n. *bonitentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SG9 sp001761425*. The type genome for the species is the GenBank assembly GCA\_001761425.1. The GC content of the type genome is 46.37 % and the genome length is 1.12 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Halite rock".

#### **Description of *Candidatus Mimogarcha tenebetta* sp. nov.**

*Candidatus Mimogarcha tenebetta* (NL. fem. n. *tenebetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS1403 sp002687825*. The type genome for the species is the GenBank assembly GCA\_002687825.1. The GC content of the type genome is 30.55 % and the genome length is 0.78 Mbp.

#### **Description of *Candidatus Mimogarcha* gen. nov.**

*Candidatus Mimogarcha* (NL. fem. n. *Mimogarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARS1403*. The type species for the genus is *Candidatus Mimogarcha tenebetta* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1403*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Mimogarchaceae*.

#### **Description of *Candidatus Mimogarchaceae* fam. nov.**

*Candidatus Mimogarchaceae* (NL. fem. n. *Mimogarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *ARS1403*. The type genus for the taxon is *Candidatus Mimogarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order

*SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Lanifarchales.

**Description of *Candidatus* Mimogarcha vepalago sp. nov.**

*Candidatus* Mimogarcha vepalago (NL. fem. n. *vepalago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS1403 sp002688395*. The type genome for the species is the GenBank assembly GCA\_002688395.1. The GC content of the type genome is 29.27 % and the genome length is 0.63 Mbp.

**Description of *Candidatus* Minagarcha daducax sp. nov.**

*Candidatus* Minagarcha daducax (NL. fem. n. *daducax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BMS3ABIN17 sp002897655*. The type genome for the species is the GenBank assembly GCA\_011050875.1. The GC content of the type genome is 31.67 % and the genome length is 1.16 Mbp.

**Description of *Candidatus* Minagarcha gen. nov.**

*Candidatus* Minagarcha (NL. fem. n. *Minagarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BMS3ABIN17*. The type species for the genus is *Candidatus* Minagarcha daducax .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Deseparchaceae.

**Description of *Candidatus* Minurarcha citipigena sp. nov.**

*Candidatus* Minurarcha citipigena (NL. fem. n. *citipigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10205 sp902386385*. The type genome for the species is the

GenBank assembly GCA\_902386385.1. The GC content of the type genome is 49.88 % and the genome length is 1.09 Mbp.

**Description of *Candidatus Minurarcha* gen. nov.**

*Candidatus Minurarcha* (NL. fem. n. *Minurarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10205*. The type species for the genus is *Candidatus Minurarcha citipigena*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Minurarcha denecedo* sp. nov.**

*Candidatus Minurarcha denecedo* (NL. fem. n. *denecedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10205 sp10205u*. The type genome for the species is the GenBank assembly GCA\_013331625.1. The GC content of the type genome is 48.78 % and the genome length is 1.43 Mbp.

**Description of *Candidatus Minurarcha semodricula* sp. nov.**

*Candidatus Minurarcha semodricula* (NL. fem. n. *semodricula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10205 sp005239615*. The type genome for the species is the GenBank assembly GCA\_005239615.1. The GC content of the type genome is 52.26 % and the genome length is 1.14 Mbp.

**Description of *Candidatus Mirabarcha ceraratio* sp. nov.**

*Candidatus Mirabarcha ceraratio* (NL. fem. n. *ceraratio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *FEN-33 sp003135935*. The type genome for the species is the GenBank assembly GCA\_003135935.1. The GC content of the type genome is 53.65 % and the genome length is 2.08 Mbp.

### **Description of *Candidatus Mirabarcha* gen. nov.**

*Candidatus Mirabarcha* (NL. fem. n. *Mirabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *FEN-33*. The type species for the genus is *Candidatus Mirabarcha ceraratio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA472*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Satacarchaceae*.

### **Description of *Candidatus Mirabarcha hecatibula* sp. nov.**

*Candidatus Mirabarcha hecatibula* (NL. fem. n. *hecatibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *FEN-33 sp003153895*. The type genome for the species is the GenBank assembly GCA\_003153895.1. The GC content of the type genome is 54.03 % and the genome length is 1.83 Mbp.

### **Description of *Candidatus Miracarcha vitigessa* sp. nov.**

*Candidatus Miracarcha vitigessa* (NL. fem. n. *vitigessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-000496135 sp000496135*. The type genome for the species is the GenBank assembly GCA\_002496995.1. The GC content of the type genome is 38.27 % and the genome length is 1.58 Mbp.

### **Description of *Candidatus Miracarcha* gen. nov.**

*Candidatus Miracarcha* (NL. fem. n. *Miracarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-000496135*. The type species for the genus is *Candidatus Miracarcha vitigessa*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Mirifarcha baditax* sp. nov.**

*Candidatus* Mirifarcha baditax (NL. fem. n. *baditax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WRKA01 sp009780575*. The type genome for the species is the GenBank assembly GCA\_009780575.1. The GC content of the type genome is 49.65 % and the genome length is 1.37 Mbp.

#### **Description of *Candidatus* Mirifarcha gen. nov.**

*Candidatus* Mirifarcha (NL. fem. n. *Mirifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WRKA01*. The type species for the genus is *Candidatus* Mirifarcha baditax .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Mirifarcha peropax sp. nov.**

*Candidatus* Mirifarcha peropax (NL. fem. n. *peropax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WRKA01 sp009780795*. The type genome for the species is the GenBank assembly GCA\_009780795.1. The GC content of the type genome is 53.51 % and the genome length is 1.2 Mbp.

#### **Description of *Candidatus* Mirifarcha recoritas sp. nov.**

*Candidatus* Mirifarcha recoritas (NL. fem. n. *recoritas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WRKA01 sp009778265*. The type genome for the species is the GenBank assembly GCA\_009778265.1. The GC content of the type genome is 51.89 % and the genome length is 0.96 Mbp.

#### **Description of *Candidatus* Mirifarcha sifunugo sp. nov.**

*Candidatus* Mirifarcha sifunugo (NL. fem. n. *sifunugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WRKA01 sp009776695*. The type genome for the species is the GenBank assembly GCA\_009776695.1. The GC content of the type genome is 52.57 % and the genome length is 1.2 Mbp.

**Description of *Candidatus Mirifarcha visibiforma* sp. nov.**

*Candidatus Mirifarcha visibiforma* (NL. fem. n. *visibiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WRKA01 sp009784745*. The type genome for the species is the GenBank assembly GCA\_009784745.1. The GC content of the type genome is 46.48 % and the genome length is 1.25 Mbp.

**Description of *Candidatus Modifarcha defaciforma* sp. nov.**

*Candidatus Modifarcha defaciforma* (NL. fem. n. *defaciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B10-G16 sp003649185*. The type genome for the species is the GenBank assembly GCA\_003649185.1. The GC content of the type genome is 37.17 % and the genome length is 1.38 Mbp.

**Description of *Candidatus Modifarcha* gen. nov.**

*Candidatus Modifarcha* (NL. fem. n. *Modifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B10-G16*. The type species for the genus is *Candidatus Modifarcha defaciforma*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B10-G16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Modifarchaceae*.

**Description of *Candidatus Modifarchaceae* fam. nov.**

*Candidatus Modifarchaceae* (NL. fem. n. *Modifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this taxon is *B10-G16*. The type genus for the taxon is *Candidatus* Modifarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *B29-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Coninarchales.

#### **Description of *Candidatus* Molecarcha perexibra sp. nov.**

*Candidatus* Molecarcha perexibra (NL. fem. n. *perexibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SW-7-71-33 sp003022865*. The type genome for the species is the GenBank assembly GCA\_003022805.1. The GC content of the type genome is 71.17 % and the genome length is 1.75 Mbp.

#### **Description of *Candidatus* Molecarcha gen. nov.**

*Candidatus* Molecarcha (NL. fem. n. *Molecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SW-7-71-33*. The type species for the genus is *Candidatus* Molecarcha perexibra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *SW-7-71-33*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Molecarchaceae.

#### **Description of *Candidatus* Molecarchaceae fam. nov.**

*Candidatus* Molecarchaceae (NL. fem. n. *Molecarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SW-7-71-33*. The type genus for the taxon is *Candidatus* Molecarcha .

According to GTDB R06-RS202, this family belongs to the order *Halobacteriales*.

#### **Description of *Candidatus* Molecarcha velifago sp. nov.**

*Candidatus* Molecarcha velifago (NL. fem. n. *velifago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *SW-7-71-33 sp003023195*. The type genome for the species is the GenBank assembly GCA\_003023195.1. The GC content of the type genome is 69.42 % and the genome length is 3.29 Mbp.

#### **Description of *Candidatus Momorarcha virecicula* sp. nov.**

*Candidatus Momorarcha virecicula* (NL. fem. n. *virecicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTIR01 sp011362825*. The type genome for the species is the GenBank assembly GCA\_011362825.1. The GC content of the type genome is 36.91 % and the genome length is 0.4 Mbp.

#### **Description of *Candidatus Momorarcha* gen. nov.**

*Candidatus Momorarcha* (NL. fem. n. *Momorarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTIR01*. The type species for the genus is *Candidatus Momorarcha virecicula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTIR01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Momorarchaceae*.

#### **Description of *Candidatus Momorarchaceae* fam. nov.**

*Candidatus Momorarchaceae* (NL. fem. n. *Momorarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTIR01*. The type genus for the taxon is *Candidatus Momorarcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

#### **Description of *Candidatus Monacarcha voragitica* sp. nov.**

*Candidatus Monacarcha voragitica* (NL. fem. n. *voragitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *20-14-0-80-47-9 sp002779555*. The type genome for the species is the GenBank assembly GCA\_002779555.1. The GC content of the type genome is 47.44 %

and the genome length is 1.43 Mbp.

**Description of *Candidatus Monacarcha* gen. nov.**

*Candidatus Monacarcha* (NL. fem. n. *Monacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *20-14-0-80-47-9*. The type species for the genus is *Candidatus Monacarcha voragitica* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

**Description of *Candidatus Monimarcha papilicula* sp. nov.**

*Candidatus Monimarcha papilicula* (NL. fem. n. *papilicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *M3-22 sp013343275*. The type genome for the species is the GenBank assembly *RS\_GCF\_013343275.1*. The GC content of the type genome is 46.95 % and the genome length is 0.92 Mbp.

**Description of *Candidatus Monimarcha* gen. nov.**

*Candidatus Monimarcha* (NL. fem. n. *Monimarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *M3-22*. The type species for the genus is *Candidatus Monimarcha papilicula* .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Monodarcha colutetta* sp. nov.**

*Candidatus Monodarcha colutetta* (NL. fem. n. *colutetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *AcdI sp000389735*. The type genome for the species is the GenBank assembly *GCA\_000389735.1*. The GC content of the type genome is 51.68 % and the genome length is 1.51 Mbp. The isolation source for the NCBI BioSample associated

with the type genome is described as "hot spring water and gravel".

**Description of *Candidatus Monodarcha* gen. nov.**

*Candidatus Monodarcha* (NL. fem. n. *Monodarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *Acd1*. The type species for the genus is *Candidatus Monodarcha colutetta* .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Monoparcha deparigena* sp. nov.**

*Candidatus Monoparcha deparigena* (NL. fem. n. *deparigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B18-G2 sp003651105*. The type genome for the species is the GenBank assembly GCA\_003651105.1. The GC content of the type genome is 47.22 % and the genome length is 0.6 Mbp.

**Description of *Candidatus Monoparcha* gen. nov.**

*Candidatus Monoparcha* (NL. fem. n. *Monoparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B18-G2*. The type species for the genus is *Candidatus Monoparcha deparigena* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B18-G2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Monoparchaceae*.

**Description of *Candidatus Monoparchaceae* fam. nov.**

*Candidatus Monoparchaceae* (NL. fem. n. *Monoparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B18-G2*. The type genus for the taxon is *Candidatus Monoparcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *DHVEG-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs

to the order *Candidatus* Pedifarchales.

#### **Description of *Candidatus* Monumarcha dicimitudo sp. nov.**

*Candidatus* Monumarcha dicimitudo (NL. fem. n. *dicimitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA114 sp002506335*. The type genome for the species is the GenBank assembly GCA\_002506335.1. The GC content of the type genome is 52.02 % and the genome length is 2.41 Mbp.

#### **Description of *Candidatus* Monumarcha gen. nov.**

*Candidatus* Monumarcha (NL. fem. n. *Monumarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA114*. The type species for the genus is *Candidatus* Monumarcha dicimitudo .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Morigarcha nocumicella sp. nov.**

*Candidatus* Morigarcha nocumicella (NL. fem. n. *nocumicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PXRE01 sp003021085*. The type genome for the species is the GenBank assembly GCA\_003021085.1. The GC content of the type genome is 68.02 % and the genome length is 3.39 Mbp.

#### **Description of *Candidatus* Morigarcha gen. nov.**

*Candidatus* Morigarcha (NL. fem. n. *Morigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PXRE01*. The type species for the genus is *Candidatus* Morigarcha nocumicella .

According to the original version of GTDB R06-RS202, this genus belongs to the family *PXRE01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Morigarchaceae.

### **Description of *Candidatus Morigarchaceae* fam. nov.**

*Candidatus Morigarchaceae* (NL. fem. n. *Morigarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PXRE01*. The type genus for the taxon is *Candidatus Morigarcha*.

According to GTDB R06-RS202, this family belongs to the order *Halobacteriales*.

### **Description of *Candidatus Munifarcha monoditas* sp. nov.**

*Candidatus Munifarcha monoditas* (NL. fem. n. *monoditas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *G60ANME1 sp003194435*. The type genome for the species is the GenBank assembly GCA\_003194435.1. The GC content of the type genome is 45.84 % and the genome length is 1.81 Mbp.

### **Description of *Candidatus Munifarcha* gen. nov.**

*Candidatus Munifarcha* (NL. fem. n. *Munifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *G60ANME1*. The type species for the genus is *Candidatus Munifarcha monoditas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ANME-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Loriparchaceae*.

### **Description of *Candidatus Murelarcha buceletta* sp. nov.**

*Candidatus Murelarcha buceletta* (NL. fem. n. *buceletta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9212 sp9293u*. The type genome for the species is the GenBank assembly GCA\_013329505.1. The GC content of the type genome is 41.27 % and the genome length is 1.42 Mbp.

### **Description of *Candidatus Murelarcha* gen. nov.**

*Candidatus* Murelarcha (NL. fem. n. *Murelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA9212*. The type species for the genus is *Candidatus* Murelarcha buceletta .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA9212*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Murelarchaceae.

### **Description of *Candidatus* Murelarchaceae fam. nov.**

*Candidatus* Murelarchaceae (NL. fem. n. *Murelarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA9212*. The type genus for the taxon is *Candidatus* Murelarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA9212*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Murelarchales.

### **Description of *Candidatus* Murelarchales ord. nov.**

*Candidatus* Murelarchales (NL. fem. n. *Murelarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA9212*. The type genus for the taxon is *Candidatus* Murelarcha .

According to the original version of GTDB R06-RS202, this family belongs to the class *E2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus* Visibarchae.

### **Description of *Candidatus* Murelarcha ludibitica sp. nov.**

*Candidatus* Murelarcha ludibitica (NL. fem. n. *ludibitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9212 sp9212u*. The type genome for the species is the GenBank assembly GCA\_013329495.1. The GC content of the type genome is 42.91 % and the genome length is 1.49 Mbp.

### **Description of *Candidatus Murilarcha monumiforma* sp. nov.**

*Candidatus Murilarcha monumiforma* (NL. fem. n. *monumiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2687275 sp002687275*. The type genome for the species is the GenBank assembly *GCA\_002687275.1*. The GC content of the type genome is 49.67 % and the genome length is 1.09 Mbp.

### **Description of *Candidatus Murilarcha* gen. nov.**

*Candidatus Murilarcha* (NL. fem. n. *Murilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2687275*. The type species for the genus is *Candidatus Murilarcha monumiforma*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS49*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Terebarchaceae*.

### **Description of *Candidatus Musularcha bipinastra* sp. nov.**

*Candidatus Musularcha bipinastra* (NL. fem. n. *bipinastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp011525095*. The type genome for the species is the GenBank assembly *GCA\_011525095.1*. The GC content of the type genome is 44.88 % and the genome length is 1.72 Mbp.

### **Description of *Candidatus Musularcha* gen. nov.**

*Candidatus Musularcha* (NL. fem. n. *Musularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIa-K1*. The type species for the genus is *Candidatus Musularcha bipinastra*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Musularcha bucelitrix* sp. nov.**



*Candidatus Musularcha bucelitrix* (NL. fem. n. *bucelitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp011522915*. The type genome for the species is the GenBank assembly GCA\_011522915.1. The GC content of the type genome is 44.06 % and the genome length is 1.8 Mbp.

**Description of *Candidatus Musularcha buxanibula* sp. nov.**

*Candidatus Musularcha buxanibula* (NL. fem. n. *buxanibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp003602415*. The type genome for the species is the GenBank assembly GCA\_003602415.1. The GC content of the type genome is 42.93 % and the genome length is 1.89 Mbp.

**Description of *Candidatus Musularcha capiletta* sp. nov.**

*Candidatus Musularcha capiletta* (NL. fem. n. *capiletta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002689565*. The type genome for the species is the GenBank assembly GCA\_002689565.1. The GC content of the type genome is 42.32 % and the genome length is 1.62 Mbp.

**Description of *Candidatus Musularcha conarugo* sp. nov.**

*Candidatus Musularcha conarugo* (NL. fem. n. *conarugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002694245*. The type genome for the species is the GenBank assembly GCA\_002694245.1. The GC content of the type genome is 42.81 % and the genome length is 1.98 Mbp.

**Description of *Candidatus Musularcha decapiforma* sp. nov.**

*Candidatus Musularcha decapiforma* (NL. fem. n. *decapiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp009936765*. The type genome for the species is the GenBank assembly GCA\_009936765.1. The GC content of the type genome is 43.71 % and the genome length is 1.74 Mbp.

**Description of *Candidatus Musularcha delucitia* sp. nov.**

*Candidatus Musularcha delucitia* (NL. fem. n. *delucitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002498185*. The type genome for the species is the GenBank assembly GCA\_002506725.1. The GC content of the type genome is 44.92 % and the genome length is 1.53 Mbp.

**Description of *Candidatus Musularcha denixedo* sp. nov.**

*Candidatus Musularcha denixedo* (NL. fem. n. *denixedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002715725*. The type genome for the species is the GenBank assembly GCA\_002715725.1. The GC content of the type genome is 42.56 % and the genome length is 1.94 Mbp.

**Description of *Candidatus Musularcha depecibula* sp. nov.**

*Candidatus Musularcha depecibula* (NL. fem. n. *depecibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002707335*. The type genome for the species is the GenBank assembly GCA\_002707335.2. The GC content of the type genome is 40.51 % and the genome length is 1.3 Mbp.

**Description of *Candidatus Musularcha duricigena* sp. nov.**

*Candidatus Musularcha duricigena* (NL. fem. n. *duricigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002720115*. The type genome for the species is the GenBank assembly GCA\_002720115.1. The GC content of the type genome is 43.03 %

and the genome length is 2.03 Mbp.

**Description of *Candidatus Musularcha figilisca* sp. nov.**

*Candidatus Musularcha figilisca* (NL. fem. n. *figilisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp003602535*. The type genome for the species is the GenBank assembly GCA\_003602535.1. The GC content of the type genome is 42.04 % and the genome length is 1.76 Mbp.

**Description of *Candidatus Musularcha hexagricula* sp. nov.**

*Candidatus Musularcha hexagricula* (NL. fem. n. *hexagricula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002507425*. The type genome for the species is the GenBank assembly GCA\_002504995.1. The GC content of the type genome is 41.94 % and the genome length is 1.72 Mbp.

**Description of *Candidatus Musularcha holovastra* sp. nov.**

*Candidatus Musularcha holovastra* (NL. fem. n. *holovastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002727515*. The type genome for the species is the GenBank assembly GCA\_002727515.1. The GC content of the type genome is 41.44 % and the genome length is 1.88 Mbp.

**Description of *Candidatus Musularcha malivetta* sp. nov.**

*Candidatus Musularcha malivetta* (NL. fem. n. *malivetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002727695*. The type genome for the species is the GenBank assembly GCA\_002727695.1. The GC content of the type genome is 44.63 % and the genome length is 1.7 Mbp.

**Description of *Candidatus Musularcha modifatio* sp. nov.**

*Candidatus Musularcha modifatio* (NL. fem. n. *modifatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002706615*. The type genome for the species is the GenBank assembly GCA\_002503295.1. The GC content of the type genome is 41.69 % and the genome length is 1.7 Mbp.

**Description of *Candidatus Musularcha monacicula* sp. nov.**

*Candidatus Musularcha monacicula* (NL. fem. n. *monacicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002709705*. The type genome for the species is the GenBank assembly GCA\_002709705.1. The GC content of the type genome is 44.03 % and the genome length is 1.53 Mbp.

**Description of *Candidatus Musularcha navifitrix* sp. nov.**

*Candidatus Musularcha navifitrix* (NL. fem. n. *navifitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp004195515*. The type genome for the species is the GenBank assembly GCA\_004195515.1. The GC content of the type genome is 45.19 % and the genome length is 1.92 Mbp.

**Description of *Candidatus Musularcha nocumitas* sp. nov.**

*Candidatus Musularcha nocumitas* (NL. fem. n. *nocumitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002701145*. The type genome for the species is the GenBank assembly GCA\_002701145.1. The GC content of the type genome is 43.62 % and the genome length is 1.61 Mbp.

**Description of *Candidatus Musularcha pedifilega* sp. nov.**

*Candidatus Musularcha pedifilega* (NL. fem. n. *pedifilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002710015*. The type genome for the species is the GenBank assembly GCA\_002495045.1. The GC content of the type genome is 42.21 % and the genome length is 1.91 Mbp.

**Description of *Candidatus Musularcha purulicula* sp. nov.**

*Candidatus Musularcha purulicula* (NL. fem. n. *purulicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp902563095*. The type genome for the species is the GenBank assembly GCA\_902563095.1. The GC content of the type genome is 43.42 % and the genome length is 1.38 Mbp.

**Description of *Candidatus Musularcha selibilega* sp. nov.**

*Candidatus Musularcha selibilega* (NL. fem. n. *selibilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002506705*. The type genome for the species is the GenBank assembly GCA\_002506705.1. The GC content of the type genome is 45.28 % and the genome length is 1.15 Mbp.

**Description of *Candidatus Musularcha solacax* sp. nov.**

*Candidatus Musularcha solacax* (NL. fem. n. *solacax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002710205*. The type genome for the species is the GenBank assembly GCA\_002710205.1. The GC content of the type genome is 43.94 % and the genome length is 1.67 Mbp.

**Description of *Candidatus Musularcha turibitudo* sp. nov.**

*Candidatus Musularcha turibitudo* (NL. fem. n. *turibitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp12207u*. The type genome for the species is the GenBank assembly GCA\_003672445.1. The GC content of the type genome is 43.86 % and the

genome length is 1.66 Mbp.

**Description of *Candidatus Musularcha viragitas* sp. nov.**

*Candidatus Musularcha viragitas* (NL. fem. n. *viragitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp902605365*. The type genome for the species is the GenBank assembly GCA\_902605365.1. The GC content of the type genome is 43.39 % and the genome length is 1.45 Mbp.

**Description of *Candidatus Musularcha virecitudo* sp. nov.**

*Candidatus Musularcha virecitudo* (NL. fem. n. *virecitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-K1 sp002689345*. The type genome for the species is the GenBank assembly GCA\_002689345.1. The GC content of the type genome is 42.77 % and the genome length is 1.68 Mbp.

**Description of *Candidatus Mutabarcha hominicula* sp. nov.**

*Candidatus Mutabarcha hominicula* (NL. fem. n. *homicicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIXYX01 sp902384555*. The type genome for the species is the GenBank assembly GCA\_902384555.1. The GC content of the type genome is 61.71 % and the genome length is 1.3 Mbp.

**Description of *Candidatus Mutabarcha* gen. nov.**

*Candidatus Mutabarcha* (NL. fem. n. *Mutabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIXYX01*. The type species for the genus is *Candidatus Mutabarcha hominicula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10161*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Siligarchaceae*.

### **Description of *Candidatus Mutabarcha lupanastra* sp. nov.**

*Candidatus Mutabarcha lupanastra* (NL. fem. n. *lupanastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIXYX01 sp903923795*. The type genome for the species is the GenBank assembly GCA\_903923795.1. The GC content of the type genome is 54.36 % and the genome length is 1.24 Mbp.

### **Description of *Candidatus Nanosalina caravatio* sp. nov.**

*Candidatus Nanosalina caravatio* (NL. fem. n. *caravatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nanosalina sp000220375*. The type genome for the species is the GenBank assembly GCA\_000220375.1. The GC content of the type genome is 43.58 % and the genome length is 1.23 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Lake Tyrrell".

### **Description of *Candidatus Nanosalinarum vitifitrix* sp. nov.**

*Candidatus Nanosalinarum vitifitrix* (NL. fem. n. *vitifitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nanosalinarum sp000220355*. The type genome for the species is the GenBank assembly GCA\_000220355.1. The GC content of the type genome is 56.2 % and the genome length is 1.22 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Lake Tyrrell".

### **Description of *Candidatus Natrarchaeobaculum nugigivita* sp. nov.**

*Candidatus Natrarchaeobaculum nugigivita* (NL. fem. n. *nugigivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natrarchaeobaculum sp001563805*. The type genome for the species is the GenBank assembly GCA\_001563805.1. The GC content of the type genome is 65.72 % and the genome length is 2.87 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample B1-Br-g2; brine of Lake Bitter-1".

### **Description of *Candidatus Natrarchaeobaculum vitifousia* sp. nov.**

*Candidatus Natrarchaeobaculum vitifousia* (NL. fem. n. *vitifousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natrarchaeobaculum sp001563885*. The type genome for the species is the GenBank assembly GCA\_001563885.1. The GC content of the type genome is 59.91 % and the genome length is 2.01 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample B1-Br-g2; brine of Lake Bitter-1".

### **Description of *Candidatus Natrtrialba murilitio* sp. nov.**

*Candidatus Natrtrialba murilitio* (NL. fem. n. *murilitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natrtrialba sp001861355*. The type genome for the species is the GenBank assembly RS\_GCF\_001861355.1. The GC content of the type genome is 61.47 % and the genome length is 4.58 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "brine sample".

### **Description of *Candidatus Natrinema cosiditica* sp. nov.**

*Candidatus Natrinema cosiditica* (NL. fem. n. *cosiditica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natrinema sp013402815*. The type genome for the species is the GenBank assembly RS\_GCF\_013402815.1. The GC content of the type genome is 60.62 % and the genome length is 4.36 Mbp.

### **Description of *Candidatus Natrinema pedepatica* sp. nov.**

*Candidatus Natrinema pedepatica* (NL. fem. n. *pedepatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natrinema sp002572525*. The type genome for the species is the GenBank assembly RS\_GCF\_002572525.1. The GC content of the type genome is 62.27 % and the genome length is 5.06 Mbp.

### **Description of *Candidatus Natrinema tenemiforma* sp. nov.**



*Candidatus* Natrinema tenemiforma (NL. fem. n. *tenemiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natrinema sp013456555*. The type genome for the species is the GenBank assembly RS\_GCF\_013456555.1. The GC content of the type genome is 63.53 % and the genome length is 3.78 Mbp.

**Description of *Candidatus* Natrinema verifatio sp. nov.**

*Candidatus* Natrinema verifatio (NL. fem. n. *verifatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natrinema sp005938085*. The type genome for the species is the GenBank assembly RS\_GCF\_005938085.1. The GC content of the type genome is 61.49 % and the genome length is 4.26 Mbp.

**Description of *Candidatus* Natronococcus resulitoga sp. nov.**

*Candidatus* Natronococcus resulitoga (NL. fem. n. *resulitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronococcus sp008122205*. The type genome for the species is the GenBank assembly RS\_GCF\_008122205.1. The GC content of the type genome is 63.19 % and the genome length is 5.32 Mbp.

**Description of *Candidatus* Natronococcus semifivita sp. nov.**

*Candidatus* Natronococcus semifivita (NL. fem. n. *semifivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronococcus sp003559215*. The type genome for the species is the GenBank assembly GCA\_003559215.1. The GC content of the type genome is 64.79 % and the genome length is 3.94 Mbp.

**Description of *Candidatus* Natronolimnobius cacalitoga sp. nov.**

*Candidatus* Natronolimnobius cacalitoga (NL. fem. n. *cacalitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronolimnobius sp011043775*. The type genome for the species is the GenBank assembly RS\_GCF\_011043775.1. The GC content of the type genome is 58.85 % and the genome length is 4.56 Mbp.

**Description of *Candidatus Natronomonas catobivita* sp. nov.**

*Candidatus Natronomonas catobivita* (NL. fem. n. *catobivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp003022905*. The type genome for the species is the GenBank assembly GCA\_003022905.1. The GC content of the type genome is 68.18 % and the genome length is 1.52 Mbp.

**Description of *Candidatus Natronomonas colutitudo* sp. nov.**

*Candidatus Natronomonas colutitudo* (NL. fem. n. *colutitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp013391085*. The type genome for the species is the GenBank assembly RS\_GCF\_013391085.1. The GC content of the type genome is 64.36 % and the genome length is 3.21 Mbp.

**Description of *Candidatus Natronomonas demagitudo* sp. nov.**

*Candidatus Natronomonas demagitudo* (NL. fem. n. *demagitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp007122455*. The type genome for the species is the GenBank assembly GCA\_007127355.1. The GC content of the type genome is 65.1 % and the genome length is 2.34 Mbp.

**Description of *Candidatus Natronomonas desacimonas* sp. nov.**

*Candidatus Natronomonas desacimonas* (NL. fem. n. *desacimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp003023535*. The type genome for the species is the GenBank assembly GCA\_003023535.1. The GC content of the type genome is 70.3 %

and the genome length is 1.89 Mbp.

**Description of *Candidatus Natronomonas dupunitura* sp. nov.**

*Candidatus Natronomonas dupunitura* (NL. fem. n. *dupunitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp003021005*. The type genome for the species is the GenBank assembly GCA\_003021005.1. The GC content of the type genome is 68.73 % and the genome length is 2.45 Mbp.

**Description of *Candidatus Natronomonas medimetta* sp. nov.**

*Candidatus Natronomonas medimetta* (NL. fem. n. *medimetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp009741925*. The type genome for the species is the GenBank assembly RS\_GCF\_009741925.1. The GC content of the type genome is 63.91 % and the genome length is 3.45 Mbp.

**Description of *Candidatus Natronomonas metapitoga* sp. nov.**

*Candidatus Natronomonas metapitoga* (NL. fem. n. *metapitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp003022945*. The type genome for the species is the GenBank assembly GCA\_003022945.1. The GC content of the type genome is 68.84 % and the genome length is 2.63 Mbp.

**Description of *Candidatus Natronomonas novilentia* sp. nov.**

*Candidatus Natronomonas novilentia* (NL. fem. n. *novilentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp013391105*. The type genome for the species is the GenBank assembly RS\_GCF\_013391105.1. The GC content of the type genome is 67.45 % and the genome length is 3.75 Mbp.

**Description of *Candidatus Natronomonas perexago* sp. nov.**

*Candidatus* Natronomonas perexago (NL. fem. n. *perexago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp003020965*. The type genome for the species is the GenBank assembly GCA\_003020965.1. The GC content of the type genome is 69.11 % and the genome length is 2.95 Mbp.

**Description of *Candidatus* Natronomonas recumiforma sp. nov.**

*Candidatus* Natronomonas recumiforma (NL. fem. n. *recumiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp013839515*. The type genome for the species is the GenBank assembly RS\_GCF\_013839515.1. The GC content of the type genome is 64.53 % and the genome length is 2.78 Mbp.

**Description of *Candidatus* Natronomonas rubicugo sp. nov.**

*Candidatus* Natronomonas rubicugo (NL. fem. n. *rubicugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp007121575*. The type genome for the species is the GenBank assembly GCA\_007121575.1. The GC content of the type genome is 58.7 % and the genome length is 1.88 Mbp.

**Description of *Candidatus* Natronomonas totiditrix sp. nov.**

*Candidatus* Natronomonas totiditrix (NL. fem. n. *totiditrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp007135435*. The type genome for the species is the GenBank assembly GCA\_007135435.1. The GC content of the type genome is 68.8 % and the genome length is 3.11 Mbp.

**Description of *Candidatus* Natronomonas vehemetta sp. nov.**

*Candidatus* Natronomonas vehemetta (NL. fem. n. *vehemetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp003021325*. The type genome for the species is the GenBank assembly GCA\_003021325.1. The GC content of the type genome is 70.05 % and the genome length is 1.88 Mbp.

**Description of *Candidatus Natronomonas viripitas* sp. nov.**

*Candidatus Natronomonas viripitas* (NL. fem. n. *viripitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp003022815*. The type genome for the species is the GenBank assembly GCA\_003022815.1. The GC content of the type genome is 68.27 % and the genome length is 1.5 Mbp.

**Description of *Candidatus Natronomonas xeropitia* sp. nov.**

*Candidatus Natronomonas xeropitia* (NL. fem. n. *xeropitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronomonas sp003021745*. The type genome for the species is the GenBank assembly GCA\_003021745.1. The GC content of the type genome is 69.58 % and the genome length is 2.2 Mbp.

**Description of *Candidatus Natronorubrum cuferatio* sp. nov.**

*Candidatus Natronorubrum cuferatio* (NL. fem. n. *cuferatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronorubrum sp003670115*. The type genome for the species is the GenBank assembly RS\_GCF\_003670115.1. The GC content of the type genome is 62.87 % and the genome length is 4.67 Mbp.

**Description of *Candidatus Natronorubrum mimogatio* sp. nov.**

*Candidatus Natronorubrum mimogatio* (NL. fem. n. *mimogatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Natronorubrum sp009834785*. The type genome for the species is the GenBank assembly RS\_GCF\_009834785.1. The GC content of the type genome is 62.46 % and the genome length is 4.67 Mbp.

% and the genome length is 4.56 Mbp.

**Description of *Candidatus Navicarcha funamitica* sp. nov.**

*Candidatus Navicarcha funamitica* (NL. fem. n. *funamitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS1160 sp002688415*. The type genome for the species is the GenBank assembly GCA\_002688415.1. The GC content of the type genome is 36.72 % and the genome length is 0.8 Mbp.

**Description of *Candidatus Navicarcha* gen. nov.**

*Candidatus Navicarcha* (NL. fem. n. *Navicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARS1160*. The type species for the genus is *Candidatus Navicarcha funamitica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1160*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Navicarchaceae*.

**Description of *Candidatus Navicarchaceae* fam. nov.**

*Candidatus Navicarchaceae* (NL. fem. n. *Navicarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *ARS1160*. The type genus for the taxon is *Candidatus Navicarcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

**Description of *Candidatus Navifarcha cocolitia* sp. nov.**

*Candidatus Navifarcha cocolitia* (NL. fem. n. *cocolitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *COMBO-56-21 sp001800675*. The type genome for the species is the GenBank assembly GCA\_001800675.1. The GC content of the type genome is 57.05 % and the genome length is 1.52 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at

13ft depth".

**Description of *Candidatus Navifarcha* gen. nov.**

*Candidatus Navifarcha* (NL. fem. n. *Navifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *COMBO-56-21*. The type species for the genus is *Candidatus Navifarcha cocolitia* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10834*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cilotarchaceae*.

**Description of *Candidatus Navifarcha domigivita* sp. nov.**

*Candidatus Navifarcha domigivita* (NL. fem. n. *domigivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *COMBO-56-21 sp001800815*. The type genome for the species is the GenBank assembly GCA\_001800815.1. The GC content of the type genome is 56.4 % and the genome length is 1.87 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 19ft depth".

**Description of *Candidatus Necoparcha notacilenta* sp. nov.**

*Candidatus Necoparcha notacilenta* (NL. fem. n. *notacilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MTP4 sp9310u*. The type genome for the species is the GenBank assembly GCA\_013329415.1. The GC content of the type genome is 46.79 % and the genome length is 3.86 Mbp.

**Description of *Candidatus Necoparcha* gen. nov.**

*Candidatus Necoparcha* (NL. fem. n. *Necoparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MTP4*. The type species for the genus is *Candidatus Necoparcha notacilenta* .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus* Necoparcha xeropibra sp. nov.**

*Candidatus* Necoparcha xeropibra (NL. fem. n. *xeropibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MTP4 sp000970045*. The type genome for the species is the GenBank assembly RS\_GCF\_000970045.1. The GC content of the type genome is 45.93 % and the genome length is 4.21 Mbp.

**Description of *Candidatus* Necubarcha negidatio sp. nov.**

*Candidatus* Necubarcha negidatio (NL. fem. n. *negidatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *LFW-46 sp902384675*. The type genome for the species is the GenBank assembly GCA\_902384675.1. The GC content of the type genome is 43.69 % and the genome length is 1.2 Mbp.

**Description of *Candidatus* Necubarcha gen. nov.**

*Candidatus* Necubarcha (NL. fem. n. *Necubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *LFW-46*. The type species for the genus is *Candidatus* Necubarcha negidatio .

According to the original version of GTDB R06-RS202, this genus belongs to the family *LFW-46*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Necubarchaceae.

**Description of *Candidatus* Necubarchaceae fam. nov.**

*Candidatus* Necubarchaceae (NL. fem. n. *Necubarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *LFW-46*. The type genus for the taxon is *Candidatus* Necubarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-52*. According to the renamed version of GTDB R06-RS202, this taxon belongs



to the order *Candidatus* Bifararchales.

**Description of *Candidatus* Nefanarcha pinacax sp. nov.**

*Candidatus* Nefanarcha pinacax (NL. fem. n. *pinacax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-11 sp002011035*. The type genome for the species is the GenBank assembly GCA\_002009985.1. The GC content of the type genome is 51.79 % and the genome length is 1.82 Mbp.

**Description of *Candidatus* Nefanarcha gen. nov.**

*Candidatus* Nefanarcha (NL. fem. n. *Nefanarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-11*. The type species for the genus is *Candidatus* Nefanarcha pinacax .

According to the original version of GTDB R06-RS202, this genus belongs to the family B25. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Diponarchaceae.

**Description of *Candidatus* Negidarcha malivitrix sp. nov.**

*Candidatus* Negidarcha malivitrix (NL. fem. n. *malivitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIYYQ01 sp903930505*. The type genome for the species is the GenBank assembly GCA\_903930505.1. The GC content of the type genome is 40.01 % and the genome length is 2.09 Mbp.

**Description of *Candidatus* Negidarcha gen. nov.**

*Candidatus* Negidarcha (NL. fem. n. *Negidarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIYYQ01*. The type species for the genus is *Candidatus* Negidarcha malivitrix .

According to the original version of GTDB R06-RS202, this genus belongs to the family

*DHVEG-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pedifarchaceae.

**Description of *Candidatus* Negotarcha bonitudo sp. nov.**

*Candidatus* Negotarcha bonitudo (NL. fem. n. *bonitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *0-14-0-80-44-23 sp002779235*. The type genome for the species is the GenBank assembly GCA\_002779235.1. The GC content of the type genome is 44.26 % and the genome length is 0.92 Mbp.

**Description of *Candidatus* Negotarcha gen. nov.**

*Candidatus* Negotarcha (NL. fem. n. *Negotarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *0-14-0-80-44-23*. The type species for the genus is *Candidatus* Negotarcha bonitudo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *0-14-0-80-44-23*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Negotarchaceae.

**Description of *Candidatus* Negotarchaceae fam. nov.**

*Candidatus* Negotarchaceae (NL. fem. n. *Negotarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *0-14-0-80-44-23*. The type genus for the taxon is *Candidatus* Negotarcha .

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

**Description of *Candidatus* Nehalarcha laculiforma sp. nov.**

*Candidatus* Nehalarcha laculiforma (NL. fem. n. *laculiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG1-02-35-32 sp002792635*. The type genome for the species is the

GenBank assembly GCA\_002792635.1. The GC content of the type genome is 35.1 % and the genome length is 0.78 Mbp.

**Description of *Candidatus Nehalarcha* gen. nov.**

*Candidatus* Nehalarcha (NL. fem. n. *Nehalarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CGI-02-35-32*. The type species for the genus is *Candidatus* Nehalarcha laculiforma .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Decenarchaceae.

**Description of *Candidatus Nicomarcha pavimitio* sp. nov.**

*Candidatus* Nicomarcha pavimitio (NL. fem. n. *pavimitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACIWG01 sp014361085*. The type genome for the species is the GenBank assembly GCA\_014361085.1. The GC content of the type genome is 36.65 % and the genome length is 1.82 Mbp.

**Description of *Candidatus Nicomarcha* gen. nov.**

*Candidatus* Nicomarcha (NL. fem. n. *Nicomarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JACIWG01*. The type species for the genus is *Candidatus* Nicomarcha pavimitio .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JACIWG01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Nicomarchaceae.

**Description of *Candidatus Nicomarchaceae* fam. nov.**

*Candidatus* Nicomarchaceae (NL. fem. n. *Nicomarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JACIWG01*. The type genus for the taxon is *Candidatus* Nicomarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *JACIWG01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Nicomarchales.

**Description of *Candidatus* Nicomarchales ord. nov.**

*Candidatus* Nicomarchales (NL. fem. n. *Nicomarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JACIWG01*. The type genus for the taxon is *Candidatus* Nicomarcha .

According to the GTDB R06-RS202, this order belongs to the class *Nitrososphaeria*.

**Description of *Candidatus* Nicotarcha cocolicella sp. nov.**

*Candidatus* Nicotarcha cocolicella (NL. fem. n. *cocolicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA95 sp002499405*. The type genome for the species is the GenBank assembly GCA\_002785565.1. The GC content of the type genome is 54.55 % and the genome length is 0.74 Mbp.

**Description of *Candidatus* Nicotarcha gen. nov.**

*Candidatus* Nicotarcha (NL. fem. n. *Nicotarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA95*. The type species for the genus is *Candidatus* Nicotarcha cocolicella .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA93*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Tenilarchaceae.

**Description of *Candidatus* Nidifarcha tegimessa sp. nov.**

*Candidatus* Nidifarcha tegimessa (NL. fem. n. *teгимessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *NZBF01 sp002687775*. The type genome for the species is the

GenBank assembly GCA\_002687775.1. The GC content of the type genome is 36.3 % and the genome length is 0.52 Mbp.

**Description of *Candidatus Nidifarcha* gen. nov.**

*Candidatus Nidifarcha* (NL. fem. n. *Nidifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *NZBF01*. The type species for the genus is *Candidatus Nidifarcha tegimessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tirocarchaceae*.

**Description of *Candidatus Nimirarcha cacomilenta* sp. nov.**

*Candidatus Nimirarcha cacomilenta* (NL. fem. n. *cacomilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005883695*. The type genome for the species is the GenBank assembly GCA\_005883695.1. The GC content of the type genome is 52.02 % and the genome length is 1.31 Mbp.

**Description of *Candidatus Nimirarcha* gen. nov.**

*Candidatus Nimirarcha* (NL. fem. n. *Nimirarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *40CM-2-53-6*. The type species for the genus is *Candidatus Nimirarcha cacomilenta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *40CM-2-53-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nimirarchaceae*.

**Description of *Candidatus Nimirarchaceae* fam. nov.**

*Candidatus Nimirarchaceae* (NL. fem. n. *Nimirarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *40CM-2-53-6*. The type genus for the taxon is *Candidatus Nimirarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *40CM-2-53-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Nimirarchales*.

#### **Description of *Candidatus Nimirarchales* ord. nov.**

*Candidatus Nimirarchales* (NL. fem. n. *Nimirarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *40CM-2-53-6*. The type genus for the taxon is *Candidatus Nimirarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Bathyarchaeia*.

#### **Description of *Candidatus Nimirarcha catabiforma* sp. nov.**

*Candidatus Nimirarcha catabiforma* (NL. fem. n. *catabiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp001918745*. The type genome for the species is the GenBank assembly GCA\_001918745.1. The GC content of the type genome is 51.8 % and the genome length is 1.78 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Soil sample from Angelo meadow plot 1; 40cm depth; 6 days after first rain event (27mm)".

#### **Description of *Candidatus Nimirarcha cimitibula* sp. nov.**

*Candidatus Nimirarcha cimitibula* (NL. fem. n. *cimitibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005888745*. The type genome for the species is the GenBank assembly GCA\_005888745.1. The GC content of the type genome is 51.72 % and the genome length is 2.2 Mbp.

#### **Description of *Candidatus Nimirarcha colimedo* sp. nov.**

*Candidatus Nimirarcha colimedo* (NL. fem. n. *colimedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005882895*. The type genome for the species is the

GenBank assembly GCA\_005882885.1. The GC content of the type genome is 52.18 % and the genome length is 1.68 Mbp.

**Description of *Candidatus Nimirarcha dilemigena* sp. nov.**

*Candidatus Nimirarcha dilemigena* (NL. fem. n. *dilemigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005883075*. The type genome for the species is the GenBank assembly GCA\_005884215.1. The GC content of the type genome is 51.88 % and the genome length is 1.5 Mbp.

**Description of *Candidatus Nimirarcha fibiciforma* sp. nov.**

*Candidatus Nimirarcha fibiciforma* (NL. fem. n. *fibiciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005883085*. The type genome for the species is the GenBank assembly GCA\_005883085.1. The GC content of the type genome is 52.03 % and the genome length is 1.71 Mbp.

**Description of *Candidatus Nimirarcha loceligena* sp. nov.**

*Candidatus Nimirarcha loceligena* (NL. fem. n. *loceligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005888635*. The type genome for the species is the GenBank assembly GCA\_005888635.1. The GC content of the type genome is 51.95 % and the genome length is 2.18 Mbp.

**Description of *Candidatus Nimirarcha manupilega* sp. nov.**

*Candidatus Nimirarcha manupilega* (NL. fem. n. *manupilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005882905*. The type genome for the species is the GenBank assembly GCA\_005881655.1. The GC content of the type genome is 53.34 % and the genome length is 1.56 Mbp.

**Description of *Candidatus Nimirarcha megalifica* sp. nov.**

*Candidatus Nimirarcha megalifica* (NL. fem. n. *megalifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp002495485*. The type genome for the species is the GenBank assembly GCA\_002495485.1. The GC content of the type genome is 54.1 % and the genome length is 1.81 Mbp.

**Description of *Candidatus Nimirarcha melopifica* sp. nov.**

*Candidatus Nimirarcha melopifica* (NL. fem. n. *melopifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005888755*. The type genome for the species is the GenBank assembly GCA\_005888755.1. The GC content of the type genome is 51.98 % and the genome length is 2.01 Mbp.

**Description of *Candidatus Nimirarcha mimogivita* sp. nov.**

*Candidatus Nimirarcha mimogivita* (NL. fem. n. *mimogivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp001919285*. The type genome for the species is the GenBank assembly GCA\_005884635.1. The GC content of the type genome is 52.02 % and the genome length is 2.07 Mbp.

**Description of *Candidatus Nimirarcha pacifitia* sp. nov.**

*Candidatus Nimirarcha pacifitia* (NL. fem. n. *pacifitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005881615*. The type genome for the species is the GenBank assembly GCA\_005881615.1. The GC content of the type genome is 51.92 % and the genome length is 2.23 Mbp.

**Description of *Candidatus Nimirarcha refinitica* sp. nov.**

*Candidatus Nimirarcha refinitica* (NL. fem. n. *refinitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).



A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp001915065*. The type genome for the species is the GenBank assembly GCA\_001920575.1. The GC content of the type genome is 53.31 % and the genome length is 1.54 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Soil sample from Angelo meadow plot 1; 20cm depth; 4 days after first rain event (27mm)".

**Description of *Candidatus Nimirarcha relecastra* sp. nov.**

*Candidatus Nimirarcha relecastra* (NL. fem. n. *relecastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005884195*. The type genome for the species is the GenBank assembly GCA\_005884195.1. The GC content of the type genome is 51.91 % and the genome length is 1.92 Mbp.

**Description of *Candidatus Nimirarcha robigitio* sp. nov.**

*Candidatus Nimirarcha robigitio* (NL. fem. n. *robigitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005881695*. The type genome for the species is the GenBank assembly GCA\_005881695.1. The GC content of the type genome is 52.16 % and the genome length is 2.0 Mbp.

**Description of *Candidatus Nimirarcha seposisca* sp. nov.**

*Candidatus Nimirarcha seposisca* (NL. fem. n. *seposisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005882955*. The type genome for the species is the GenBank assembly GCA\_005882955.1. The GC content of the type genome is 51.88 % and the genome length is 1.47 Mbp.

**Description of *Candidatus Nimirarcha sicarifica* sp. nov.**

*Candidatus Nimirarcha sicarifica* (NL. fem. n. *sicarifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *40CM-2-53-6 sp001918765*. The type genome for the species is the GenBank assembly GCA\_001918765.1. The GC content of the type genome is 51.94 % and the genome length is 1.33 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Soil sample from Angelo meadow plot 1; 40cm depth; 6 days after first rain event (27mm)".

**Description of *Candidatus Nimirarcha viginibra* sp. nov.**

*Candidatus Nimirarcha viginibra* (NL. fem. n. *vginibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *40CM-2-53-6 sp005884605*. The type genome for the species is the GenBank assembly GCA\_005884605.1. The GC content of the type genome is 51.84 % and the genome length is 2.03 Mbp.

**Description of *Candidatus Nitelarcha desomigena* sp. nov.**

*Candidatus Nitelarcha desomigena* (NL. fem. n. *desomigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMZT01 sp003663325*. The type genome for the species is the GenBank assembly GCA\_011039365.1. The GC content of the type genome is 37.72 % and the genome length is 0.7 Mbp.

**Description of *Candidatus Nitelarcha* gen. nov.**

*Candidatus Nitelarcha* (NL. fem. n. *Nitelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMZT01*. The type species for the genus is *Candidatus Nitelarcha desomigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZT01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nitelarchaceae*.

**Description of *Candidatus Nitelarchaceae* fam. nov.**

*Candidatus Nitelarchaceae* (NL. fem. n. *Nitelarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this taxon is *QMZT01*. The type genus for the taxon is *Candidatus Nitelarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *QMZP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Detorarchales*.

#### **Description of *Candidatus Nitrosarchaeum buxifessa* sp. nov.**

*Candidatus Nitrosarchaeum buxifessa* (NL. fem. n. *buxifessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosarchaeum sp013140415*. The type genome for the species is the GenBank assembly GCA\_013140415.1. The GC content of the type genome is 33.15 % and the genome length is 1.21 Mbp.

#### **Description of *Candidatus Nitrosarchaeum desulentia* sp. nov.**

*Candidatus Nitrosarchaeum desulentia* (NL. fem. n. *desulentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosarchaeum sp005798405*. The type genome for the species is the GenBank assembly GCA\_005798995.1. The GC content of the type genome is 33.25 % and the genome length is 0.58 Mbp.

#### **Description of *Candidatus Nitrosarchaeum lametago* sp. nov.**

*Candidatus Nitrosarchaeum lametago* (NL. fem. n. *lametago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosarchaeum sp004297665*. The type genome for the species is the GenBank assembly GCA\_004297665.1. The GC content of the type genome is 32.99 % and the genome length is 1.55 Mbp.

#### **Description of *Candidatus Nitrosarchaeum levidimonas* sp. nov.**

*Candidatus Nitrosarchaeum levidimonas* (NL. fem. n. *levidimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosarchaeum sp002737445*. The type genome for the species is the

GenBank assembly GCA\_013521055.1. The GC content of the type genome is 31.43 % and the genome length is 1.22 Mbp.

**Description of *Candidatus Nitrosarchaeum medimessa* sp. nov.**

*Candidatus Nitrosarchaeum medimessa* (NL. fem. n. *medimessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosarchaeum sp009697485*. The type genome for the species is the GenBank assembly GCA\_009697485.1. The GC content of the type genome is 33.31 % and the genome length is 0.72 Mbp.

**Description of *Candidatus Nitrosarchaeum papilitudo* sp. nov.**

*Candidatus Nitrosarchaeum papilitudo* (NL. fem. n. *papilitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosarchaeum sp012030815*. The type genome for the species is the GenBank assembly GCA\_012030815.1. The GC content of the type genome is 33.45 % and the genome length is 1.06 Mbp.

**Description of *Candidatus Nitrosarchaeum vinolisca* sp. nov.**

*Candidatus Nitrosarchaeum vinolisca* (NL. fem. n. *vinolisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosarchaeum sp003569705*. The type genome for the species is the GenBank assembly GCA\_003569705.1. The GC content of the type genome is 33.0 % and the genome length is 1.46 Mbp.

**Description of *Candidatus Nitrosarchaeum benemimonia* sp. nov.**

*Candidatus Nitrosarchaeum benemimonia* (NL. fem. n. *benemimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosarchaeum\_A sp002781805*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002781805.1. The GC content of the type genome is 37.07 % and the genome length is 1.02 Mbp.

**Description of *Candidatus Nitrosocaldus sotulitudo* sp. nov.**

*Candidatus Nitrosocaldus sotulitudo* (NL. fem. n. *sotulitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosocaldus sp002898655*. The type genome for the species is the GenBank assembly GCA\_002898655.1. The GC content of the type genome is 41.77 % and the genome length is 1.21 Mbp.

**Description of *Candidatus Nitrosocaldus tenemibra* sp. nov.**

*Candidatus Nitrosocaldus tenemibra* (NL. fem. n. *tenemibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosocaldus sp013538675*. The type genome for the species is the GenBank assembly GCA\_013538675.1. The GC content of the type genome is 42.77 % and the genome length is 1.24 Mbp.

**Description of *Candidatus Nitrosocaldus valefibra* sp. nov.**

*Candidatus Nitrosocaldus valefibra* (NL. fem. n. *valefibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosocaldus sp013538805*. The type genome for the species is the GenBank assembly GCA\_013538805.1. The GC content of the type genome is 41.96 % and the genome length is 1.45 Mbp.

**Description of *Candidatus Nitrosocosmicus deparitia* sp. nov.**

*Candidatus Nitrosocosmicus deparitia* (NL. fem. n. *deparitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosocosmicus sp013694585*. The type genome for the species is the GenBank assembly GCA\_013694585.1. The GC content of the type genome is 33.61 % and the genome length is 2.12 Mbp.

**Description of *Candidatus Nitrosocosmicus futatiforma* sp. nov.**

*Candidatus Nitrosocosmicus futatiforma* (NL. fem. n. *futatiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a

noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosocosmicus sp009379865*. The type genome for the species is the GenBank assembly GCA\_009379865.1. The GC content of the type genome is 33.53 % and the genome length is 3.06 Mbp.

**Description of *Candidatus Nitrosocosmicus menapimonas* sp. nov.**

*Candidatus Nitrosocosmicus menapimonas* (NL. fem. n. *menapimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosocosmicus sp013821245*. The type genome for the species is the GenBank assembly GCA\_013821245.1. The GC content of the type genome is 34.07 % and the genome length is 2.28 Mbp.

**Description of *Candidatus Nitrosocosmicus senacivita* sp. nov.**

*Candidatus Nitrosocosmicus senacivita* (NL. fem. n. *senacivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosocosmicus sp008389435*. The type genome for the species is the GenBank assembly RS\_GCF\_008389435.1. The GC content of the type genome is 33.43 % and the genome length is 3.22 Mbp.

**Description of *Candidatus Nitrosocosmicus supelago* sp. nov.**

*Candidatus Nitrosocosmicus supelago* (NL. fem. n. *supelago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosocosmicus sp013114705*. The type genome for the species is the GenBank assembly GCA\_013114705.1. The GC content of the type genome is 34.31 % and the genome length is 2.45 Mbp.

**Description of *Candidatus Nitrosopelagicus capudatica* sp. nov.**

*Candidatus Nitrosopelagicus capudatica* (NL. fem. n. *capudatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *Nitrosopelagicus* sp902606965. The type genome for the species is the GenBank assembly GCA\_902606965.1. The GC content of the type genome is 35.45 % and the genome length is 0.73 Mbp.

**Description of *Candidatus Nitrosopelagicus cerofastra* sp. nov.**

*Candidatus Nitrosopelagicus cerofastra* (NL. fem. n. *cerofastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus* sp000402075. The type genome for the species is the GenBank assembly GCA\_014384145.1. The GC content of the type genome is 35.8 % and the genome length is 0.96 Mbp.

**Description of *Candidatus Nitrosopelagicus cobaliforma* sp. nov.**

*Candidatus Nitrosopelagicus cobaliforma* (NL. fem. n. *cobaliforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus* sp013390785. The type genome for the species is the GenBank assembly RS\_GCF\_013390785.1. The GC content of the type genome is 35.21 % and the genome length is 0.95 Mbp.

**Description of *Candidatus Nitrosopelagicus dehonitas* sp. nov.**

*Candidatus Nitrosopelagicus dehonitas* (NL. fem. n. *dehonitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus* sp902552015. The type genome for the species is the GenBank assembly GCA\_902552015.1. The GC content of the type genome is 33.61 % and the genome length is 0.84 Mbp.

**Description of *Candidatus Nitrosopelagicus demulitia* sp. nov.**

*Candidatus Nitrosopelagicus demulitia* (NL. fem. n. *demulitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus* sp013390765. The type genome for the species is the GenBank assembly RS\_GCF\_013390765.1. The GC content of the type genome is 34.6 % and the genome length is 0.88 Mbp.

### **Description of *Candidatus Nitrosopelagicus denixifica* sp. nov.**

*Candidatus Nitrosopelagicus denixifica* (NL. fem. n. *denixifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus* sp001627235. The type genome for the species is the GenBank assembly GCA\_001627235.1. The GC content of the type genome is 34.05 % and the genome length is 1.01 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Red Sea water column Station 149 - depth 100m".

### **Description of *Candidatus Nitrosopelagicus depicitica* sp. nov.**

*Candidatus Nitrosopelagicus depicitica* (NL. fem. n. *depicitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus* sp013390745. The type genome for the species is the GenBank assembly RS\_GCF\_013390745.1. The GC content of the type genome is 35.54 % and the genome length is 1.08 Mbp.

### **Description of *Candidatus Nitrosopelagicus depubatio* sp. nov.**

*Candidatus Nitrosopelagicus depubatio* (NL. fem. n. *depubatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus* sp902512865. The type genome for the species is the GenBank assembly GCA\_902512865.1. The GC content of the type genome is 33.07 % and the genome length is 0.61 Mbp.

### **Description of *Candidatus Nitrosopelagicus desonatica* sp. nov.**

*Candidatus Nitrosopelagicus desonatica* (NL. fem. n. *desonatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus* sp902566725. The type genome for the species is the GenBank assembly GCA\_902566725.1. The GC content of the type genome is 33.86 % and the genome length is 0.79 Mbp.

### **Description of *Candidatus Nitrosopelagicus fumifastra* sp. nov.**



*Candidatus Nitrosopelagicus fumifastra* (NL. fem. n. *fumifastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus sp000746705*. The type genome for the species is the GenBank assembly GCA\_000746705.1. The GC content of the type genome is 34.68 % and the genome length is 0.52 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "single cell amplified by MDA; Atlantis II deep Red Sea brine-seawater interface".

**Description of *Candidatus Nitrosopelagicus laxiticella* sp. nov.**

*Candidatus Nitrosopelagicus laxiticella* (NL. fem. n. *laxiticella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus sp902606945*. The type genome for the species is the GenBank assembly GCA\_902606945.1. The GC content of the type genome is 34.66 % and the genome length is 0.78 Mbp.

**Description of *Candidatus Nitrosopelagicus legifibula* sp. nov.**

*Candidatus Nitrosopelagicus legifibula* (NL. fem. n. *legifibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus sp902608175*. The type genome for the species is the GenBank assembly GCA\_902608175.1. The GC content of the type genome is 32.89 % and the genome length is 0.8 Mbp.

**Description of *Candidatus Nitrosopelagicus lenocigena* sp. nov.**

*Candidatus Nitrosopelagicus lenocigena* (NL. fem. n. *lenocigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus sp002698885*. The type genome for the species is the GenBank assembly GCA\_002698885.1. The GC content of the type genome is 32.65 % and the genome length is 0.75 Mbp.

**Description of *Candidatus Nitrosopelagicus ludimentia* sp. nov.**

*Candidatus Nitrosopelagicus ludimentia* (NL. fem. n. *ludimentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus sp902590655*. The type genome for the species is the GenBank assembly GCA\_902590655.1. The GC content of the type genome is 35.51 % and the genome length is 0.91 Mbp.

**Description of *Candidatus Nitrosopelagicus luticatica* sp. nov.**

*Candidatus Nitrosopelagicus luticatica* (NL. fem. n. *luticatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus sp902511735*. The type genome for the species is the GenBank assembly GCA\_902511735.1. The GC content of the type genome is 32.6 % and the genome length is 0.76 Mbp.

**Description of *Candidatus Nitrosopelagicus momorago* sp. nov.**

*Candidatus Nitrosopelagicus momorago* (NL. fem. n. *momorago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus sp000484935*. The type genome for the species is the GenBank assembly GCA\_000484935.1. The GC content of the type genome is 35.58 % and the genome length is 0.93 Mbp.

**Description of *Candidatus Nitrosopelagicus rutabatio* sp. nov.**

*Candidatus Nitrosopelagicus rutabatio* (NL. fem. n. *rutabatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus sp902578515*. The type genome for the species is the GenBank assembly GCA\_902578515.1. The GC content of the type genome is 35.1 % and the genome length is 0.69 Mbp.

**Description of *Candidatus Nitrosopelagicus valefisca* sp. nov.**

*Candidatus Nitrosopelagicus valefisca* (NL. fem. n. *valefisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *Nitrosopelagicus* sp001510295. The type genome for the species is the GenBank assembly GCA\_001510295.1. The GC content of the type genome is 32.48 % and the genome length is 0.66 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Capian Sea".

**Description of *Candidatus Nitrosopelagicus venunitudo* sp. nov.**

*Candidatus Nitrosopelagicus venunitudo* (NL. fem. n. *venunitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus* sp012964965. The type genome for the species is the GenBank assembly GCA\_012964965.1. The GC content of the type genome is 34.81 % and the genome length is 0.72 Mbp.

**Description of *Candidatus Nitrosopelagicus vitablicella* sp. nov.**

*Candidatus Nitrosopelagicus vitablicella* (NL. fem. n. *vitablicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopelagicus* sp002709285. The type genome for the species is the GenBank assembly GCA\_002709285.1. The GC content of the type genome is 35.44 % and the genome length is 0.63 Mbp.

**Description of *Candidatus Nitrosopumilus bisacessa* sp. nov.**

*Candidatus Nitrosopumilus bisacessa* (NL. fem. n. *bisacessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus* sp000746685. The type genome for the species is the GenBank assembly GCA\_000746685.1. The GC content of the type genome is 33.72 % and the genome length is 1.08 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "single cell amplified by MDA; Atlantis II deep Red Sea brine-seawater interface".

**Description of *Candidatus Nitrosopumilus carucimonas* sp. nov.**

*Candidatus Nitrosopumilus carucimonas* (NL. fem. n. *carucimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus* sp013203245. The type genome for the species is the

GenBank assembly GCA\_013203245.1. The GC content of the type genome is 33.74 % and the genome length is 1.45 Mbp.

**Description of *Candidatus Nitrosopumilus carucimonia* sp. nov.**

*Candidatus Nitrosopumilus carucimonia* (NL. fem. n. *carucimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp003702525*. The type genome for the species is the GenBank assembly GCA\_003702525.1. The GC content of the type genome is 34.53 % and the genome length is 1.28 Mbp.

**Description of *Candidatus Nitrosopumilus cepulitudo* sp. nov.**

*Candidatus Nitrosopumilus cepulitudo* (NL. fem. n. *cepulitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp000484975*. The type genome for the species is the GenBank assembly GCA\_000484975.1. The GC content of the type genome is 33.37 % and the genome length is 1.04 Mbp.

**Description of *Candidatus Nitrosopumilus cetaritica* sp. nov.**

*Candidatus Nitrosopumilus cetaritica* (NL. fem. n. *cetaritica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp014384555*. The type genome for the species is the GenBank assembly GCA\_014384555.1. The GC content of the type genome is 33.31 % and the genome length is 1.39 Mbp.

**Description of *Candidatus Nitrosopumilus colutatica* sp. nov.**

*Candidatus Nitrosopumilus colutatica* (NL. fem. n. *colutatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp013002265*. The type genome for the species is the GenBank assembly GCA\_013002265.1. The GC content of the type genome is 33.89 % and the genome length is 1.49 Mbp.

**Description of *Candidatus Nitrosopumilus daducatica* sp. nov.**

*Candidatus Nitrosopumilus daducatica* (NL. fem. n. *daducatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp002730325*. The type genome for the species is the GenBank assembly GCA\_002730325.1. The GC content of the type genome is 31.66 % and the genome length is 1.13 Mbp.

**Description of *Candidatus Nitrosopumilus decapastra* sp. nov.**

*Candidatus Nitrosopumilus decapastra* (NL. fem. n. *decapastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp000746785*. The type genome for the species is the GenBank assembly GCA\_000746785.1. The GC content of the type genome is 33.72 % and the genome length is 1.0 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "single cell amplified by MDA; Atlantis II deep Red Sea brine-seawater interface".

**Description of *Candidatus Nitrosopumilus decinetta* sp. nov.**

*Candidatus Nitrosopumilus decinetta* (NL. fem. n. *decinetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp003702495*. The type genome for the species is the GenBank assembly GCA\_003702495.1. The GC content of the type genome is 34.55 % and the genome length is 1.27 Mbp.

**Description of *Candidatus Nitrosopumilus demaditoga* sp. nov.**

*Candidatus Nitrosopumilus demaditoga* (NL. fem. n. *demaditoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp902514275*. The type genome for the species is the GenBank assembly GCA\_902514275.1. The GC content of the type genome is 31.0 % and the genome length is 0.88 Mbp.

**Description of *Candidatus Nitrosopumilus demigicula* sp. nov.**

*Candidatus Nitrosopumilus demigicula* (NL. fem. n. *demigicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp002690535*. The type genome for the species is the GenBank assembly GCA\_002690535.1. The GC content of the type genome is 31.05 % and the genome length is 0.95 Mbp.

**Description of *Candidatus Nitrosopumilus denixibula* sp. nov.**

*Candidatus Nitrosopumilus denixibula* (NL. fem. n. *denixibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp007571135*. The type genome for the species is the GenBank assembly GCA\_0075711005.1. The GC content of the type genome is 41.9 % and the genome length is 1.09 Mbp.

**Description of *Candidatus Nitrosopumilus depubessa* sp. nov.**

*Candidatus Nitrosopumilus depubessa* (NL. fem. n. *depubessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp002317795*. The type genome for the species is the GenBank assembly GCA\_002317795.1. The GC content of the type genome is 31.44 % and the genome length is 1.91 Mbp.

**Description of *Candidatus Nitrosopumilus depupisca* sp. nov.**

*Candidatus Nitrosopumilus depupisca* (NL. fem. n. *depupisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp001510275*. The type genome for the species is the GenBank assembly GCA\_001510275.1. The GC content of the type genome is 32.77 % and the genome length is 1.22 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Capian Sea".

**Description of *Candidatus Nitrosopumilus dilecibra* sp. nov.**

*Candidatus Nitrosopumilus dilecibra* (NL. fem. n. *dilecibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp900620265*. The type genome for the species is the GenBank assembly RS\_GCF\_900620265.1. The GC content of the type genome is 64.82 % and the genome length is 2.0 Mbp.

**Description of *Candidatus Nitrosopumilus divulgatus* sp. nov.**

*Candidatus Nitrosopumilus divulgatus* (NL. fem. n. *divulgatus* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp013215285*. The type genome for the species is the GenBank assembly GCA\_013215285.1. The GC content of the type genome is 31.98 % and the genome length is 1.66 Mbp.

**Description of *Candidatus Nitrosopumilus gabinitia* sp. nov.**

*Candidatus Nitrosopumilus gabinitia* (NL. fem. n. *gabinitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp014078525*. The type genome for the species is the GenBank assembly RS\_GCF\_014078525.1. The GC content of the type genome is 33.35 % and the genome length is 1.79 Mbp.

**Description of *Candidatus Nitrosopumilus homogigena* sp. nov.**

*Candidatus Nitrosopumilus homogigena* (NL. fem. n. *homogigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp001437625*. The type genome for the species is the GenBank assembly GCA\_013329465.1. The GC content of the type genome is 31.26 % and the genome length is 1.09 Mbp.

**Description of *Candidatus Nitrosopumilus licenilega* sp. nov.**

*Candidatus Nitrosopumilus licenilega* (NL. fem. n. *licenilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp013390905*. The type genome for the species is the GenBank assembly RS\_GCF\_013390855.1. The GC content of the type genome is 33.26 % and the genome length is 1.18 Mbp.

### **Description of *Candidatus Nitrosopumilus ludifica* sp. nov.**

*Candidatus Nitrosopumilus ludifica* (NL. fem. n. *ludifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp003724285*. The type genome for the species is the GenBank assembly GCA\_003724235.1. The GC content of the type genome is 53.21 % and the genome length is 1.19 Mbp.

### **Description of *Candidatus Nitrosopumilus malogedo* sp. nov.**

*Candidatus Nitrosopumilus malogedo* (NL. fem. n. *malogedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp013043295*. The type genome for the species is the GenBank assembly GCA\_013043295.1. The GC content of the type genome is 33.28 % and the genome length is 1.17 Mbp.

### **Description of *Candidatus Nitrosopumilus megalugo* sp. nov.**

*Candidatus Nitrosopumilus megalugo* (NL. fem. n. *megalugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp013867245*. The type genome for the species is the GenBank assembly GCA\_013867245.1. The GC content of the type genome is 32.65 % and the genome length is 1.15 Mbp.

### **Description of *Candidatus Nitrosopumilus miracibra* sp. nov.**

*Candidatus Nitrosopumilus miracibra* (NL. fem. n. *miracibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp003702465*. The type genome for the species is the GenBank assembly GCA\_003702465.1. The GC content of the type genome is 30.91 % and the genome length is 1.13 Mbp.

### **Description of *Candidatus Nitrosopumilus necopibra* sp. nov.**

*Candidatus Nitrosopumilus necopibra* (NL. fem. n. *necopibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in



apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp000746765*. The type genome for the species is the GenBank assembly GCA\_000722915.1. The GC content of the type genome is 34.21 % and the genome length is 1.3 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "single cell amplified by MDA; Atlantis II Deep Red Sea brine-seawater interface".

**Description of *Candidatus Nitrosopumilus panopiforma* sp. nov.**

*Candidatus Nitrosopumilus panopiforma* (NL. fem. n. *panopiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp014384445*. The type genome for the species is the GenBank assembly GCA\_014384445.1. The GC content of the type genome is 31.97 % and the genome length is 1.32 Mbp.

**Description of *Candidatus Nitrosopumilus patibiforma* sp. nov.**

*Candidatus Nitrosopumilus patibiforma* (NL. fem. n. *patibiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp006740685*. The type genome for the species is the GenBank assembly RS\_GCF\_006740685.1. The GC content of the type genome is 33.76 % and the genome length is 1.5 Mbp.

**Description of *Candidatus Nitrosopumilus peracago* sp. nov.**

*Candidatus Nitrosopumilus peracago* (NL. fem. n. *peracago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp003175215*. The type genome for the species is the GenBank assembly RS\_GCF\_003175215.1. The GC content of the type genome is 33.84 % and the genome length is 1.76 Mbp.

**Description of *Candidatus Nitrosopumilus ranunilega* sp. nov.**

*Candidatus Nitrosopumilus ranunilega* (NL. fem. n. *ranunilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp014075315*. The type genome for the species is the GenBank assembly GCA\_011087695.1. The GC content of the type genome is 37.44 % and the genome length is 1.21 Mbp.

**Description of *Candidatus Nitrosopumilus retunifica* sp. nov.**

*Candidatus Nitrosopumilus retunifica* (NL. fem. n. *retunifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp003724325*. The type genome for the species is the GenBank assembly GCA\_003724325.1. The GC content of the type genome is 47.91 % and the genome length is 1.17 Mbp.

**Description of *Candidatus Nitrosopumilus risibugo* sp. nov.**

*Candidatus Nitrosopumilus risibugo* (NL. fem. n. *risibugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp003702545*. The type genome for the species is the GenBank assembly GCA\_003702545.1. The GC content of the type genome is 34.87 % and the genome length is 1.22 Mbp.

**Description of *Candidatus Nitrosopumilus rumifitura* sp. nov.**

*Candidatus Nitrosopumilus rumifitura* (NL. fem. n. *rumifitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp002737455*. The type genome for the species is the GenBank assembly GCA\_001510225.1. The GC content of the type genome is 30.33 % and the genome length is 1.04 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Capian Sea".

**Description of *Candidatus Nitrosopumilus selecax* sp. nov.**

*Candidatus Nitrosopumilus selecax* (NL. fem. n. *selecax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp008080815*. The type genome for the species is the

GenBank assembly GCA\_008080815.1. The GC content of the type genome is 32.56 % and the genome length is 1.07 Mbp.

**Description of *Candidatus Nitrosopumilus semimibra* sp. nov.**

*Candidatus Nitrosopumilus semimibra* (NL. fem. n. *semimibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp001543015*. The type genome for the species is the GenBank assembly GCA\_001543015.1. The GC content of the type genome is 31.64 % and the genome length is 1.93 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "glass sponge collected from seamount of South China Sea".

**Description of *Candidatus Nitrosopumilus senipitura* sp. nov.**

*Candidatus Nitrosopumilus senipitura* (NL. fem. n. *senipitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp002506665*. The type genome for the species is the GenBank assembly GCA\_002494985.1. The GC content of the type genome is 41.3 % and the genome length is 1.1 Mbp.

**Description of *Candidatus Nitrosopumilus sugililenta* sp. nov.**

*Candidatus Nitrosopumilus sugililenta* (NL. fem. n. *sugililenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp001541925*. The type genome for the species is the GenBank assembly RS\_GCF\_001541925.1. The GC content of the type genome is 31.4 % and the genome length is 1.38 Mbp.

**Description of *Candidatus Nitrosopumilus turilitura* sp. nov.**

*Candidatus Nitrosopumilus turilitura* (NL. fem. n. *turilitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp013911135*. The type genome for the species is the GenBank assembly GCA\_013911135.1. The GC content of the type genome is 33.27 % and the genome length is 1.71 Mbp.

### **Description of *Candidatus Nitrosopumilus vehemimonas* sp. nov.**

*Candidatus Nitrosopumilus vehemimonas* (NL. fem. n. *vehemimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp002788515*. The type genome for the species is the GenBank assembly GCA\_002788515.1. The GC content of the type genome is 33.75 % and the genome length is 1.37 Mbp.

### **Description of *Candidatus Nitrosopumilus vicecatio* sp. nov.**

*Candidatus Nitrosopumilus vicecatio* (NL. fem. n. *vicecatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp902514095*. The type genome for the species is the GenBank assembly GCA\_902514095.1. The GC content of the type genome is 30.4 % and the genome length is 0.87 Mbp.

### **Description of *Candidatus Nitrosopumilus vigenilenta* sp. nov.**

*Candidatus Nitrosopumilus vigenilenta* (NL. fem. n. *vigenilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosopumilus sp007571225*. The type genome for the species is the GenBank assembly GCA\_007571225.1. The GC content of the type genome is 49.87 % and the genome length is 1.29 Mbp.

### **Description of *Candidatus Nitrososphaera benivastra* sp. nov.**

*Candidatus Nitrososphaera benivastra* (NL. fem. n. *benivastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrososphaera sp013388945*. The type genome for the species is the GenBank assembly GCA\_013388945.1. The GC content of the type genome is 54.54 % and the genome length is 1.99 Mbp.

### **Description of *Candidatus Nitrososphaera luticitrix* sp. nov.**

*Candidatus Nitrososphaera luticitrix* (NL. fem. n. *luticitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrososphaera sp013114715*. The type genome for the species is the GenBank assembly GCA\_013114715.1. The GC content of the type genome is 48.23 % and the genome length is 1.82 Mbp.

**Description of *Candidatus Nitrososphaera relecibra* sp. nov.**

*Candidatus Nitrososphaera relecibra* (NL. fem. n. *relecibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrososphaera sp002501845*. The type genome for the species is the GenBank assembly GCA\_002508435.1. The GC content of the type genome is 49.14 % and the genome length is 1.03 Mbp.

**Description of *Candidatus Nitrososphaera sicunatio* sp. nov.**

*Candidatus Nitrososphaera sicunatio* (NL. fem. n. *sicunatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrososphaera sp002494895*. The type genome for the species is the GenBank assembly GCA\_002494895.1. The GC content of the type genome is 49.69 % and the genome length is 1.59 Mbp.

**Description of *Candidatus Nitrosotalea bigemugo* sp. nov.**

*Candidatus Nitrosotalea bigemugo* (NL. fem. n. *bigemugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotalea sp011319465*. The type genome for the species is the GenBank assembly RS\_GCF\_011319465.1. The GC content of the type genome is 40.09 % and the genome length is 1.54 Mbp.

**Description of *Candidatus Nitrosotalea catalimonia* sp. nov.**

*Candidatus Nitrosotalea catalimonia* (NL. fem. n. *catalimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *Nitrosotalea* sp007280465. The type genome for the species is the GenBank assembly GCA\_007280465.1. The GC content of the type genome is 36.1 % and the genome length is 0.92 Mbp.

**Description of *Candidatus Nitrosotalea fiducitia* sp. nov.**

*Candidatus Nitrosotalea fiducitia* (NL. fem. n. *fiducitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotalea* sp013288545. The type genome for the species is the GenBank assembly GCA\_013288545.1. The GC content of the type genome is 37.81 % and the genome length is 1.39 Mbp.

**Description of *Candidatus Nitrosotalea nubigifica* sp. nov.**

*Candidatus Nitrosotalea nubigifica* (NL. fem. n. *nubigifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotalea* sp005877205. The type genome for the species is the GenBank assembly GCA\_005877205.1. The GC content of the type genome is 38.69 % and the genome length is 1.56 Mbp.

**Description of *Candidatus Nitrosotalea pavimentia* sp. nov.**

*Candidatus Nitrosotalea pavimentia* (NL. fem. n. *pavimentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotalea* sp001920395. The type genome for the species is the GenBank assembly GCA\_001920395.1. The GC content of the type genome is 39.08 % and the genome length is 1.06 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Soil sample from Angelo meadow plot 1; 20cm depth; 4 days after first rain event (27mm)".

**Description of *Candidatus Nitrosotalea sicinibra* sp. nov.**

*Candidatus Nitrosotalea sicinibra* (NL. fem. n. *sicinibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotalea* sp001917995. The type genome for the species is the GenBank assembly GCA\_001917995.1. The GC content of the type genome is 38.21 %

and the genome length is 1.38 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Soil sample from Angelo meadow plot 1; 40cm depth; 2 days after first rain event (91mm)".

**Description of *Candidatus Nitrosotalea vinolitica* sp. nov.**

*Candidatus Nitrosotalea vinolitica* (NL. fem. n. *vinolitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotalea sp011319475*. The type genome for the species is the GenBank assembly RS\_GCF\_011319475.1. The GC content of the type genome is 38.8 % and the genome length is 1.82 Mbp.

**Description of *Candidatus Nitrosotenuis bimetastra* sp. nov.**

*Candidatus Nitrosotenuis bimetastra* (NL. fem. n. *bimetastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotenuis sp004322465*. The type genome for the species is the GenBank assembly GCA\_004322465.1. The GC content of the type genome is 42.65 % and the genome length is 1.68 Mbp.

**Description of *Candidatus Nitrosotenuis bisuletta* sp. nov.**

*Candidatus Nitrosotenuis bisuletta* (NL. fem. n. *bisuletta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotenuis sp900299125*. The type genome for the species is the GenBank assembly GCA\_900299125.1. The GC content of the type genome is 36.39 % and the genome length is 1.56 Mbp.

**Description of *Candidatus Nitrosotenuis feficastra* sp. nov.**

*Candidatus Nitrosotenuis feficastra* (NL. fem. n. *feficastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotenuis sp005240025*. The type genome for the species is the GenBank assembly GCA\_005240025.1. The GC content of the type genome is 44.26 % and the genome length is 1.35 Mbp.

**Description of *Candidatus Nitrosotenuis negidicula* sp. nov.**

*Candidatus Nitrosotenuis negidicula* (NL. fem. n. *negidicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotenuis sp013407275*. The type genome for the species is the GenBank assembly RS\_GCF\_013407275.1. The GC content of the type genome is 41.25 % and the genome length is 1.83 Mbp.

**Description of *Candidatus Nitrosotenuis siticimonia* sp. nov.**

*Candidatus Nitrosotenuis siticimonia* (NL. fem. n. *siticimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotenuis sp010028495*. The type genome for the species is the GenBank assembly GCA\_010028425.1. The GC content of the type genome is 40.07 % and the genome length is 1.62 Mbp.

**Description of *Candidatus Nitrosotenuis vehicimonas* sp. nov.**

*Candidatus Nitrosotenuis vehicimonas* (NL. fem. n. *vehicimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Nitrosotenuis sp002499525*. The type genome for the species is the GenBank assembly GCA\_013331435.1. The GC content of the type genome is 38.08 % and the genome length is 0.86 Mbp.

**Description of *Candidatus Nivomarcha demuligena* sp. nov.**

*Candidatus Nivomarcha demuligena* (NL. fem. n. *demuligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTNL01 sp011358645*. The type genome for the species is the GenBank assembly GCA\_011358645.1. The GC content of the type genome is 46.5 % and the genome length is 0.95 Mbp.

**Description of *Candidatus Nivomarcha* gen. nov.**

*Candidatus Nivomarcha* (NL. fem. n. *Nivomarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).



A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTNL01*. The type species for the genus is *Candidatus Nivomarcha demuligena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTNL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nivomarchaceae*.

### **Description of *Candidatus Nivomarchaceae* fam. nov.**

*Candidatus Nivomarchaceae* (NL. fem. n. *Nivomarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTNL01*. The type genus for the taxon is *Candidatus Nivomarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *DTNL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Nivomarchales*.

### **Description of *Candidatus Nivomarchales* ord. nov.**

*Candidatus Nivomarchales* (NL. fem. n. *Nivomarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTNL01*. The type genus for the taxon is *Candidatus Nivomarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Micrarchaeia*.

### **Description of *Candidatus Nocenarcha cibicessa* sp. nov.**

*Candidatus Nocenarcha cibicessa* (NL. fem. n. *cibicessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABZYC01 sp902529885*. The type genome for the species is the GenBank assembly GCA\_902529885.1. The GC content of the type genome is 36.56 % and the genome length is 0.68 Mbp.

### **Description of *Candidatus Nocenarcha* gen. nov.**

*Candidatus Nocenarcha* (NL. fem. n. *Nocenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABZYC01*. The type species for the genus is *Candidatus Nocumarcha cibicessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tirocarchaceae*.

#### **Description of *Candidatus Nocumarcha benevisca* sp. nov.**

*Candidatus Nocumarcha benevisca* (NL. fem. n. *benevisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp011332615*. The type genome for the species is the GenBank assembly GCA\_011332615.1. The GC content of the type genome is 46.23 % and the genome length is 2.76 Mbp.

#### **Description of *Candidatus Nocumarcha* gen. nov.**

*Candidatus Nocumarcha* (NL. fem. n. *Nocumarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PALSA-986*. The type species for the genus is *Candidatus Nocumarcha benevisca*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

#### **Description of *Candidatus Nocumarcha bimetimonia* sp. nov.**

*Candidatus Nocumarcha bimetimonia* (NL. fem. n. *bimetimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp003165195*. The type genome for the species is the GenBank assembly GCA\_003165195.1. The GC content of the type genome is 42.93 % and the genome length is 3.16 Mbp.

#### **Description of *Candidatus Nocumarcha cacopitio* sp. nov.**

*Candidatus Nocumarcha cacopitio* (NL. fem. n. *cacopitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp009787175*. The type genome for the species is the GenBank assembly GCA\_009787255.1. The GC content of the type genome is 38.5 % and the genome length is 0.66 Mbp.

**Description of *Candidatus Nocumarcha cadavibra* sp. nov.**

*Candidatus Nocumarcha cadavibra* (NL. fem. n. *cadavibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp003164295*. The type genome for the species is the GenBank assembly GCA\_003164295.1. The GC content of the type genome is 40.33 % and the genome length is 3.26 Mbp.

**Description of *Candidatus Nocumarcha cadurugo* sp. nov.**

*Candidatus Nocumarcha cadurugo* (NL. fem. n. *cadurugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp009787585*. The type genome for the species is the GenBank assembly GCA\_009787585.1. The GC content of the type genome is 37.81 % and the genome length is 1.81 Mbp.

**Description of *Candidatus Nocumarcha colapitura* sp. nov.**

*Candidatus Nocumarcha colapitura* (NL. fem. n. *colapitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp011367965*. The type genome for the species is the GenBank assembly GCA\_011367965.1. The GC content of the type genome is 46.67 % and the genome length is 2.23 Mbp.

**Description of *Candidatus Nocumarcha demaditio* sp. nov.**

*Candidatus Nocumarcha demaditio* (NL. fem. n. *demaditio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *PALSA-986 sp009783705*. The type genome for the species is the GenBank assembly GCA\_009783705.1. The GC content of the type genome is 43.28 % and the genome length is 2.24 Mbp.

**Description of *Candidatus Nocumarcha depopibula* sp. nov.**

*Candidatus Nocumarcha depopibula* (NL. fem. n. *depopibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp012515445*. The type genome for the species is the GenBank assembly GCA\_012515445.1. The GC content of the type genome is 47.01 % and the genome length is 2.44 Mbp.

**Description of *Candidatus Nocumarcha homilitudo* sp. nov.**

*Candidatus Nocumarcha homilitudo* (NL. fem. n. *homilitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp009776805*. The type genome for the species is the GenBank assembly GCA\_009776805.1. The GC content of the type genome is 35.58 % and the genome length is 2.29 Mbp.

**Description of *Candidatus Nocumarcha luticicella* sp. nov.**

*Candidatus Nocumarcha luticicella* (NL. fem. n. *luticicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp009779045*. The type genome for the species is the GenBank assembly GCA\_009784175.1. The GC content of the type genome is 38.17 % and the genome length is 1.17 Mbp.

**Description of *Candidatus Nocumarcha modififica* sp. nov.**

*Candidatus Nocumarcha modififica* (NL. fem. n. *modififica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp012511995*. The type genome for the species is the GenBank assembly GCA\_012511995.1. The GC content of the type genome is 39.89 % and the genome length is 2.23 Mbp.

### **Description of *Candidatus Nocumarcha momorimonia* sp. nov.**

*Candidatus Nocumarcha momorimonia* (NL. fem. n. *momorimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp009778385*. The type genome for the species is the GenBank assembly GCA\_009778385.1. The GC content of the type genome is 39.31 % and the genome length is 2.18 Mbp.

### **Description of *Candidatus Nocumarcha panopimonas* sp. nov.**

*Candidatus Nocumarcha panopimonas* (NL. fem. n. *panopimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp003141855*. The type genome for the species is the GenBank assembly GCA\_003141295.1. The GC content of the type genome is 44.34 % and the genome length is 2.37 Mbp.

### **Description of *Candidatus Nocumarcha paracifica* sp. nov.**

*Candidatus Nocumarcha paracifica* (NL. fem. n. *paracifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp012513715*. The type genome for the species is the GenBank assembly GCA\_012513715.1. The GC content of the type genome is 37.68 % and the genome length is 2.13 Mbp.

### **Description of *Candidatus Nocumarcha peripitoga* sp. nov.**

*Candidatus Nocumarcha peripitoga* (NL. fem. n. *peripitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp903901015*. The type genome for the species is the GenBank assembly GCA\_903884205.1. The GC content of the type genome is 45.43 % and the genome length is 2.23 Mbp.

### **Description of *Candidatus Nocumarcha recumitoga* sp. nov.**

*Candidatus Nocumarcha recumitoga* (NL. fem. n. *recumitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp003589585*. The type genome for the species is the GenBank assembly RS\_GCF\_003589585.1. The GC content of the type genome is 44.9 % and the genome length is 2.08 Mbp.

**Description of *Candidatus Nocumarcha revecugo* sp. nov.**

*Candidatus* Nocumarcha revecugo (NL. fem. n. *revecugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp003151735*. The type genome for the species is the GenBank assembly GCA\_003151735.1. The GC content of the type genome is 42.32 % and the genome length is 3.51 Mbp.

**Description of *Candidatus Nocumarcha semodastra* sp. nov.**

*Candidatus* Nocumarcha semodastra (NL. fem. n. *semodastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp009781675*. The type genome for the species is the GenBank assembly GCA\_009785285.1. The GC content of the type genome is 43.38 % and the genome length is 2.08 Mbp.

**Description of *Candidatus Nocumarcha solipitoga* sp. nov.**

*Candidatus* Nocumarcha solipitoga (NL. fem. n. *solipitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PALSA-986 sp009781395*. The type genome for the species is the GenBank assembly GCA\_009781395.1. The GC content of the type genome is 39.03 % and the genome length is 2.13 Mbp.

**Description of *Candidatus Nocumarcha vilitifica* sp. nov.**

*Candidatus* Nocumarcha vilitifica (NL. fem. n. *vilififica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *PALSA-986 sp003133625*. The type genome for the species is the GenBank assembly GCA\_003133625.1. The GC content of the type genome is 42.81 % and the genome length is 2.55 Mbp.

#### **Description of *Candidatus Nosocarcha levifimonia* sp. nov.**

*Candidatus Nosocarcha levifimonia* (NL. fem. n. *levifimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MX-02 sp006954405*. The type genome for the species is the GenBank assembly RS\_GCF\_900769185.1. The GC content of the type genome is 47.81 % and the genome length is 1.09 Mbp.

#### **Description of *Candidatus Nosocarcha* gen. nov.**

*Candidatus Nosocarcha* (NL. fem. n. *Nosocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MX-02*. The type species for the genus is *Candidatus Nosocarcha levifimonia*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Notabarcha butubibra* sp. nov.**

*Candidatus Notabarcha butubibra* (NL. fem. n. *butubibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2688095 sp002688095*. The type genome for the species is the GenBank assembly GCA\_002688095.1. The GC content of the type genome is 32.02 % and the genome length is 0.61 Mbp.

#### **Description of *Candidatus Notabarcha* gen. nov.**

*Candidatus Notabarcha* (NL. fem. n. *Notabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2688095*. The type species for the genus is *Candidatus Notabarcha butubibra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-2688095*. According to the renamed version of GTDB R06-RS202, this taxon

belongs to the family *Candidatus* Notabarchaceae.

**Description of *Candidatus* Notabarchaceae fam. nov.**

*Candidatus* Notabarchaceae (NL. fem. n. *Notabarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GCA-2688095*. The type genus for the taxon is *Candidatus* Notabarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Lanifarchales.

**Description of *Candidatus* Notacarcha lametitio sp. nov.**

*Candidatus* Notacarcha lametitio (NL. fem. n. *lametitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAINOH01 sp903851445*. The type genome for the species is the GenBank assembly *GCA\_903851445.1*. The GC content of the type genome is 54.6 % and the genome length is 1.09 Mbp.

**Description of *Candidatus* Notacarcha gen. nov.**

*Candidatus* Notacarcha (NL. fem. n. *Notacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAINOH01*. The type species for the genus is *Candidatus* Notacarcha lametitio .

According to the original version of GTDB R06-RS202, this genus belongs to the family *CAINOH01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Notacarchaceae.

**Description of *Candidatus* Notacarchaceae fam. nov.**

*Candidatus* Notacarchaceae (NL. fem. n. *Notacarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CAINOH01*. The type genus for the taxon is *Candidatus* Notacarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order



*UBA8480*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Colubarchales.

#### **Description of *Candidatus* Novilarcha funivitis sp. nov.**

*Candidatus* Novilarcha funivitis (NL. fem. n. *funivitis* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA412 sp002495685*. The type genome for the species is the GenBank assembly GCA\_002508885.1. The GC content of the type genome is 27.06 % and the genome length is 1.69 Mbp.

#### **Description of *Candidatus* Novilarcha gen. nov.**

*Candidatus* Novilarcha (NL. fem. n. *Novilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA412*. The type species for the genus is *Candidatus* Novilarcha funivitis .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Nubecarcha binocitio sp. nov.**

*Candidatus* Nubecarcha binocitio (NL. fem. n. *binocitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2687185 sp002687185*. The type genome for the species is the GenBank assembly GCA\_002687185.1. The GC content of the type genome is 37.33 % and the genome length is 1.58 Mbp.

#### **Description of *Candidatus* Nubecarcha gen. nov.**

*Candidatus* Nubecarcha (NL. fem. n. *Nubecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2687185*. The type species for the genus is *Candidatus* Nubecarcha binocitio .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-2687185*. According to the renamed version of GTDB R06-RS202, this taxon

belongs to the family *Candidatus* Nubecarchaceae.

#### **Description of *Candidatus* Nubecarchaceae fam. nov.**

*Candidatus* Nubecarchaceae (NL. fem. n. *Nubecarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GCA-2687185*. The type genus for the taxon is *Candidatus* Nubecarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Lanifarchales.

#### **Description of *Candidatus* Nubifarcha revexitudo sp. nov.**

*Candidatus* Nubifarcha revexitudo (NL. fem. n. *revexitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *A07HB70 sp000496195*. The type genome for the species is the GenBank assembly *GCA\_000496195.1*. The GC content of the type genome is 70.99 % and the genome length is 2.39 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "hypersaline water sample from Lake Tyrrell".

#### **Description of *Candidatus* Nubifarcha gen. nov.**

*Candidatus* Nubifarcha (NL. fem. n. *Nubifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *A07HB70*. The type species for the genus is *Candidatus* Nubifarcha revexitudo .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Nubigarcha casigilenta sp. nov.**

*Candidatus* Nubigarcha casigilenta (NL. fem. n. *casigilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SMTZ1-45 sp004376265*. The type genome for the species is the

GenBank assembly GCA\_004376265.1. The GC content of the type genome is 43.33 % and the genome length is 3.04 Mbp.

**Description of *Candidatus Nubigarcha* gen. nov.**

*Candidatus Nubigarcha* (NL. fem. n. *Nubigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SMTZ1-45*. The type species for the genus is *Candidatus Nubigarcha casigilenta*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Nubigarcha cisoriforma* sp. nov.**

*Candidatus Nubigarcha cisoriforma* (NL. fem. n. *cisoriforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SMTZ1-45 sp001563335*. The type genome for the species is the GenBank assembly GCA\_001563335.1. The GC content of the type genome is 42.16 % and the genome length is 3.54 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Sulfate-methane transition zone estuary sediments 16-26 cm".

**Description of *Candidatus Nubigarcha denunax* sp. nov.**

*Candidatus Nubigarcha denunax* (NL. fem. n. *denunax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SMTZ1-45 sp011364905*. The type genome for the species is the GenBank assembly GCA\_011364905.1. The GC content of the type genome is 44.97 % and the genome length is 3.08 Mbp.

**Description of *Candidatus Nubigarcha domicax* sp. nov.**

*Candidatus Nubigarcha domicax* (NL. fem. n. *domicax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SMTZ1-45 sp002825515*. The type genome for the species is the GenBank assembly GCA\_002825515.1. The GC content of the type genome is 42.59 %

and the genome length is 3.49 Mbp.

**Description of *Candidatus Nubigarcha forabugo* sp. nov.**

*Candidatus Nubigarcha forabugo* (NL. fem. n. *forabugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SMTZ1-45 sp001940705*. The type genome for the species is the GenBank assembly GCA\_001940705.1. The GC content of the type genome is 44.58 % and the genome length is 2.86 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Marine sediment".

**Description of *Candidatus Nucifarcha derunessa* sp. nov.**

*Candidatus Nucifarcha derunessa* (NL. fem. n. *derunessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA288 sp004332335*. The type genome for the species is the GenBank assembly GCA\_004332335.1. The GC content of the type genome is 66.4 % and the genome length is 2.37 Mbp.

**Description of *Candidatus Nucifarcha* gen. nov.**

*Candidatus Nucifarcha* (NL. fem. n. *Nucifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA288*. The type species for the genus is *Candidatus Nucifarcha derunessa*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Nucifarcha dinupentia* sp. nov.**

*Candidatus Nucifarcha dinupentia* (NL. fem. n. *dinupentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA288 sp11384u*. The type genome for the species is the GenBank assembly GCA\_013331215.1. The GC content of the type genome is 66.66 % and the genome length is 2.15 Mbp.

### **Description of *Candidatus Nucifarcha penecetta* sp. nov.**

*Candidatus Nucifarcha penecetta* (NL. fem. n. *penecetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA288 sp012728895*. The type genome for the species is the GenBank assembly GCA\_012728895.1. The GC content of the type genome is 67.82 % and the genome length is 2.28 Mbp.

### **Description of *Candidatus Nucifarcha venucago* sp. nov.**

*Candidatus Nucifarcha venucago* (NL. fem. n. *venucago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA288 sp002495225*. The type genome for the species is the GenBank assembly GCA\_002495225.1. The GC content of the type genome is 68.61 % and the genome length is 1.93 Mbp.

### **Description of *Candidatus Nugacarcha pacifitudo* sp. nov.**

*Candidatus Nugacarcha pacifitudo* (NL. fem. n. *pacifitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA233 sp002010925*. The type genome for the species is the GenBank assembly GCA\_002010925.1. The GC content of the type genome is 41.91 % and the genome length is 1.07 Mbp.

### **Description of *Candidatus Nugacarcha* gen. nov.**

*Candidatus Nugacarcha* (NL. fem. n. *Nugacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA233*. The type species for the genus is *Candidatus Nugacarcha pacifitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

### **Description of *Candidatus Nugacarchaceae* fam. nov.**

*Candidatus* Nugacarchaceae (NL. fem. n. *Nugacarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA233*. The type genus for the taxon is *Candidatus* Nugacarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Remularchales.

#### **Description of *Candidatus* Nugacarcha rubigatica sp. nov.**

*Candidatus* Nugacarcha rubigatica (NL. fem. n. *rubigatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA233 sp002507245*. The type genome for the species is the GenBank assembly GCA\_002507245.1. The GC content of the type genome is 40.91 % and the genome length is 1.58 Mbp.

#### **Description of *Candidatus* Nugacarcha semodivita sp. nov.**

*Candidatus* Nugacarcha semodivita (NL. fem. n. *semodivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA233 sp003661945*. The type genome for the species is the GenBank assembly GCA\_003661945.1. The GC content of the type genome is 46.67 % and the genome length is 1.26 Mbp.

#### **Description of *Candidatus* Nugivarcha venunedo sp. nov.**

*Candidatus* Nugivarcha venunedo (NL. fem. n. *venunedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMZM01 sp003663175*. The type genome for the species is the GenBank assembly GCA\_011044085.1. The GC content of the type genome is 38.04 % and the genome length is 0.93 Mbp.

#### **Description of *Candidatus* Nugivarcha gen. nov.**

*Candidatus* Nugivarcha (NL. fem. n. *Nugivarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMZM01*. The type species for the genus is *Candidatus Nugivarcha venunedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZM01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugivarchaceae*.

#### **Description of *Candidatus Nugivarchaceae* fam. nov.**

*Candidatus Nugivarchaceae* (NL. fem. n. *Nugivarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMZM01*. The type genus for the taxon is *Candidatus Nugivarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *IMC4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Baditarchales*.

#### **Description of *Candidatus Nutabarcha favonibra* sp. nov.**

*Candidatus Nutabarcha favonibra* (NL. fem. n. *favonibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J07HR59 sp000496235*. The type genome for the species is the GenBank assembly GCA\_000496235.1. The GC content of the type genome is 59.1 % and the genome length is 2.88 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "hypersaline water sample from Lake Tyrrell".

#### **Description of *Candidatus Nutabarcha* gen. nov.**

*Candidatus Nutabarcha* (NL. fem. n. *Nutabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J07HR59*. The type species for the genus is *Candidatus Nutabarcha favonibra*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Nutamarcha caravago* sp. nov.**

*Candidatus* Nutamarcha caravago (NL. fem. n. *caravago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWEA01 sp003554235*. The type genome for the species is the GenBank assembly GCA\_003554235.1. The GC content of the type genome is 43.82 % and the genome length is 0.56 Mbp.

#### **Description of *Candidatus* Nutamarcha gen. nov.**

*Candidatus* Nutamarcha (NL. fem. n. *Nutamarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PWEA01*. The type species for the genus is *Candidatus* Nutamarcha caravago .

According to the original version of GTDB R06-RS202, this genus belongs to the family *PWEA01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Nutamarchaceae.

#### **Description of *Candidatus* Nutamarchaceae fam. nov.**

*Candidatus* Nutamarchaceae (NL. fem. n. *Nutamarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PWEA01*. The type genus for the taxon is *Candidatus* Nutamarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *PWEA01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Nutamarchales.

#### **Description of *Candidatus* Nutamarchales ord. nov.**

*Candidatus* Nutamarchales (NL. fem. n. *Nutamarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PWEA01*. The type genus for the taxon is *Candidatus* Nutamarcha .

According to the original version of GTDB R06-RS202, this family belongs to the class *PWEA01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus* Nutamarchae.



### **Description of *Candidatus Nutamarchae* class. nov.**

*Candidatus Nutamarchae* (NL. fem. n. *c\_\_Nutamarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PWEA01*. The type genus for the taxon is *Candidatus Nutamarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the phylum *PWEA01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the phylum *Candidatus Nutamarchota*.

### **Description of *Candidatus Nutamarchota* phyl. nov.**

*Candidatus Nutamarchota* (NL. fem. n. *Nutamarchota* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PWEA01*. The type genus for the taxon is *Candidatus Nutamarcha*.

According to GTDB R06-RS202, this phylum belongs to the domain *Archaea*.

### **Description of *Candidatus Nutamarcha dinupibra* sp. nov.**

*Candidatus Nutamarcha dinupibra* (NL. fem. n. *dinupibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWEA01 sp003553905*. The type genome for the species is the GenBank assembly GCA\_003553905.1. The GC content of the type genome is 41.54 % and the genome length is 0.7 Mbp.

### **Description of *Candidatus Nutamarcha facunax* sp. nov.**

*Candidatus Nutamarcha facunax* (NL. fem. n. *facunax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWEA01 sp003554845*. The type genome for the species is the GenBank assembly GCA\_003554845.1. The GC content of the type genome is 43.4 % and the genome length is 0.63 Mbp.

### **Description of *Candidatus Nutamarcha monogugo* sp. nov.**

*Candidatus Nutamarcha monogugo* (NL. fem. n. *monogugo* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWEA01 sp003550625*. The type genome for the species is the GenBank assembly GCA\_003550625.1. The GC content of the type genome is 44.83 % and the genome length is 0.72 Mbp.

**Description of *Candidatus Nutamarcha penurimonas* sp. nov.**

*Candidatus Nutamarcha penurimonas* (NL. fem. n. *penurimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWEA01 sp003555465*. The type genome for the species is the GenBank assembly GCA\_003555465.1. The GC content of the type genome is 46.01 % and the genome length is 0.63 Mbp.

**Description of *Candidatus Pabilarcha panopatica* sp. nov.**

*Candidatus Pabilarcha panopatica* (NL. fem. n. *panopatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA117 sp002494785*. The type genome for the species is the GenBank assembly GCA\_002494785.1. The GC content of the type genome is 33.41 % and the genome length is 2.18 Mbp.

**Description of *Candidatus Pabilarcha* gen. nov.**

*Candidatus Pabilarcha* (NL. fem. n. *Pabilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA117*. The type species for the genus is *Candidatus Pabilarcha panopatica* .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Pacifarcha remedessa* sp. nov.**

*Candidatus Pacifarcha remedessa* (NL. fem. n. *remedessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B48-G16 sp003660605*. The type genome for the species is the GenBank assembly GCA\_003660605.1. The GC content of the type genome is 36.25 % and the genome length is 1.17 Mbp.

#### **Description of *Candidatus Pacifarcha* gen. nov.**

*Candidatus Pacifarcha* (NL. fem. n. *Pacifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B48-G16*. The type species for the genus is *Candidatus Pacifarcha remedessa*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B48-G16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pacifarchaceae*.

#### **Description of *Candidatus Pacifarchaceae* fam. nov.**

*Candidatus Pacifarchaceae* (NL. fem. n. *Pacifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B48-G16*. The type genus for the taxon is *Candidatus Pacifarcha*.

According to GTDB R06-RS202, this family belongs to the order *Methanofastidiosales*.

#### **Description of *Candidatus Palaeococcus dilecatio* sp. nov.**

*Candidatus Palaeococcus dilecatio* (NL. fem. n. *dilecatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Palaeococcus sp003660495*. The type genome for the species is the GenBank assembly GCA\_003660495.1. The GC content of the type genome is 44.66 % and the genome length is 1.21 Mbp.

#### **Description of *Candidatus Palaeococcus fetifitia* sp. nov.**

*Candidatus Palaeococcus fetifitia* (NL. fem. n. *fetifitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Palaeococcus sp003663695*. The type genome for the species is the

GenBank assembly GCA\_003663695.1. The GC content of the type genome is 44.59 % and the genome length is 1.36 Mbp.

**Description of *Candidatus Palifarcha cicativita* sp. nov.**

*Candidatus Palifarcha cicativita* (NL. fem. n. *cicativita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SICV01 sp009694725*. The type genome for the species is the GenBank assembly GCA\_009694725.1. The GC content of the type genome is 42.29 % and the genome length is 0.64 Mbp.

**Description of *Candidatus Palifarcha* gen. nov.**

*Candidatus Palifarcha* (NL. fem. n. *Palifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SICV01*. The type species for the genus is *Candidatus Palifarcha cicativita*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Decenarchaceae*.

**Description of *Candidatus Panifarcha vicaticula* sp. nov.**

*Candidatus Panifarcha vicaticula* (NL. fem. n. *vicaticula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PEZQ01 sp002763265*. The type genome for the species is the GenBank assembly GCA\_002763265.1. The GC content of the type genome is 42.86 % and the genome length is 1.01 Mbp.

**Description of *Candidatus Panifarcha* gen. nov.**

*Candidatus Panifarcha* (NL. fem. n. *Panifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PEZQ01*. The type species for the genus is *Candidatus Panifarcha vicaticula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family

*PEZQ01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Panifarchaceae*.

#### **Description of *Candidatus Panifarchaceae* fam. nov.**

*Candidatus Panifarchaceae* (NL. fem. n. *Panifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PEZQ01*. The type genus for the taxon is *Candidatus Panifarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *PEZQ01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Panifarchales*.

#### **Description of *Candidatus Panifarchales* ord. nov.**

*Candidatus Panifarchales* (NL. fem. n. *Panifarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PEZQ01*. The type genus for the taxon is *Candidatus Panifarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Nanoarchaeia*.

#### **Description of *Candidatus Panoparcha ceracago* sp. nov.**

*Candidatus Panoparcha ceracago* (NL. fem. n. *ceracago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA57 sp002713205*. The type genome for the species is the GenBank assembly GCA\_002713205.1. The GC content of the type genome is 31.06 % and the genome length is 0.92 Mbp.

#### **Description of *Candidatus Panoparcha* gen. nov.**

*Candidatus Panoparcha* (NL. fem. n. *Panoparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA57*. The type species for the genus is *Candidatus Panoparcha ceracago*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA57*. According to the renamed version of GTDB R06-RS202, this taxon belongs to

the family *Candidatus* Panoparchaceae.

**Description of *Candidatus* Panoparchaceae fam. nov.**

*Candidatus* Panoparchaceae (NL. fem. n. *Panoparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA57*. The type genus for the taxon is *Candidatus* Panoparcha .

According to GTDB R06-RS202, this family belongs to the order *Nitrososphaerales*.

**Description of *Candidatus* Panoparcha corocitoga sp. nov.**

*Candidatus* Panoparcha corocitoga (NL. fem. n. *corocitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA57 sp002494565*. The type genome for the species is the GenBank assembly GCA\_002494565.1. The GC content of the type genome is 33.54 % and the genome length is 0.61 Mbp.

**Description of *Candidatus* Panoparcha paropitio sp. nov.**

*Candidatus* Panoparcha paropitio (NL. fem. n. *paropitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA57 sp013378385*. The type genome for the species is the GenBank assembly GCA\_013378385.1. The GC content of the type genome is 34.02 % and the genome length is 1.0 Mbp.

**Description of *Candidatus* Panoparcha revuligena sp. nov.**

*Candidatus* Panoparcha revuligena (NL. fem. n. *revuligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA57 sp002495905*. The type genome for the species is the GenBank assembly GCA\_002717165.1. The GC content of the type genome is 32.07 % and the genome length is 0.7 Mbp.

**Description of *Candidatus* Panoparcha ruricitrix sp. nov.**

*Candidatus* Panoparcha ruricitrix (NL. fem. n. *ruricitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA57 sp002693165*. The type genome for the species is the GenBank assembly GCA\_013378375.1. The GC content of the type genome is 31.32 % and the genome length is 0.92 Mbp.

#### **Description of *Candidatus* Papavarcha malificula sp. nov.**

*Candidatus* Papavarcha malificula (NL. fem. n. *malificula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ANME-1-THS sp004212135*. The type genome for the species is the GenBank assembly GCA\_004212135.1. The GC content of the type genome is 48.73 % and the genome length is 2.03 Mbp.

#### **Description of *Candidatus* Papavarcha gen. nov.**

*Candidatus* Papavarcha (NL. fem. n. *Papavarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ANME-1-THS*. The type species for the genus is *Candidatus* Papavarcha malificula .

According to the original version of GTDB R06-RS202, this genus belongs to the family *ANME-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Loriparchaceae.

#### **Description of *Candidatus* Papilarcha funamisca sp. nov.**

*Candidatus* Papilarcha funamisca (NL. fem. n. *funamisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADef01 sp013153555*. The type genome for the species is the GenBank assembly GCA\_013153555.1. The GC content of the type genome is 33.15 % and the genome length is 0.57 Mbp.

#### **Description of *Candidatus* Papilarcha gen. nov.**

*Candidatus* Papilarcha (NL. fem. n. *Papilarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADDEF01*. The type species for the genus is *Candidatus Papilarcha funamisca*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAADDEF01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Papilarchaceae*.

### **Description of *Candidatus Papilarchaceae* fam. nov.**

*Candidatus Papilarchaceae* (NL. fem. n. *Papilarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAADDEF01*. The type genus for the taxon is *Candidatus Papilarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-52*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Bifararchales*.

### **Description of *Candidatus Paracarcha ludibastra* sp. nov.**

*Candidatus Paracarcha ludibastra* (NL. fem. n. *ludibastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PSPM01 sp004195435*. The type genome for the species is the GenBank assembly GCA\_012960605.1. The GC content of the type genome is 30.23 % and the genome length is 0.52 Mbp.

### **Description of *Candidatus Paracarcha* gen. nov.**

*Candidatus Paracarcha* (NL. fem. n. *Paracarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PSPM01*. The type species for the genus is *Candidatus Paracarcha ludibastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Decenarchaceae*.



### **Description of *Candidatus Paralarcha malededo* sp. nov.**

*Candidatus Paralarcha malededo* (NL. fem. n. *malededo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10107 sp10107u*. The type genome for the species is the GenBank assembly GCA\_013331965.1. The GC content of the type genome is 36.96 % and the genome length is 0.7 Mbp.

### **Description of *Candidatus Paralarcha* gen. nov.**

*Candidatus Paralarcha* (NL. fem. n. *Paralarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10107*. The type species for the genus is *Candidatus Paralarcha malededo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10107*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Paralarchaceae*.

### **Description of *Candidatus Paralarchaceae* fam. nov.**

*Candidatus Paralarchaceae* (NL. fem. n. *Paralarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10107*. The type genus for the taxon is *Candidatus Paralarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woeseearchaeales*.

### **Description of *Candidatus Parocarcha detotiforma* sp. nov.**

*Candidatus Parocarcha detotiforma* (NL. fem. n. *detotiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADER01 sp013153275*. The type genome for the species is the GenBank assembly GCA\_013153275.1. The GC content of the type genome is 43.75 % and the genome length is 1.39 Mbp.

### **Description of *Candidatus Parocarcha* gen. nov.**

*Candidatus Parocarcha* (NL. fem. n. *Parocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADER01*. The type species for the genus is *Candidatus Parocarcha detotiforma*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Parocarcha dibucitrix* sp. nov.**

*Candidatus Parocarcha dibucitrix* (NL. fem. n. *dibucitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADER01 sp013153895*. The type genome for the species is the GenBank assembly GCA\_013153895.1. The GC content of the type genome is 38.18 % and the genome length is 1.79 Mbp.

#### **Description of *Candidatus Parocarcha vigenitia* sp. nov.**

*Candidatus Parocarcha vigenitia* (NL. fem. n. *vigenitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADER01 sp013154355*. The type genome for the species is the GenBank assembly GCA\_013154355.1. The GC content of the type genome is 38.73 % and the genome length is 1.39 Mbp.

#### **Description of *Candidatus Paroparcha xenopiforma* sp. nov.**

*Candidatus Paroparcha xenopiforma* (NL. fem. n. *xenopiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADFX01 sp013152685*. The type genome for the species is the GenBank assembly GCA\_013152685.1. The GC content of the type genome is 59.96 % and the genome length is 1.8 Mbp.

#### **Description of *Candidatus Paroparcha* gen. nov.**

*Candidatus Paroparcha* (NL. fem. n. *Paroparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADFX01*. The type species for the genus is *Candidatus* Paroparcha xenopiforma .

According to the original version of GTDB R06-RS202, this genus belongs to the family *BMS3B*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Baroparchaceae.

#### **Description of *Candidatus* Patibarcha decupimonia sp. nov.**

*Candidatus* Patibarcha decupimonia (NL. fem. n. *decupimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SURF-58 sp003599145*. The type genome for the species is the GenBank assembly GCA\_003599145.1. The GC content of the type genome is 37.92 % and the genome length is 1.31 Mbp.

#### **Description of *Candidatus* Patibarcha gen. nov.**

*Candidatus* Patibarcha (NL. fem. n. *Patibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SURF-58*. The type species for the genus is *Candidatus* Patibarcha decupimonia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA9642*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Citivarchaceae.

#### **Description of *Candidatus* Pavicarcha ficedentia sp. nov.**

*Candidatus* Pavicarcha ficedentia (NL. fem. n. *ficedentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA92 sp002497285*. The type genome for the species is the GenBank assembly GCA\_001872795.1. The GC content of the type genome is 34.35 % and the genome length is 0.77 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "groundwater filtered through a 3.0 um filter and then through a 0.2 um filter".

#### **Description of *Candidatus* Pavicarcha gen. nov.**

*Candidatus Pavicarcha* (NL. fem. n. *Pavicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA92*. The type species for the genus is *Candidatus Pavicarcha ficedentia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Decenarchaceae*.

### **Description of *Candidatus Pavimarcha nubecitudo* sp. nov.**

*Candidatus Pavimarcha nubecitudo* (NL. fem. n. *nubecitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SpSt-734 sp011363135*. The type genome for the species is the GenBank assembly GCA\_011363135.1. The GC content of the type genome is 36.8 % and the genome length is 0.43 Mbp.

### **Description of *Candidatus Pavimarcha* gen. nov.**

*Candidatus Pavimarcha* (NL. fem. n. *Pavimarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SpSt-734*. The type species for the genus is *Candidatus Pavimarcha nubecitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SCSR01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cucurarchaceae*.

### **Description of *Candidatus Pecunarcha baditivita* sp. nov.**

*Candidatus Pecunarcha baditivita* (NL. fem. n. *baditivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTBU01 sp011369595*. The type genome for the species is the GenBank assembly GCA\_011369595.1. The GC content of the type genome is 41.4 % and the genome length is 1.59 Mbp.

### **Description of *Candidatus Pecunarcha* gen. nov.**

*Candidatus Pecunarcha* (NL. fem. n. *Pecunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTBU01*. The type species for the genus is *Candidatus Pecunarcha baditivita*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B24*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Refularchaceae*.

### **Description of *Candidatus Pecunarcha benemastra* sp. nov.**

*Candidatus Pecunarcha benemastra* (NL. fem. n. *benemastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTBU01 sp011374155*. The type genome for the species is the GenBank assembly GCA\_011374155.1. The GC content of the type genome is 42.04 % and the genome length is 1.33 Mbp.

### **Description of *Candidatus Pecunarcha doxolousia* sp. nov.**

*Candidatus Pecunarcha doxolousia* (NL. fem. n. *doxolousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTBU01 sp011361905*. The type genome for the species is the GenBank assembly GCA\_011361905.1. The GC content of the type genome is 42.88 % and the genome length is 1.27 Mbp.

### **Description of *Candidatus Pecunarcha volubitas* sp. nov.**

*Candidatus Pecunarcha volubitas* (NL. fem. n. *volubitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTBU01 sp011366665*. The type genome for the species is the GenBank assembly GCA\_011366665.1. The GC content of the type genome is 41.36 % and the genome length is 1.5 Mbp.

### **Description of *Candidatus Pedeparcha velivessa* sp. nov.**

*Candidatus* Pedeparcha velivessa (NL. fem. n. *velivessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BA2 sp001399795*. The type genome for the species is the GenBank assembly GCA\_001399795.1. The GC content of the type genome is 44.2 % and the genome length is 1.46 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Formation waters from coalbed methane well".

#### **Description of *Candidatus* Pedeparcha gen. nov.**

*Candidatus* Pedeparcha (NL. fem. n. *Pedeparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BA2*. The type species for the genus is *Candidatus* Pedeparcha velivessa .

According to the original version of GTDB R06-RS202, this genus belongs to the family *BA1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Hemitarchaceae.

#### **Description of *Candidatus* Penicarcha benivimonia sp. nov.**

*Candidatus* Penicarcha benivimonia (NL. fem. n. *benivimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIib-P sp002457195*. The type genome for the species is the GenBank assembly GCA\_002457195.1. The GC content of the type genome is 48.15 % and the genome length is 1.27 Mbp.

#### **Description of *Candidatus* Penicarcha gen. nov.**

*Candidatus* Penicarcha (NL. fem. n. *Penicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIib-P*. The type species for the genus is *Candidatus* Penicarcha benivimonia .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Penicarcha bicorousia sp. nov.**

*Candidatus* Penicarcha bicorousia (NL. fem. n. *bicorousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-P sp002701965*. The type genome for the species is the GenBank assembly GCA\_002701965.1. The GC content of the type genome is 47.45 % and the genome length is 1.39 Mbp.

**Description of *Candidatus* Penicarcha conubitia sp. nov.**

*Candidatus* Penicarcha conubitia (NL. fem. n. *conubitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-P sp002722595*. The type genome for the species is the GenBank assembly GCA\_002722595.1. The GC content of the type genome is 44.71 % and the genome length is 1.64 Mbp.

**Description of *Candidatus* Penicarcha derecivita sp. nov.**

*Candidatus* Penicarcha derecivita (NL. fem. n. *derecivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-P sp002498455*. The type genome for the species is the GenBank assembly GCA\_002498455.1. The GC content of the type genome is 48.97 % and the genome length is 1.83 Mbp.

**Description of *Candidatus* Penicarcha petulitura sp. nov.**

*Candidatus* Penicarcha petulitura (NL. fem. n. *petulitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-P sp002724815*. The type genome for the species is the GenBank assembly GCA\_002724815.1. The GC content of the type genome is 49.5 % and the genome length is 1.84 Mbp.

**Description of *Candidatus* Penicarcha sacomicula sp. nov.**

*Candidatus* Penicarcha sacomicula (NL. fem. n. *sacomicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-P sp002505685*. The type genome for the species is the GenBank assembly GCA\_002719355.1. The GC content of the type genome is 48.28 % and the genome length is 1.32 Mbp.

**Description of *Candidatus Pepenarcha recumago* sp. nov.**

*Candidatus Pepenarcha recumago* (NL. fem. n. *recumago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIPOI01 sp903866625*. The type genome for the species is the GenBank assembly GCA\_903828205.1. The GC content of the type genome is 31.81 % and the genome length is 0.72 Mbp.

**Description of *Candidatus Pepenarcha* gen. nov.**

*Candidatus Pepenarcha* (NL. fem. n. *Pepenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIPOI01*. The type species for the genus is *Candidatus Pepenarcha recumago*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1285*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Corocarchaceae*.

**Description of *Candidatus Perabarcha nugigatica* sp. nov.**

*Candidatus Perabarcha nugigatica* (NL. fem. n. *nugigatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BA-19 sp005888735*. The type genome for the species is the GenBank assembly GCA\_005888795.1. The GC content of the type genome is 52.9 % and the genome length is 2.65 Mbp.

**Description of *Candidatus Perabarcha* gen. nov.**

*Candidatus Perabarcha* (NL. fem. n. *Perabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this genus is *BA-19*. The type species for the genus is *Candidatus Peracarcha nugigatica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *40CM-2-53-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nimirarchaceae*.

#### **Description of *Candidatus Peracarcha deteciforma* sp. nov.**

*Candidatus Peracarcha deteciforma* (NL. fem. n. *deteciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO6 sp004347925*. The type genome for the species is the GenBank assembly GCA\_004347925.1. The GC content of the type genome is 65.02 % and the genome length is 1.24 Mbp.

#### **Description of *Candidatus Peracarcha* gen. nov.**

*Candidatus Peracarcha* (NL. fem. n. *Peracarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WYZ-LMO6*. The type species for the genus is *Candidatus Peracarcha deteciforma*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *WYZ-LMO6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Peracarchaceae*.

#### **Description of *Candidatus Peracarchaceae* fam. nov.**

*Candidatus Peracarchaceae* (NL. fem. n. *Peracarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *WYZ-LMO6*. The type genus for the taxon is *Candidatus Peracarcha*.

According to GTDB R06-RS202, this family belongs to the order *Hadarchaeales*.

#### **Description of *Candidatus Peracarcha rubigitura* sp. nov.**

*Candidatus Peracarcha rubigitura* (NL. fem. n. *rubigitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO6 sp011367165*. The type genome for the species is the GenBank assembly GCA\_011367165.1. The GC content of the type genome is 55.88 % and the genome length is 0.79 Mbp.

#### **Description of *Candidatus Peradarcha luxuritica* sp. nov.**

*Candidatus Peradarcha luxuritica* (NL. fem. n. *luxuritica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTKF01 sp011370445*. The type genome for the species is the GenBank assembly GCA\_011370445.1. The GC content of the type genome is 59.75 % and the genome length is 0.74 Mbp.

#### **Description of *Candidatus Peradarcha* gen. nov.**

*Candidatus Peradarcha* (NL. fem. n. *Peradarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTKF01*. The type species for the genus is *Candidatus Peradarcha luxuritica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTKF01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Peradarchaceae*.

#### **Description of *Candidatus Peradarchaceae* fam. nov.**

*Candidatus Peradarchaceae* (NL. fem. n. *Peradarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTKF01*. The type genus for the taxon is *Candidatus Peradarcha*.

According to GTDB R06-RS202, this family belongs to the order *Hadarchaeales*.

#### **Description of *Candidatus Peradarcha subaciforma* sp. nov.**

*Candidatus Peradarcha subaciforma* (NL. fem. n. *subaciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTKF01 sp011367225*. The type genome for the species is the

GenBank assembly GCA\_011367225.1. The GC content of the type genome is 45.78 % and the genome length is 1.0 Mbp.

**Description of *Candidatus Peribarcha divulgago* sp. nov.**

*Candidatus* Peribarcha divulgago (NL. fem. n. *divulgago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADFH01 sp013152995*. The type genome for the species is the GenBank assembly GCA\_013152995.1. The GC content of the type genome is 58.77 % and the genome length is 0.83 Mbp.

**Description of *Candidatus Peribarcha* gen. nov.**

*Candidatus* Peribarcha (NL. fem. n. *Peribarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADFH01*. The type species for the genus is *Candidatus* Peribarcha divulgago .

According to the original version of GTDB R06-RS202, this genus belongs to the family *BMS3B*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Baroparchaceae.

**Description of *Candidatus Pericarcha bicodentia* sp. nov.**

*Candidatus* Pericarcha bicodentia (NL. fem. n. *bicodentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR5 sp000806115*. The type genome for the species is the GenBank assembly GCA\_000806115.1. The GC content of the type genome is 49.01 % and the genome length is 0.86 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle groundwater metagenome at time 1".

**Description of *Candidatus Pericarcha* gen. nov.**

*Candidatus* Pericarcha (NL. fem. n. *Pericarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GW2011-AR5*. The type species for the genus is *Candidatus* Pericarcha

bicodentia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR5*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pericarchaceae*.

#### **Description of *Candidatus Pericarchaceae* fam. nov.**

*Candidatus Pericarchaceae* (NL. fem. n. *Pericarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GW2011-AR5*. The type genus for the taxon is *Candidatus Pericarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *GW2011-AR5*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Pericarchales*.

#### **Description of *Candidatus Pericarchales* ord. nov.**

*Candidatus Pericarchales* (NL. fem. n. *Pericarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GW2011-AR5*. The type genus for the taxon is *Candidatus Pericarcha* .

According to the GTDB R06-RS202, this order belongs to the class *Aenigmataarchaeia\_A*.

#### **Description of *Candidatus Pericarcha nuciforma* sp. nov.**

*Candidatus Pericarcha nuciforma* (NL. fem. n. *nuciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR5 sp10154u*. The type genome for the species is the GenBank assembly GCA\_013331845.1. The GC content of the type genome is 41.6 % and the genome length is 0.9 Mbp.

#### **Description of *Candidatus Peridarcha colimimonia* sp. nov.**

*Candidatus Peridarcha colimimonia* (NL. fem. n. *colimimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *EX4484-2 sp002254565*. The type genome for the species is the GenBank assembly GCA\_002254565.1. The GC content of the type genome is 45.61 % and the genome length is 1.4 Mbp.

#### **Description of *Candidatus Peridarcha* gen. nov.**

*Candidatus Peridarcha* (NL. fem. n. *Peridarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-2*. The type species for the genus is *Candidatus Peridarcha colimimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZM01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugivarchaceae*.

#### **Description of *Candidatus Peridarcha ficedetta* sp. nov.**

*Candidatus Peridarcha ficedetta* (NL. fem. n. *ficedetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-2 sp002254405*. The type genome for the species is the GenBank assembly GCA\_002254405.1. The GC content of the type genome is 44.32 % and the genome length is 0.92 Mbp.

#### **Description of *Candidatus Periparcha deparibra* sp. nov.**

*Candidatus Periparcha deparibra* (NL. fem. n. *deparibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG1-02-39-14 sp001872315*. The type genome for the species is the GenBank assembly GCA\_009992305.1. The GC content of the type genome is 39.0 % and the genome length is 0.73 Mbp.

#### **Description of *Candidatus Periparcha* gen. nov.**

*Candidatus Periparcha* (NL. fem. n. *Periparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CG1-02-39-14*. The type species for the genus is *Candidatus Periparcha deparibra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Decenarchaceae*.

#### **Description of *Candidatus Peroparcha purulousia* sp. nov.**

*Candidatus Peroparcha purulousia* (NL. fem. n. *purulousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG1-02-57-44 sp001871415*. The type genome for the species is the GenBank assembly GCA\_002503425.1. The GC content of the type genome is 57.12 % and the genome length is 1.55 Mbp.

#### **Description of *Candidatus Peroparcha* gen. nov.**

*Candidatus Peroparcha* (NL. fem. n. *Peroparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CG1-02-57-44*. The type species for the genus is *Candidatus Peroparcha purulousia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG1-02-57-44*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Peroparchaceae*.

#### **Description of *Candidatus Peroparchaceae* fam. nov.**

*Candidatus Peroparchaceae* (NL. fem. n. *Peroparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CG1-02-57-44*. The type genus for the taxon is *Candidatus Peroparcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Petularcha sicarastra* sp. nov.**

*Candidatus Petularcha sicarastra* (NL. fem. n. *sicarastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABDCJ01 sp013288145*. The type genome for the species is the

GenBank assembly GCA\_013288145.1. The GC content of the type genome is 46.73 % and the genome length is 2.57 Mbp.

#### **Description of *Candidatus Petularcha* gen. nov.**

*Candidatus Petularcha* (NL. fem. n. *Petularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JABDCJ01*. The type species for the genus is *Candidatus Petularcha sicarastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CADDZS01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Resalarchaceae*.

#### **Description of *Candidatus Pimenarcha direpibula* sp. nov.**

*Candidatus Pimenarcha direpibula* (NL. fem. n. *direpibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-43 sp002011355*. The type genome for the species is the GenBank assembly GCA\_002011355.1. The GC content of the type genome is 37.88 % and the genome length is 1.23 Mbp.

#### **Description of *Candidatus Pimenarcha* gen. nov.**

*Candidatus Pimenarcha* (NL. fem. n. *Pimenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-43*. The type species for the genus is *Candidatus Pimenarcha direpibula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JdFR-43*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pimenarchaceae*.

#### **Description of *Candidatus Pimenarchaceae* fam. nov.**

*Candidatus Pimenarchaceae* (NL. fem. n. *Pimenarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JdFR-43*. The type genus for the taxon is *Candidatus Pimenarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA202*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Cimitarchales.

#### **Description of *Candidatus* Pinacarcha volubibula sp. nov.**

*Candidatus* Pinacarcha volubibula (NL. fem. n. *volubibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SW-10-68-16 sp003023485*. The type genome for the species is the GenBank assembly GCA\_003023485.1. The GC content of the type genome is 68.02 % and the genome length is 1.57 Mbp.

#### **Description of *Candidatus* Pinacarcha gen. nov.**

*Candidatus* Pinacarcha (NL. fem. n. *Pinacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SW-10-68-16*. The type species for the genus is *Candidatus* Pinacarcha volubibula .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Pinifarcha virecitoga sp. nov.**

*Candidatus* Pinifarcha virecitoga (NL. fem. n. *virecitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTDM01 sp011362245*. The type genome for the species is the GenBank assembly GCA\_011366965.1. The GC content of the type genome is 33.95 % and the genome length is 2.67 Mbp.

#### **Description of *Candidatus* Pinifarcha gen. nov.**

*Candidatus* Pinifarcha (NL. fem. n. *Pinifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTDM01*. The type species for the genus is *Candidatus* Pinifarcha virecitoga .

According to the original version of GTDB R06-RS202, this genus belongs to the family



*DTDM01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pinifarchaceae.

#### **Description of *Candidatus* Pinifarchaceae fam. nov.**

*Candidatus* Pinifarchaceae (NL. fem. n. *Pinifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTDM01*. The type genus for the taxon is *Candidatus* Pinifarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *DTDM01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Pinifarchales.

#### **Description of *Candidatus* Pinifarchales ord. nov.**

*Candidatus* Pinifarchales (NL. fem. n. *Pinifarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTDM01*. The type genus for the taxon is *Candidatus* Pinifarcha .

According to the GTDB R06-RS202, this order belongs to the class *Methanomethylica*.

#### **Description of *Candidatus* Pinigarcha molecastra sp. nov.**

*Candidatus* Pinigarcha molecastra (NL. fem. n. *molecastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10117 sp10117u*. The type genome for the species is the GenBank assembly GCA\_013331935.1. The GC content of the type genome is 41.09 % and the genome length is 0.77 Mbp.

#### **Description of *Candidatus* Pinigarcha gen. nov.**

*Candidatus* Pinigarcha (NL. fem. n. *Pinigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10117*. The type species for the genus is *Candidatus* Pinigarcha molecastra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10117*. According to the renamed version of GTDB R06-RS202, this taxon belongs

to the family *Candidatus* Pinigarchaceae.

### **Description of *Candidatus* Pinigarchaceae fam. nov.**

*Candidatus* Pinigarchaceae (NL. fem. n. *Pinigarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10117*. The type genus for the taxon is *Candidatus* Pinigarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA10117*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Pinigarchales.

### **Description of *Candidatus* Pinigarchales ord. nov.**

*Candidatus* Pinigarchales (NL. fem. n. *Pinigarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10117*. The type genus for the taxon is *Candidatus* Pinigarcha .

According to the GTDB R06-RS202, this order belongs to the class *Nanoarchaeia*.

### **Description of *Candidatus* Pocilarcha dehisitudo sp. nov.**

*Candidatus* Pocilarcha dehisitudo (NL. fem. n. *dehisitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B9-G17 sp003649225*. The type genome for the species is the GenBank assembly GCA\_003649225.1. The GC content of the type genome is 40.23 % and the genome length is 1.38 Mbp.

### **Description of *Candidatus* Pocilarcha gen. nov.**

*Candidatus* Pocilarcha (NL. fem. n. *Pocilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B9-G17*. The type species for the genus is *Candidatus* Pocilarcha dehisitudo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B9-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pocilarchaceae.

### **Description of *Candidatus* Pocilarchaceae fam. nov.**

*Candidatus* Pocilarchaceae (NL. fem. n. *Pocilarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B9-G17*. The type genus for the taxon is *Candidatus* Pocilarcha .

According to GTDB R06-RS202, this family belongs to the order *Thermofilales*.

### **Description of *Candidatus* Podagarcha cuferisca sp. nov.**

*Candidatus* Podagarcha cuferisca (NL. fem. n. *cuferisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QCWD01 sp013114725*. The type genome for the species is the GenBank assembly GCA\_013114725.1. The GC content of the type genome is 30.82 % and the genome length is 1.91 Mbp.

### **Description of *Candidatus* Podagarcha gen. nov.**

*Candidatus* Podagarcha (NL. fem. n. *Podagarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QCWD01*. The type species for the genus is *Candidatus* Podagarcha cuferisca .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus* Pomifarcha depubiforma sp. nov.**

*Candidatus* Pomifarcha depubiforma (NL. fem. n. *depubiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG07-land sp002779595*. The type genome for the species is the GenBank assembly GCA\_002779595.1. The GC content of the type genome is 37.33 % and the genome length is 0.78 Mbp.

### **Description of *Candidatus* Pomifarcha gen. nov.**

*Candidatus* Pomifarcha (NL. fem. n. *Pomifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CG07-land*. The type species for the genus is *Candidatus Pomifarcha depubiforma*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG07-land*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pomifarchaceae*.

#### **Description of *Candidatus Pomifarchaceae* fam. nov.**

*Candidatus Pomifarchaceae* (NL. fem. n. *Pomifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CG07-land*. The type genus for the taxon is *Candidatus Pomifarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *CG07-land*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Pomifarchales*.

#### **Description of *Candidatus Pomifarchales* ord. nov.**

*Candidatus Pomifarchales* (NL. fem. n. *Pomifarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CG07-land*. The type genus for the taxon is *Candidatus Pomifarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Nanoarchaeia*.

#### **Description of *Candidatus Poseidonia bipatisca* sp. nov.**

*Candidatus Poseidonia bipatisca* (NL. fem. n. *bipatisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp003602475*. The type genome for the species is the GenBank assembly GCA\_003602475.1. The GC content of the type genome is 54.66 % and the genome length is 1.95 Mbp.

#### **Description of *Candidatus Poseidonia catecimon* sp. nov.**

*Candidatus Poseidonia catecimon* (NL. fem. n. *catecimon* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp902625885*. The type genome for the species is the GenBank assembly GCA\_902625885.1. The GC content of the type genome is 55.18 % and the genome length is 1.66 Mbp.

**Description of *Candidatus Poseidonia ceromugo* sp. nov.**

*Candidatus Poseidonia ceromugo* (NL. fem. n. *ceromugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002728035*. The type genome for the species is the GenBank assembly GCA\_002728035.1. The GC content of the type genome is 54.86 % and the genome length is 1.84 Mbp.

**Description of *Candidatus Poseidonia depetago* sp. nov.**

*Candidatus Poseidonia depetago* (NL. fem. n. *depetago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002495645*. The type genome for the species is the GenBank assembly GCA\_002716785.1. The GC content of the type genome is 55.69 % and the genome length is 1.78 Mbp.

**Description of *Candidatus Poseidonia fetuletta* sp. nov.**

*Candidatus Poseidonia fetuletta* (NL. fem. n. *fetuletta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002494645*. The type genome for the species is the GenBank assembly GCA\_002494645.1. The GC content of the type genome is 51.38 % and the genome length is 1.79 Mbp.

**Description of *Candidatus Poseidonia lupanax* sp. nov.**

*Candidatus Poseidonia lupanax* (NL. fem. n. *lupanax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002694525*. The type genome for the species is the GenBank assembly GCA\_002694525.1. The GC content of the type genome is 58.62 %

and the genome length is 1.6 Mbp.

**Description of *Candidatus Poseidonia monacastra* sp. nov.**

*Candidatus Poseidonia monacastra* (NL. fem. n. *monacastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002497765*. The type genome for the species is the GenBank assembly GCA\_002495105.1. The GC content of the type genome is 58.3 % and the genome length is 1.86 Mbp.

**Description of *Candidatus Poseidonia nugacimonia* sp. nov.**

*Candidatus Poseidonia nugacimonia* (NL. fem. n. *nugacimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002726495*. The type genome for the species is the GenBank assembly GCA\_002690785.1. The GC content of the type genome is 48.22 % and the genome length is 1.81 Mbp.

**Description of *Candidatus Poseidonia nugigisca* sp. nov.**

*Candidatus Poseidonia nugigisca* (NL. fem. n. *nugigisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002722695*. The type genome for the species is the GenBank assembly GCA\_003672845.1. The GC content of the type genome is 57.32 % and the genome length is 1.7 Mbp.

**Description of *Candidatus Poseidonia nugivicula* sp. nov.**

*Candidatus Poseidonia nugivicula* (NL. fem. n. *nugivicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp011524855*. The type genome for the species is the GenBank assembly GCA\_011524855.1. The GC content of the type genome is 59.63 % and the genome length is 1.94 Mbp.

**Description of *Candidatus Poseidonia panifugo* sp. nov.**

*Candidatus* Poseidonia panifugo (NL. fem. n. *panifugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002689105*. The type genome for the species is the GenBank assembly GCA\_003602395.1. The GC content of the type genome is 54.88 % and the genome length is 1.81 Mbp.

**Description of *Candidatus* Poseidonia reduvimonas sp. nov.**

*Candidatus* Poseidonia reduvimonas (NL. fem. n. *reduvimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002714305*. The type genome for the species is the GenBank assembly GCA\_003672645.1. The GC content of the type genome is 54.98 % and the genome length is 1.47 Mbp.

**Description of *Candidatus* Poseidonia relenitio sp. nov.**

*Candidatus* Poseidonia relenitio (NL. fem. n. *relenitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002704515*. The type genome for the species is the GenBank assembly GCA\_002704515.1. The GC content of the type genome is 54.13 % and the genome length is 1.64 Mbp.

**Description of *Candidatus* Poseidonia sotulisca sp. nov.**

*Candidatus* Poseidonia sotulisca (NL. fem. n. *sotulisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002725275*. The type genome for the species is the GenBank assembly GCA\_002703295.1. The GC content of the type genome is 58.98 % and the genome length is 1.38 Mbp.

**Description of *Candidatus* Poseidonia subadigena sp. nov.**

*Candidatus* Poseidonia subadigena (NL. fem. n. *subadigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp003602485*. The type genome for the species is the GenBank assembly GCA\_003602485.1. The GC content of the type genome is 50.68 % and the genome length is 1.78 Mbp.

**Description of *Candidatus Poseidonia tetenisca* sp. nov.**

*Candidatus Poseidonia tetenisca* (NL. fem. n. *tetenisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp8339u*. The type genome for the species is the GenBank assembly GCA\_003602525.1. The GC content of the type genome is 53.91 % and the genome length is 1.76 Mbp.

**Description of *Candidatus Poseidonia vitifitas* sp. nov.**

*Candidatus Poseidonia vitifitas* (NL. fem. n. *vitifitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Poseidonia sp002502295*. The type genome for the species is the GenBank assembly GCA\_002502295.1. The GC content of the type genome is 53.88 % and the genome length is 1.95 Mbp.

**Description of *Candidatus Pudibarcha manubessa* sp. nov.**

*Candidatus Pudibarcha manubessa* (NL. fem. n. *manubessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *M9B1D sp002900535*. The type genome for the species is the GenBank assembly GCA\_002900535.1. The GC content of the type genome is 31.44 % and the genome length is 1.69 Mbp.

**Description of *Candidatus Pudibarcha* gen. nov.**

*Candidatus Pudibarcha* (NL. fem. n. *Pudibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *M9B1D*. The type species for the genus is *Candidatus Pudibarcha manubessa*.



According to the original version of GTDB R06-RS202, this genus belongs to the family *DHVEG-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pedifarchaceae.

#### **Description of *Candidatus* Pulegarcha telegicella sp. nov.**

*Candidatus* Pulegarcha telegicella (NL. fem. n. *telegicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA12030 sp10106u*. The type genome for the species is the GenBank assembly GCA\_013331945.1. The GC content of the type genome is 42.53 % and the genome length is 0.92 Mbp.

#### **Description of *Candidatus* Pulegarcha gen. nov.**

*Candidatus* Pulegarcha (NL. fem. n. *Pulegarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA12030*. The type species for the genus is *Candidatus* Pulegarcha telegicella .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA12030*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pulegarchaceae.

#### **Description of *Candidatus* Pulegarchaceae fam. nov.**

*Candidatus* Pulegarchaceae (NL. fem. n. *Pulegarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA12030*. The type genus for the taxon is *Candidatus* Pulegarcha .

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

#### **Description of *Candidatus* Purularcha detunitrix sp. nov.**

*Candidatus* Purularcha detunitrix (NL. fem. n. *detunitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *AG1 sp003116855*. The type genome for the species is the GenBank

assembly GCA\_009889545.1. The GC content of the type genome is 48.33 % and the genome length is 2.43 Mbp.

#### **Description of *Candidatus Purularcha* gen. nov.**

*Candidatus Purularcha* (NL. fem. n. *Purularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *AG1*. The type species for the genus is *Candidatus Purularcha detunitrix*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *AG1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Purularchaceae*.

#### **Description of *Candidatus Purularchaceae* fam. nov.**

*Candidatus Purularchaceae* (NL. fem. n. *Purularchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *AG1*. The type genus for the taxon is *Candidatus Purularcha*.

According to GTDB R06-RS202, this family belongs to the order *Sulfolobales*.

#### **Description of *Candidatus Purularcha lenocetta* sp. nov.**

*Candidatus Purularcha lenocetta* (NL. fem. n. *lenocetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *AG1 sp011056395*. The type genome for the species is the GenBank assembly GCA\_011056395.1. The GC content of the type genome is 45.83 % and the genome length is 2.17 Mbp.

#### **Description of *Candidatus Pyrobaculum lutuligena* sp. nov.**

*Candidatus Pyrobaculum lutuligena* (NL. fem. n. *lutuligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Pyrobaculum sp001189275*. The type genome for the species is the GenBank assembly GCA\_001189275.1. The GC content of the type genome is 58.31 % and the genome length is 1.99 Mbp. The isolation source for the NCBI BioSample

associated with the type genome is described as "sediment".

**Description of *Candidatus Pyrobaculum pecunisca* sp. nov.**

*Candidatus Pyrobaculum pecunisca* (NL. fem. n. *pecunisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Pyrobaculum sp009903905*. The type genome for the species is the GenBank assembly GCA\_009903905.1. The GC content of the type genome is 57.8 % and the genome length is 2.2 Mbp.

**Description of *Candidatus Pyrococcus cadavivita* sp. nov.**

*Candidatus Pyrococcus cadavivita* (NL. fem. n. *cadavivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Pyrococcus sp000263735*. The type genome for the species is the GenBank assembly RS\_GCF\_000263735.1. The GC content of the type genome is 42.29 % and the genome length is 1.74 Mbp.

**Description of *Candidatus Pyrococcus colimibula* sp. nov.**

*Candidatus Pyrococcus colimibula* (NL. fem. n. *colimibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Pyrococcus sp000211475*. The type genome for the species is the GenBank assembly RS\_GCF\_000211475.1. The GC content of the type genome is 42.74 % and the genome length is 1.86 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "hydrothermal vent area; 1650 m depth".

**Description of *Candidatus Pyrococcus tibicax* sp. nov.**

*Candidatus Pyrococcus tibicax* (NL. fem. n. *tibicax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Pyrococcus sp003660485*. The type genome for the species is the GenBank assembly GCA\_003660485.1. The GC content of the type genome is 45.0 % and the genome length is 1.35 Mbp.

**Description of *Candidatus Ranunarcha deculiforma* sp. nov.**

*Candidatus* Ranunarcha deculiforma (NL. fem. n. *deculiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *1-14-0-10-31-34 sp002763225*. The type genome for the species is the GenBank assembly GCA\_002763225.1. The GC content of the type genome is 30.85 % and the genome length is 1.04 Mbp.

#### **Description of *Candidatus* Ranunarcha gen. nov.**

*Candidatus* Ranunarcha (NL. fem. n. *Ranunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *1-14-0-10-31-34*. The type species for the genus is *Candidatus* Ranunarcha deculiforma .

According to the original version of GTDB R06-RS202, this genus belongs to the family *1-14-0-10-31-34*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Ranunarchaceae.

#### **Description of *Candidatus* Ranunarchaceae fam. nov.**

*Candidatus* Ranunarchaceae (NL. fem. n. *Ranunarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *1-14-0-10-31-34*. The type genus for the taxon is *Candidatus* Ranunarcha .

According to GTDB R06-RS202, this family belongs to the order *Iainarchaeales*.

#### **Description of *Candidatus* Rarefarcha holisicella sp. nov.**

*Candidatus* Rarefarcha holisicella (NL. fem. n. *holisicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTBI01 sp011362025*. The type genome for the species is the GenBank assembly GCA\_011362025.1. The GC content of the type genome is 47.51 % and the genome length is 2.26 Mbp.

#### **Description of *Candidatus* Rarefarcha gen. nov.**

*Candidatus* Rarefarcha (NL. fem. n. *Rarefarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTBI01*. The type species for the genus is *Candidatus Rarefarcha holisicella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTBI01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Rarefarchaceae*.

### **Description of *Candidatus Rarefarchaceae* fam. nov.**

*Candidatus Rarefarchaceae* (NL. fem. n. *Rarefarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTBI01*. The type genus for the taxon is *Candidatus Rarefarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *DTBI01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Rarefarchales*.

### **Description of *Candidatus Rarefarchales* ord. nov.**

*Candidatus Rarefarchales* (NL. fem. n. *Rarefarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTBI01*. The type genus for the taxon is *Candidatus Rarefarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the class *DTBI01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Rarefarchae*.

### **Description of *Candidatus Rarefarchae* class. nov.**

*Candidatus Rarefarchae* (NL. fem. n. *c\_\_Rarefarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTBI01*. The type genus for the taxon is *Candidatus Rarefarcha*.

According to GTDB R06-RS202, this class belongs to the phylum *Asgardarchaeota*.

### **Description of *Candidatus Rarefarcha navicifica* sp. nov.**

*Candidatus* Rarefarcha navicifica (NL. fem. n. *navicifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTBI01 sp011364305*. The type genome for the species is the GenBank assembly GCA\_011364305.1. The GC content of the type genome is 47.18 % and the genome length is 1.88 Mbp.

#### **Description of *Candidatus* Ratifarcha hegumastra sp. nov.**

*Candidatus* Ratifarcha hegumastra (NL. fem. n. *hegumastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR17 sp009691355*. The type genome for the species is the GenBank assembly GCA\_009691355.1. The GC content of the type genome is 36.33 % and the genome length is 0.66 Mbp.

#### **Description of *Candidatus* Ratifarcha gen. nov.**

*Candidatus* Ratifarcha (NL. fem. n. *Ratifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GW2011-AR17*. The type species for the genus is *Candidatus* Ratifarcha hegumastra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Ratifarchaceae.

#### **Description of *Candidatus* Ratifarchaceae fam. nov.**

*Candidatus* Ratifarchaceae (NL. fem. n. *Ratifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GW2011-AR17*. The type genus for the taxon is *Candidatus* Ratifarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Lanifarchales.

#### **Description of *Candidatus* Ratifarcha terebedo sp. nov.**

*Candidatus* Ratifarcha terebedo (NL. fem. n. *terebedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR17 sp10136u*. The type genome for the species is the GenBank assembly GCA\_013331795.1. The GC content of the type genome is 34.29 % and the genome length is 0.97 Mbp.

#### **Description of *Candidatus* Recocarcha paraledo sp. nov.**

*Candidatus* Recocarcha paraledo (NL. fem. n. *paraledo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS50 sp002687255*. The type genome for the species is the GenBank assembly GCA\_002687255.1. The GC content of the type genome is 46.45 % and the genome length is 0.79 Mbp.

#### **Description of *Candidatus* Recocarcha gen. nov.**

*Candidatus* Recocarcha (NL. fem. n. *Recocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARS50*. The type species for the genus is *Candidatus* Recocarcha paraledo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA73*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Decenarchaceae.

#### **Description of *Candidatus* Recogarcha loraritoga sp. nov.**

*Candidatus* Recogarcha loraritoga (NL. fem. n. *loraritoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS10 sp002690445*. The type genome for the species is the GenBank assembly GCA\_002690445.1. The GC content of the type genome is 44.83 % and the genome length is 6.6 Mbp.

#### **Description of *Candidatus* Recogarcha gen. nov.**

*Candidatus* Recogarcha (NL. fem. n. *Recogarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARS10*. The type species for the genus is *Candidatus Recorarcha loraritoga*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1160*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Navicarchaceae*.

#### **Description of *Candidatus Recorarcha pedifetta* sp. nov.**

*Candidatus Recorarcha pedifetta* (NL. fem. n. *pedifetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTCF01 sp011364865*. The type genome for the species is the GenBank assembly GCA\_011364865.1. The GC content of the type genome is 47.29 % and the genome length is 1.4 Mbp.

#### **Description of *Candidatus Recorarcha* gen. nov.**

*Candidatus Recorarcha* (NL. fem. n. *Recorarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTCF01*. The type species for the genus is *Candidatus Recorarcha pedifetta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTCF01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Recorarchaceae*.

#### **Description of *Candidatus Recorarchaceae* fam. nov.**

*Candidatus Recorarchaceae* (NL. fem. n. *Recorarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTCF01*. The type genus for the taxon is *Candidatus Recorarcha*.

According to GTDB R06-RS202, this family belongs to the order *Nezhaarchaeales*.

#### **Description of *Candidatus Recucarcha duponugo* sp. nov.**

*Candidatus Recucarcha duponugo* (NL. fem. n. *duponugo* a species epithet created



arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B17-G17 sp003662645*. The type genome for the species is the GenBank assembly GCA\_003662645.1. The GC content of the type genome is 51.1 % and the genome length is 1.23 Mbp.

#### **Description of *Candidatus Recucarcha* gen. nov.**

*Candidatus Recucarcha* (NL. fem. n. *Recucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B17-G17*. The type species for the genus is *Candidatus Recucarcha duponugo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Remularchaceae*.

#### **Description of *Candidatus Recumarcha saxopousia* sp. nov.**

*Candidatus Recumarcha saxopousia* (NL. fem. n. *saxopousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMWW01 sp003661825*. The type genome for the species is the GenBank assembly GCA\_003661825.1. The GC content of the type genome is 43.61 % and the genome length is 1.15 Mbp.

#### **Description of *Candidatus Recumarcha* gen. nov.**

*Candidatus Recumarcha* (NL. fem. n. *Recumarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMWW01*. The type species for the genus is *Candidatus Recumarcha saxopousia*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Redacarcha visifitudo* sp. nov.**

*Candidatus Redacarcha visifitudo* (NL. fem. n. *visifitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2688775 sp002688775*. The type genome for the species is the GenBank assembly GCA\_002688775.1. The GC content of the type genome is 35.71 % and the genome length is 1.04 Mbp.

#### **Description of *Candidatus Redacarcha* gen. nov.**

*Candidatus Redacarcha* (NL. fem. n. *Redacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2688775*. The type species for the genus is *Candidatus Redacarcha visifitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Dehonarchaceae*.

#### **Description of *Candidatus Reduvarcha defalitas* sp. nov.**

*Candidatus Reduvarcha defalitas* (NL. fem. n. *defalitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA7939 sp7939u*. The type genome for the species is the GenBank assembly GCA\_013330355.1. The GC content of the type genome is 45.5 % and the genome length is 1.2 Mbp.

#### **Description of *Candidatus Reduvarcha* gen. nov.**

*Candidatus Reduvarcha* (NL. fem. n. *Reduvarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA7939*. The type species for the genus is *Candidatus Reduvarcha defalitas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *HRI*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Buxanarchaceae*.

#### **Description of *Candidatus Reduvarcha hegumugo* sp. nov.**

*Candidatus Reduvarcha hegumugo* (NL. fem. n. *hegumugo* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA7939 sp009649835*. The type genome for the species is the GenBank assembly GCA\_009649835.1. The GC content of the type genome is 46.03 % and the genome length is 1.81 Mbp.

**Description of *Candidatus Reduvarcha resacetta* sp. nov.**

*Candidatus Reduvarcha resacetta* (NL. fem. n. *resacetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA7939 sp014237145*. The type genome for the species is the GenBank assembly GCA\_014237495.1. The GC content of the type genome is 42.9 % and the genome length is 3.26 Mbp.

**Description of *Candidatus Reduvarcha subacedo* sp. nov.**

*Candidatus Reduvarcha subacedo* (NL. fem. n. *subacedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA7939 sp013374465*. The type genome for the species is the GenBank assembly GCA\_013374465.1. The GC content of the type genome is 43.63 % and the genome length is 1.73 Mbp.

**Description of *Candidatus Refacarcha maxilimonas* sp. nov.**

*Candidatus Refacarcha maxilimonas* (NL. fem. n. *maxilimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2728275 sp002728275*. The type genome for the species is the GenBank assembly GCA\_002728275.1. The GC content of the type genome is 30.12 % and the genome length is 1.41 Mbp.

**Description of *Candidatus Refacarcha* gen. nov.**

*Candidatus Refacarcha* (NL. fem. n. *Refacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this genus is *GCA-2728275*. The type species for the genus is *Candidatus Refinarcha maxilimonas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *LC-2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Saxifarchaceae*.

#### **Description of *Candidatus Refinarcha detepitudo* sp. nov.**

*Candidatus Refinarcha detepitudo* (NL. fem. n. *detepitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B3-JM-08 sp011364965*. The type genome for the species is the GenBank assembly *GCA\_011364965.1*. The GC content of the type genome is 34.86 % and the genome length is 2.97 Mbp.

#### **Description of *Candidatus Refinarcha* gen. nov.**

*Candidatus Refinarcha* (NL. fem. n. *Refinarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B3-JM-08*. The type species for the genus is *Candidatus Refinarcha detepitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B3-JM-08*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Refinarchaceae*.

#### **Description of *Candidatus Refinarchaceae* fam. nov.**

*Candidatus Refinarchaceae* (NL. fem. n. *Refinarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B3-JM-08*. The type genus for the taxon is *Candidatus Refinarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *LC-3*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Galacarchales*.

#### **Description of *Candidatus Refinarcha lavabiforma* sp. nov.**

*Candidatus Refinarcha lavabiforma* (NL. fem. n. *lavabiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B3-JM-08 sp003144275*. The type genome for the species is the GenBank assembly GCA\_003144275.1. The GC content of the type genome is 36.14 % and the genome length is 3.95 Mbp.

#### **Description of *Candidatus Refocarcha colutimonia* sp. nov.**

*Candidatus Refocarcha colutimonia* (NL. fem. n. *colutimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-31 sp002254805*. The type genome for the species is the GenBank assembly GCA\_002254805.1. The GC content of the type genome is 33.14 % and the genome length is 0.28 Mbp.

#### **Description of *Candidatus Refocarcha* gen. nov.**

*Candidatus Refocarcha* (NL. fem. n. *Refocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-31*. The type species for the genus is *Candidatus Refocarcha colutimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4484-31*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Refocarchaceae*.

#### **Description of *Candidatus Refocarchaceae* fam. nov.**

*Candidatus Refocarchaceae* (NL. fem. n. *Refocarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-31*. The type genus for the taxon is *Candidatus Refocarcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

#### **Description of *Candidatus Reforarcha tubicedo* sp. nov.**

*Candidatus Reforarcha tubicedo* (NL. fem. n. *tubicedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B54-G15 sp003648985*. The type genome for the species is the GenBank assembly GCA\_003648985.1. The GC content of the type genome is 36.94 % and the genome length is 0.56 Mbp.

**Description of *Candidatus Reforarcha* gen. nov.**

*Candidatus Reforarcha* (NL. fem. n. *Reforarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B54-G15*. The type species for the genus is *Candidatus Reforarcha tubicedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B54-G15*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Reforarchaceae*.

**Description of *Candidatus Reforarchaceae* fam. nov.**

*Candidatus Reforarchaceae* (NL. fem. n. *Reforarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B54-G15*. The type genus for the taxon is *Candidatus Reforarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

**Description of *Candidatus Refularcha monimilega* sp. nov.**

*Candidatus Refularcha monimilega* (NL. fem. n. *monimilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B24 sp001593865*. The type genome for the species is the GenBank assembly GCA\_003662455.1. The GC content of the type genome is 50.93 % and the genome length is 1.66 Mbp.

**Description of *Candidatus Refularcha* gen. nov.**

*Candidatus Refularcha* (NL. fem. n. *Refularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B24*. The type species for the genus is *Candidatus Refularcha*.

monimilega .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B24*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Refularchaceae.

#### **Description of *Candidatus* Refularchaceae fam. nov.**

*Candidatus* Refularchaceae (NL. fem. n. *Refularchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B24*. The type genus for the taxon is *Candidatus* Refularcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *B24*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Refularchales.

#### **Description of *Candidatus* Refularchales ord. nov.**

*Candidatus* Refularchales (NL. fem. n. *Refularchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B24*. The type genus for the taxon is *Candidatus* Refularcha .

According to the GTDB R06-RS202, this order belongs to the class *Bathyarchaeia*.

#### **Description of *Candidatus* Refunarcha forabibula sp. nov.**

*Candidatus* Refunarcha forabibula (NL. fem. n. *forabibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EA-27 sp005878375*. The type genome for the species is the GenBank assembly GCA\_005878375.1. The GC content of the type genome is 66.29 % and the genome length is 1.67 Mbp.

#### **Description of *Candidatus* Refunarcha gen. nov.**

*Candidatus* Refunarcha (NL. fem. n. *Refunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EA-27*. The type species for the genus is *Candidatus* Refunarcha forabibula .

According to the original version of GTDB R06-RS202, this genus belongs to the family *RBG-16-68-12*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Desorarchaceae*.

#### **Description of *Candidatus Regifarcha pecunitura* sp. nov.**

*Candidatus Regifarcha pecunitura* (NL. fem. n. *pecunitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSVV01 sp011368255*. The type genome for the species is the GenBank assembly GCA\_011368255.1. The GC content of the type genome is 44.61 % and the genome length is 1.42 Mbp.

#### **Description of *Candidatus Regifarcha* gen. nov.**

*Candidatus Regifarcha* (NL. fem. n. *Regifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSVV01*. The type species for the genus is *Candidatus Regifarcha pecunitura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DSVV01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Regifarchaceae*.

#### **Description of *Candidatus Regifarchaceae* fam. nov.**

*Candidatus Regifarchaceae* (NL. fem. n. *Regifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DSVV01*. The type genus for the taxon is *Candidatus Regifarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woeseearchaeales*.

#### **Description of *Candidatus Regigarcha repepitass* sp. nov.**

*Candidatus Regigarcha repepitass* (NL. fem. n. *repepitass* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ECH-B-1 sp003019535*. The type genome for the species is the



GenBank assembly GCA\_003019535.1. The GC content of the type genome is 49.76 % and the genome length is 2.55 Mbp.

#### **Description of *Candidatus Regigarcha* gen. nov.**

*Candidatus Regigarcha* (NL. fem. n. *Regigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ECH-B-1*. The type species for the genus is *Candidatus Regigarcha repepitae*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Regigarcha solivacula* sp. nov.**

*Candidatus Regigarcha solivacula* (NL. fem. n. *solivacula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ECH-B-1 sp902812505*. The type genome for the species is the GenBank assembly RS\_GCF\_902812505.1. The GC content of the type genome is 49.14 % and the genome length is 1.43 Mbp.

#### **Description of *Candidatus Relaparcha conamitura* sp. nov.**

*Candidatus Relaparcha conamitura* (NL. fem. n. *conamitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG1-02-47-40 sp001871475*. The type genome for the species is the GenBank assembly GCA\_002499375.1. The GC content of the type genome is 47.03 % and the genome length is 1.11 Mbp.

#### **Description of *Candidatus Relaparcha* gen. nov.**

*Candidatus Relaparcha* (NL. fem. n. *Relaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CG1-02-47-40*. The type species for the genus is *Candidatus Relaparcha conamitura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG1-02-47-40*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Relaparchaceae*.

### **Description of *Candidatus Relaparchaceae* fam. nov.**

*Candidatus Relaparchaceae* (NL. fem. n. *Relaparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CG1-02-47-40*. The type genus for the taxon is *Candidatus Relaparcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Volubarchales*.

### **Description of *Candidatus Relecarcha fecunitrix* sp. nov.**

*Candidatus Relecarcha fecunitrix* (NL. fem. n. *fecunitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS21 sp002686215*. The type genome for the species is the GenBank assembly GCA\_002686215.1. The GC content of the type genome is 35.34 % and the genome length is 1.79 Mbp.

### **Description of *Candidatus Relecarcha* gen. nov.**

*Candidatus Relecarcha* (NL. fem. n. *Relecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *ARS21*. The type species for the genus is *Candidatus Relecarcha fecunitrix* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS21*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Relecarchaceae*.

### **Description of *Candidatus Relecarchaceae* fam. nov.**

*Candidatus Relecarchaceae* (NL. fem. n. *Relecarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *ARS21*. The type genus for the taxon is *Candidatus Relecarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA10117*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Pinigarchales*.

### **Description of *Candidatus Relecarcha semipitudo* sp. nov.**

*Candidatus Relecarcha semipitudo* (NL. fem. n. *semipitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS21 sp014239585*. The type genome for the species is the GenBank assembly GCA\_014239585.1. The GC content of the type genome is 32.13 % and the genome length is 0.44 Mbp.

### **Description of *Candidatus Relecarcha velivitas* sp. nov.**

*Candidatus Relecarcha velivitas* (NL. fem. n. *velivitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *ARS21 sp002725495*. The type genome for the species is the GenBank assembly GCA\_002725495.1. The GC content of the type genome is 30.28 % and the genome length is 0.64 Mbp.

### **Description of *Candidatus Relenarcha rurigago* sp. nov.**

*Candidatus Relenarcha rurigago* (NL. fem. n. *rurigago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10210 sp10210u*. The type genome for the species is the GenBank assembly GCA\_013331595.1. The GC content of the type genome is 49.58 % and the genome length is 1.14 Mbp.

### **Description of *Candidatus Relenarcha* gen. nov.**

*Candidatus Relenarcha* (NL. fem. n. *Relenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10210*. The type species for the genus is *Candidatus Relenarcha rurigago*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10210*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Relenarchaceae*.

### **Description of *Candidatus Relenarchaceae* fam. nov.**

*Candidatus* Relenarchaceae (NL. fem. n. *Relenarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10210*. The type genus for the taxon is *Candidatus* Relenarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA8480*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Colubarchales.

#### **Description of *Candidatus* Remedarcha detunilega sp. nov.**

*Candidatus* Remedarcha detunilega (NL. fem. n. *detunilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABDRC01 sp012044895*. The type genome for the species is the GenBank assembly RS\_GCF\_012044895.1. The GC content of the type genome is 65.3 % and the genome length is 3.97 Mbp.

#### **Description of *Candidatus* Remedarcha gen. nov.**

*Candidatus* Remedarcha (NL. fem. n. *Remedarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JABDRC01*. The type species for the genus is *Candidatus* Remedarcha detunilega .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JABDBI01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Dicanarchaceae.

#### **Description of *Candidatus* Remedarcha semilivita sp. nov.**

*Candidatus* Remedarcha semilivita (NL. fem. n. *semilivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABDRC01 sp013041945*. The type genome for the species is the GenBank assembly GCA\_013041945.1. The GC content of the type genome is 60.3 % and the genome length is 2.37 Mbp.

#### **Description of *Candidatus* Remularcha noninitia sp. nov.**

*Candidatus Remularcha noninitia* (NL. fem. n. *noninitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B26-1 sp001593935*. The type genome for the species is the GenBank assembly GCA\_001593935.1. The GC content of the type genome is 51.92 % and the genome length is 1.89 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "marine sediment sample collected by push cores at a deep sea vent site during cruise AT15-25 on Alvin dive 4358; sediment was oily and the sediment surface was covered with a white microbial mat".

### **Description of *Candidatus Remularcha* gen. nov.**

*Candidatus Remularcha* (NL. fem. n. *Remularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B26-1*. The type species for the genus is *Candidatus Remularcha noninitia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Remularchaceae*.

### **Description of *Candidatus Remularchaceae* fam. nov.**

*Candidatus Remularchaceae* (NL. fem. n. *Remularchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B26-1*. The type genus for the taxon is *Candidatus Remularcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *B26-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Remularchales*.

### **Description of *Candidatus Remularchales* ord. nov.**

*Candidatus Remularchales* (NL. fem. n. *Remularchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B26-1*. The type genus for the taxon is *Candidatus Remularcha*.

According to the GTDB R06-RS202, this order belongs to the class *Bathyarchaeia*.

### **Description of *Candidatus Remularcha nosociforma* sp. nov.**

*Candidatus Remularcha nosociforma* (NL. fem. n. *nosociforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B26-1 sp001593925*. The type genome for the species is the GenBank assembly GCA\_001593925.1. The GC content of the type genome is 52.68 % and the genome length is 1.35 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "marine sediment sample collected by push cores at a deep sea vent site during cruise AT15-25 on Alvin dive 4358; sediment was oily and the sediment surface was covered with a white microbial mat".

### **Description of *Candidatus Renavarcha virecigena* sp. nov.**

*Candidatus Renavarcha virecigena* (NL. fem. n. *virecigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA467 sp002503825*. The type genome for the species is the GenBank assembly GCA\_002503825.1. The GC content of the type genome is 50.91 % and the genome length is 2.84 Mbp.

### **Description of *Candidatus Renavarcha* gen. nov.**

*Candidatus Renavarcha* (NL. fem. n. *Renavarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA467*. The type species for the genus is *Candidatus Renavarcha virecigena*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Repagarcha manubitrix* sp. nov.**

*Candidatus Repagarcha manubitrix* (NL. fem. n. *manubitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BOG-1369 sp003135575*. The type genome for the species is the GenBank assembly GCA\_003135575.1. The GC content of the type genome is 58.43 % and the genome length is 2.34 Mbp.

### **Description of *Candidatus Repagarcha* gen. nov.**

*Candidatus Repagarcha* (NL. fem. n. *Repagarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BOG-1369*. The type species for the genus is *Candidatus Repagarcha manubitrix*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA183*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tenebarchaceae*.

### **Description of *Candidatus Repagarcha salubicula* sp. nov.**

*Candidatus Repagarcha salubicula* (NL. fem. n. *salubicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BOG-1369 sp003164815*. The type genome for the species is the GenBank assembly GCA\_003164815.1. The GC content of the type genome is 59.46 % and the genome length is 2.84 Mbp.

### **Description of *Candidatus Repeparcha desonax* sp. nov.**

*Candidatus Repeparcha desonax* (NL. fem. n. *desonax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JGI-OTU-1 sp000494145*. The type genome for the species is the GenBank assembly GCA\_000405905.1. The GC content of the type genome is 62.08 % and the genome length is 0.74 Mbp.

### **Description of *Candidatus Repeparcha* gen. nov.**

*Candidatus Repeparcha* (NL. fem. n. *Repeparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JGI-OTU-1*. The type species for the genus is *Candidatus Repeparcha desonax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *HR02*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Verecarchaceae*.

### **Description of *Candidatus Repeparcha famelicula* sp. nov.**

*Candidatus* Repeparcha famelicula (NL. fem. n. *famelicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JGI-OTU-1 sp011364265*. The type genome for the species is the GenBank assembly GCA\_011364265.1. The GC content of the type genome is 62.83 % and the genome length is 1.42 Mbp.

### **Description of *Candidatus Repudarcha cerimigena* sp. nov.**

*Candidatus* Repudarcha cerimigena (NL. fem. n. *cerimigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADEL01 sp011380495*. The type genome for the species is the GenBank assembly GCA\_011380495.1. The GC content of the type genome is 34.4 % and the genome length is 0.57 Mbp.

### **Description of *Candidatus Repudarcha* gen. nov.**

*Candidatus* Repudarcha (NL. fem. n. *Repudarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADEL01*. The type species for the genus is *Candidatus* Repudarcha cerimigena .

According to the original version of GTDB R06-RS202, this genus belongs to the family J096. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Bimetarchaceae.

### **Description of *Candidatus Repudarcha mimogibra* sp. nov.**

*Candidatus* Repudarcha mimogibra (NL. fem. n. *mimogibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADEL01 sp013153395*. The type genome for the species is the GenBank assembly GCA\_013153395.1. The GC content of the type genome is 44.96 % and the genome length is 0.63 Mbp.

### **Description of *Candidatus Repurarcha figilatica* sp. nov.**



*Candidatus Repurarcha figilatica* (NL. fem. n. *figilatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MWBV01 sp002069705*. The type genome for the species is the GenBank assembly GCA\_002069705.1. The GC content of the type genome is 29.37 % and the genome length is 0.88 Mbp.

#### **Description of *Candidatus Repurarcha* gen. nov.**

*Candidatus Repurarcha* (NL. fem. n. *Repurarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MWBV01*. The type species for the genus is *Candidatus Repurarcha figilatica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deseparchaceae*.

#### **Description of *Candidatus Resacarcha manuficella* sp. nov.**

*Candidatus Resacarcha manuficella* (NL. fem. n. *manuficella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRV01 sp011364585*. The type genome for the species is the GenBank assembly GCA\_011366615.1. The GC content of the type genome is 47.25 % and the genome length is 1.33 Mbp.

#### **Description of *Candidatus Resacarcha* gen. nov.**

*Candidatus Resacarcha* (NL. fem. n. *Resacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRV01*. The type species for the genus is *Candidatus Resacarcha manuficella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

### **Description of *Candidatus Resacarcha peraditudo* sp. nov.**

*Candidatus Resacarcha peraditudo* (NL. fem. n. *peraditudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRV01 sp011373965*. The type genome for the species is the GenBank assembly GCA\_011374045.1. The GC content of the type genome is 45.23 % and the genome length is 1.7 Mbp.

### **Description of *Candidatus Resalarcha pacifisca* sp. nov.**

*Candidatus Resalarcha pacifisca* (NL. fem. n. *pacifisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CADDZS01 sp902812485*. The type genome for the species is the GenBank assembly RS\_GCF\_902812485.1. The GC content of the type genome is 46.08 % and the genome length is 2.36 Mbp.

### **Description of *Candidatus Resalarcha* gen. nov.**

*Candidatus Resalarcha* (NL. fem. n. *Resalarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CADDZS01*. The type species for the genus is *Candidatus Resalarcha pacifisca*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CADDZS01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Resalarchaceae*.

### **Description of *Candidatus Resalarchaceae* fam. nov.**

*Candidatus Resalarchaceae* (NL. fem. n. *Resalarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CADDZS01*. The type genus for the taxon is *Candidatus Resalarcha*.

According to GTDB R06-RS202, this family belongs to the order *Nitrososphaerales*.

### **Description of *Candidatus Resalarcha maleditoga* sp. nov.**

*Candidatus Resularcha maleditoga* (NL. fem. n. *maleditoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PL-Br10-U2g16 sp014297435*. The type genome for the species is the GenBank assembly GCA\_014297435.1. The GC content of the type genome is 44.31 % and the genome length is 1.0 Mbp.

#### **Description of *Candidatus Resularcha* gen. nov.**

*Candidatus Resularcha* (NL. fem. n. *Resularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PL-Br10-U2g16*. The type species for the genus is *Candidatus Resularcha maleditoga*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Resularcha negotimonas* sp. nov.**

*Candidatus Resularcha negotimonas* (NL. fem. n. *negotimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PL-Br10-U2g16 sp001563995*. The type genome for the species is the GenBank assembly GCA\_001563995.1. The GC content of the type genome is 42.17 % and the genome length is 0.65 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample PL-Br10; brine of Picturesque Lake".

#### **Description of *Candidatus Resurarcha paradisca* sp. nov.**

*Candidatus Resurarcha paradisca* (NL. fem. n. *paradisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J060 sp003695745*. The type genome for the species is the GenBank assembly GCA\_003695745.1. The GC content of the type genome is 55.93 % and the genome length is 1.28 Mbp.

#### **Description of *Candidatus Resurarcha* gen. nov.**

*Candidatus Resurarcha* (NL. fem. n. *Resurarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J060*. The type species for the genus is *Candidatus Resurarcha peradisca*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SZUA-236*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Fefelarchaceae*.

### **Description of *Candidatus Retecarcha malifago* sp. nov.**

*Candidatus Retecarcha malifago* (NL. fem. n. *malifago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *AD8-1 sp001273385*. The type genome for the species is the GenBank assembly GCA\_001273385.1. The GC content of the type genome is 32.43 % and the genome length is 1.58 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Sulfate-rich zone estuary sediments 8-12 cm".

### **Description of *Candidatus Retecarcha* gen. nov.**

*Candidatus Retecarcha* (NL. fem. n. *Retecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *AD8-1*. The type species for the genus is *Candidatus Retecarcha malifago*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

### **Description of *Candidatus Revecarcha denicitudo* sp. nov.**

*Candidatus Revecarcha denicitudo* (NL. fem. n. *denicitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSZV01 sp011367065*. The type genome for the species is the GenBank assembly GCA\_011367065.1. The GC content of the type genome is 38.7 % and the genome length is 1.5 Mbp.

### **Description of *Candidatus Revecarcha* gen. nov.**

*Candidatus* Revecarcha (NL. fem. n. *Revecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSZV01*. The type species for the genus is *Candidatus* Revecarcha denicitudo .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Ridibarcha lugubax* sp. nov.**

*Candidatus* Ridibarcha lugubax (NL. fem. n. *lugubax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *VYCS01 sp009840065*. The type genome for the species is the GenBank assembly GCA\_009836545.1. The GC content of the type genome is 47.45 % and the genome length is 1.39 Mbp.

### **Description of *Candidatus Ridibarcha* gen. nov.**

*Candidatus* Ridibarcha (NL. fem. n. *Ridibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *VYCS01*. The type species for the genus is *Candidatus* Ridibarcha lugubax .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Ridibarcha vehemitica* sp. nov.**

*Candidatus* Ridibarcha vehemitica (NL. fem. n. *vehemitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *VYCS01 sp009843815*. The type genome for the species is the GenBank assembly GCA\_009846455.1. The GC content of the type genome is 47.75 % and the genome length is 1.6 Mbp.

### **Description of *Candidatus Rinocarcha citocessa* sp. nov.**

*Candidatus* Rinocarcha citocessa (NL. fem. n. *citocessa* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WTCK01 sp013138615*. The type genome for the species is the GenBank assembly GCA\_013138615.1. The GC content of the type genome is 48.13 % and the genome length is 1.47 Mbp.

#### **Description of *Candidatus Rinocarcha* gen. nov.**

*Candidatus Rinocarcha* (NL. fem. n. *Rinocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WTCK01*. The type species for the genus is *Candidatus Rinocarcha citocessa* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Risibarcha sacopibula* sp. nov.**

*Candidatus Risibarcha sacopibula* (NL. fem. n. *sacopibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Fen-7 sp003162615*. The type genome for the species is the GenBank assembly GCA\_003170635.1. The GC content of the type genome is 51.17 % and the genome length is 1.53 Mbp.

#### **Description of *Candidatus Risibarcha* gen. nov.**

*Candidatus Risibarcha* (NL. fem. n. *Risibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *Fen-7*. The type species for the genus is *Candidatus Risibarcha sacopibula* .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Robigarcha gasomessa* sp. nov.**

*Candidatus Robigarcha gasomessa* (NL. fem. n. *gasomessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAAYZC01 sp012515075*. The type genome for the species is the GenBank assembly GCA\_012515075.1. The GC content of the type genome is 59.92 % and the genome length is 0.99 Mbp.

**Description of *Candidatus Robigarcha* gen. nov.**

*Candidatus Robigarcha* (NL. fem. n. *Robigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAAYZC01*. The type species for the genus is *Candidatus Robigarcha gasomessa* .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Rorifarcha laxititoga* sp. nov.**

*Candidatus Rorifarcha laxititoga* (NL. fem. n. *laxititoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA204 sp002501765*. The type genome for the species is the GenBank assembly GCA\_002501765.1. The GC content of the type genome is 54.54 % and the genome length is 1.81 Mbp.

**Description of *Candidatus Rorifarcha* gen. nov.**

*Candidatus Rorifarcha* (NL. fem. n. *Rorifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA204*. The type species for the genus is *Candidatus Rorifarcha laxititoga* .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Rorularcha dilibisca* sp. nov.**

*Candidatus Rorularcha dilibisca* (NL. fem. n. *dilibisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMGC01 sp902385515*. The type genome for the species is the

GenBank assembly GCA\_902385515.1. The GC content of the type genome is 54.9 % and the genome length is 0.82 Mbp.

**Description of *Candidatus Rorularcha* gen. nov.**

*Candidatus Rorularcha* (NL. fem. n. *Rorularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMGC01*. The type species for the genus is *Candidatus Rorularcha dilibisca* .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Rosacarcha turicitio* sp. nov.**

*Candidatus Rosacarcha turicitio* (NL. fem. n. *turicitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAILMQ01 sp903835385*. The type genome for the species is the GenBank assembly GCA\_903916535.1. The GC content of the type genome is 57.08 % and the genome length is 1.14 Mbp.

**Description of *Candidatus Rosacarcha* gen. nov.**

*Candidatus Rosacarcha* (NL. fem. n. *Rosacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAILMQ01*. The type species for the genus is *Candidatus Rosacarcha turicitio* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Volubarchaceae*.

**Description of *Candidatus Rosararcha lenimentia* sp. nov.**

*Candidatus Rosararcha lenimentia* (NL. fem. n. *lenimentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2685855 sp002685855*. The type genome for the species is the GenBank assembly GCA\_002685855.1. The GC content of the type genome is 42.3 %



and the genome length is 0.95 Mbp.

**Description of *Candidatus Rosararcha* gen. nov.**

*Candidatus Rosararcha* (NL. fem. n. *Rosararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2685855*. The type species for the genus is *Candidatus Rosararcha lenimentia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-2685855*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Rosararchaceae*.

**Description of *Candidatus Rosararchaceae* fam. nov.**

*Candidatus Rosararchaceae* (NL. fem. n. *Rosararchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GCA-2685855*. The type genus for the taxon is *Candidatus Rosararcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

**Description of *Candidatus Rubecarcha bifarifica* sp. nov.**

*Candidatus Rubecarcha bifarifica* (NL. fem. n. *bifarifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMWL01 sp003661605*. The type genome for the species is the GenBank assembly *GCA\_003661605.1*. The GC content of the type genome is 50.74 % and the genome length is 0.79 Mbp.

**Description of *Candidatus Rubecarcha* gen. nov.**

*Candidatus Rubecarcha* (NL. fem. n. *Rubecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMWL01*. The type species for the genus is *Candidatus Rubecarcha bifarifica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMWL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to

the family *Candidatus Rubecarchaceae*.

#### **Description of *Candidatus Rubecarchaceae* fam. nov.**

*Candidatus Rubecarchaceae* (NL. fem. n. *Rubecarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMWL01*. The type genus for the taxon is *Candidatus Rubecarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *QMWL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Rubecarchales*.

#### **Description of *Candidatus Rubecarchales* ord. nov.**

*Candidatus Rubecarchales* (NL. fem. n. *Rubecarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMWL01*. The type genus for the taxon is *Candidatus Rubecarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the class *QMWL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Rubecarchae*.

#### **Description of *Candidatus Rubecarchae* class. nov.**

*Candidatus Rubecarchae* (NL. fem. n. *c\_\_Rubecarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QMWL01*. The type genus for the taxon is *Candidatus Rubecarcha*.

According to GTDB R06-RS202, this class belongs to the phylum *Thermoproteota*.

#### **Description of *Candidatus Rubefarcha diritricula* sp. nov.**

*Candidatus Rubefarcha diritricula* (NL. fem. n. *diritricula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SM1-50 sp902384685*. The type genome for the species is the GenBank assembly GCA\_902384685.1. The GC content of the type genome is 38.51 % and the genome length is 2.06 Mbp.

### **Description of *Candidatus Rubefarcha* gen. nov.**

*Candidatus Rubefarcha* (NL. fem. n. *Rubefarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SM1-50*. The type species for the genus is *Candidatus Rubefarcha diritricula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DHVEG-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pedifarchaceae*.

### **Description of *Candidatus Rubefarcha homulitio* sp. nov.**

*Candidatus Rubefarcha homulitio* (NL. fem. n. *homulitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SM1-50 sp002900555*. The type genome for the species is the GenBank assembly GCA\_002900545.1. The GC content of the type genome is 43.58 % and the genome length is 1.7 Mbp.

### **Description of *Candidatus Rubefarcha petulitica* sp. nov.**

*Candidatus Rubefarcha petulitica* (NL. fem. n. *petulitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SM1-50 sp003942085*. The type genome for the species is the GenBank assembly GCA\_003942085.1. The GC content of the type genome is 43.15 % and the genome length is 2.02 Mbp.

### **Description of *Candidatus Rubefarcha semifitrix* sp. nov.**

*Candidatus Rubefarcha semifitrix* (NL. fem. n. *semifitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SM1-50 sp002496355*. The type genome for the species is the GenBank assembly GCA\_013331255.1. The GC content of the type genome is 44.11 % and the genome length is 1.54 Mbp.

### **Description of *Candidatus Rubefarcha sicubitia* sp. nov.**

*Candidatus* Rubefarcha sicubitia (NL. fem. n. *sicubitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SM1-50 sp001595945*. The type genome for the species is the GenBank assembly GCA\_001595945.1. The GC content of the type genome is 39.01 % and the genome length is 2.09 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Sulfate-methane transition zone estuary sediments 16-26 cm".

#### **Description of *Candidatus* Rubefarcha tetenivita sp. nov.**

*Candidatus* Rubefarcha tetenivita (NL. fem. n. *tetenivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SM1-50 sp002506745*. The type genome for the species is the GenBank assembly GCA\_002506745.1. The GC content of the type genome is 42.99 % and the genome length is 1.68 Mbp.

#### **Description of *Candidatus* Rubicarcha linigilega sp. nov.**

*Candidatus* Rubicarcha linigilega (NL. fem. n. *linigilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CSP1-1 sp008974855*. The type genome for the species is the GenBank assembly GCA\_008974855.1. The GC content of the type genome is 33.21 % and the genome length is 1.07 Mbp.

#### **Description of *Candidatus* Rubicarcha gen. nov.**

*Candidatus* Rubicarcha (NL. fem. n. *Rubicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CSP1-1*. The type species for the genus is *Candidatus* Rubicarcha linigilega .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Rubicarcha rutabivita sp. nov.**

*Candidatus* Rubicarcha rutabivita (NL. fem. n. *rutabivita* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CSP1-1 sp001443365*. The type genome for the species is the GenBank assembly GCA\_001443365.1. The GC content of the type genome is 34.42 % and the genome length is 1.36 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sediment at 5m depth".

#### **Description of *Candidatus Rubigarcha conifibra* sp. nov.**

*Candidatus Rubigarcha conifibra* (NL. fem. n. *conifibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B72-G16 sp003650545*. The type genome for the species is the GenBank assembly GCA\_003650545.1. The GC content of the type genome is 36.23 % and the genome length is 1.64 Mbp.

#### **Description of *Candidatus Rubigarcha* gen. nov.**

*Candidatus Rubigarcha* (NL. fem. n. *Rubigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B72-G16*. The type species for the genus is *Candidatus Rubigarcha conifibra* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B72-G16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Rubigarchaceae*.

#### **Description of *Candidatus Rubigarchaceae* fam. nov.**

*Candidatus Rubigarchaceae* (NL. fem. n. *Rubigarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B72-G16*. The type genus for the taxon is *Candidatus Rubigarcha* .

According to GTDB R06-RS202, this family belongs to the order *Woeseearchaeales*.

#### **Description of *Candidatus Rudecarcha cicatatica* sp. nov.**

*Candidatus Rudecarcha cicatatica* (NL. fem. n. *cicatatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMWT01 sp003661775*. The type genome for the species is the GenBank assembly GCA\_003661775.1. The GC content of the type genome is 46.31 % and the genome length is 1.13 Mbp.

#### **Description of *Candidatus Rudecarcha* gen. nov.**

*Candidatus Rudecarcha* (NL. fem. n. *Rudecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QMWT01*. The type species for the genus is *Candidatus Rudecarcha cicatatica*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Rudecarcha selecilega* sp. nov.**

*Candidatus Rudecarcha selecilega* (NL. fem. n. *selecilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QMWT01 sp003661865*. The type genome for the species is the GenBank assembly GCA\_003661865.1. The GC content of the type genome is 56.11 % and the genome length is 1.56 Mbp.

#### **Description of *Candidatus Rudicarcha domipibula* sp. nov.**

*Candidatus Rudicarcha domipibula* (NL. fem. n. *domipibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTDI01 sp011362255*. The type genome for the species is the GenBank assembly GCA\_011362255.1. The GC content of the type genome is 42.61 % and the genome length is 1.22 Mbp.

#### **Description of *Candidatus Rudicarcha* gen. nov.**

*Candidatus Rudicarcha* (NL. fem. n. *Rudicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTDI01*. The type species for the genus is *Candidatus Rudicarcha*

domipibula .

According to the original version of GTDB R06-RS202, this genus belongs to the family *HR02*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Verecarchaceae*.

**Description of *Candidatus Rudicarcha fidenimonas* sp. nov.**

*Candidatus Rudicarcha fidenimonas* (NL. fem. n. *fidenimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTDI01 sp011334935*. The type genome for the species is the GenBank assembly GCA\_011334935.1. The GC content of the type genome is 50.0 % and the genome length is 0.55 Mbp.

**Description of *Candidatus Ruricarcha colubifica* sp. nov.**

*Candidatus Ruricarcha colubifica* (NL. fem. n. *colubifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO10 sp014361445*. The type genome for the species is the GenBank assembly GCA\_014361445.1. The GC content of the type genome is 46.94 % and the genome length is 1.46 Mbp.

**Description of *Candidatus Ruricarcha* gen. nov.**

*Candidatus Ruricarcha* (NL. fem. n. *Ruricarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WYZ-LMO10*. The type species for the genus is *Candidatus Ruricarcha colubifica* .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Ruricarcha depelivita* sp. nov.**

*Candidatus Ruricarcha depelivita* (NL. fem. n. *depelivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO10 sp004347955*. The type genome for the species is the

GenBank assembly GCA\_004347955.1. The GC content of the type genome is 50.26 % and the genome length is 1.16 Mbp.

**Description of *Candidatus Ruricarcha papavimonia* sp. nov.**

*Candidatus Ruricarcha papavimonia* (NL. fem. n. *papavimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO10 sp011362965*. The type genome for the species is the GenBank assembly GCA\_011362965.1. The GC content of the type genome is 49.39 % and the genome length is 0.81 Mbp.

**Description of *Candidatus Rurigarcha cisalitio* sp. nov.**

*Candidatus Rurigarcha cisalitio* (NL. fem. n. *cisalitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-13-38-9 sp001775955*. The type genome for the species is the GenBank assembly GCA\_001775955.1. The GC content of the type genome is 37.68 % and the genome length is 1.72 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 13ft depth".

**Description of *Candidatus Rurigarcha* gen. nov.**

*Candidatus Rurigarcha* (NL. fem. n. *Rurigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *RBG-13-38-9*. The type species for the genus is *Candidatus Rurigarcha cisalitio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *RBG-13-38-9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Rurigarchaceae*.

**Description of *Candidatus Rurigarchaceae* fam. nov.**

*Candidatus Rurigarchaceae* (NL. fem. n. *Rurigarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *RBG-13-38-9*. The type genus for the taxon is *Candidatus Rurigarcha*.



According to the original version of GTDB R06-RS202, this family belongs to the order *40CM-2-53-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Nimirarchales*.

**Description of *Candidatus Rurigarcha manomago* sp. nov.**

*Candidatus Rurigarcha manomago* (NL. fem. n. *manomago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-13-38-9 sp007050885*. The type genome for the species is the GenBank assembly GCA\_007050885.1. The GC content of the type genome is 41.82 % and the genome length is 1.82 Mbp.

**Description of *Candidatus Saburarcha cinefitica* sp. nov.**

*Candidatus Saburarcha cinefitica* (NL. fem. n. *cinefitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J110 sp003694805*. The type genome for the species is the GenBank assembly GCA\_003694805.1. The GC content of the type genome is 51.75 % and the genome length is 1.21 Mbp.

**Description of *Candidatus Saburarcha* gen. nov.**

*Candidatus Saburarcha* (NL. fem. n. *Saburarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J110*. The type species for the genus is *Candidatus Saburarcha cinefitica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *J110*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Saburarchaceae*.

**Description of *Candidatus Saburarchaceae* fam. nov.**

*Candidatus Saburarchaceae* (NL. fem. n. *Saburarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *J110*. The type genus for the taxon is *Candidatus Saburarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

**Description of *Candidatus Saccharolobus depopigena* sp. nov.**

*Candidatus Saccharolobus depopigena* (NL. fem. n. *depopigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Saccharolobus sp001719125*. The type genome for the species is the GenBank assembly GCA\_007050255.1. The GC content of the type genome is 34.77 % and the genome length is 2.41 Mbp.

**Description of *Candidatus Saccharolobus nehalentia* sp. nov.**

*Candidatus Saccharolobus nehalentia* (NL. fem. n. *nehalentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Saccharolobus sp009601705*. The type genome for the species is the GenBank assembly RS\_GCF\_009601705.1. The GC content of the type genome is 34.74 % and the genome length is 2.54 Mbp.

**Description of *Candidatus Sacomarcha dilibilega* sp. nov.**

*Candidatus Sacomarcha dilibilega* (NL. fem. n. *dilibilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAILAH01 sp903832205*. The type genome for the species is the GenBank assembly GCA\_903832205.1. The GC content of the type genome is 50.56 % and the genome length is 1.11 Mbp.

**Description of *Candidatus Sacomarcha* gen. nov.**

*Candidatus Sacomarcha* (NL. fem. n. *Sacomarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAILAH01*. The type species for the genus is *Candidatus Sacomarcha dilibilega*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CAILAH01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Sacomarchaceae*.

### **Description of *Candidatus Sacomarchaceae* fam. nov.**

*Candidatus Sacomarchaceae* (NL. fem. n. *Sacomarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CAILAH01*. The type genus for the taxon is *Candidatus Sacomarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *CAILAH01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Sacomarchales*.

### **Description of *Candidatus Sacomarchales* ord. nov.**

*Candidatus Sacomarchales* (NL. fem. n. *Sacomarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CAILAH01*. The type genus for the taxon is *Candidatus Sacomarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Micrarchaeia*.

### **Description of *Candidatus Sacomarcha risibousia* sp. nov.**

*Candidatus Sacomarcha risibousia* (NL. fem. n. *risibousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAILAH01 sp011389055*. The type genome for the species is the GenBank assembly GCA\_011389055.1. The GC content of the type genome is 45.08 % and the genome length is 0.68 Mbp.

### **Description of *Candidatus Sacoparcha lucifigena* sp. nov.**

*Candidatus Sacoparcha lucifigena* (NL. fem. n. *lucifigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B1-G15 sp003662715*. The type genome for the species is the GenBank assembly GCA\_003662715.1. The GC content of the type genome is 41.57 % and the genome length is 2.56 Mbp.

### **Description of *Candidatus Sacoparcha* gen. nov.**

*Candidatus Sacoparcha* (NL. fem. n. *Sacoparcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B1-G15*. The type species for the genus is *Candidatus Sacoparcha lucifigena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *BAL*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Hemitarchaceae*.

#### **Description of *Candidatus Salarchaeum fumacitoga* sp. nov.**

*Candidatus Salarchaeum fumacitoga* (NL. fem. n. *fumacitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Salarchaeum sp007833275*. The type genome for the species is the GenBank assembly RS\_GCF\_007833275.1. The GC content of the type genome is 66.16 % and the genome length is 2.52 Mbp.

#### **Description of *Candidatus Salinarchaeum miracicella* sp. nov.**

*Candidatus Salinarchaeum miracicella* (NL. fem. n. *miracicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Salinarchaeum sp000403645*. The type genome for the species is the GenBank assembly RS\_GCF\_000403645.1. The GC content of the type genome is 66.59 % and the genome length is 3.26 Mbp.

#### **Description of *Candidatus Saliphagus ficuligena* sp. nov.**

*Candidatus Saliphagus ficuligena* (NL. fem. n. *ficuligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Saliphagus sp003344565*. The type genome for the species is the GenBank assembly RS\_GCF\_003344565.1. The GC content of the type genome is 64.37 % and the genome length is 4.61 Mbp.

#### **Description of *Candidatus Salubarcha cenobedo* sp. nov.**

*Candidatus Salubarcha cenobedo* (NL. fem. n. *cenobedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-45 sp002011395*. The type genome for the species is the GenBank assembly GCA\_002011395.1. The GC content of the type genome is 57.59 % and the genome length is 1.25 Mbp.

#### **Description of *Candidatus Salubarcha* gen. nov.**

*Candidatus Salubarcha* (NL. fem. n. *Salubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-45*. The type species for the genus is *Candidatus Salubarcha cenobedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JdFR-45*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Salubarchaceae*.

#### **Description of *Candidatus Salubarchaceae* fam. nov.**

*Candidatus Salubarchaceae* (NL. fem. n. *Salubarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JdFR-45*. The type genus for the taxon is *Candidatus Salubarcha*.

According to GTDB R06-RS202, this family belongs to the order *Aciduliprofundales*.

#### **Description of *Candidatus Sanabarcha didacitoga* sp. nov.**

*Candidatus Sanabarcha didacitoga* (NL. fem. n. *didacitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA147 sp002496385*. The type genome for the species is the GenBank assembly GCA\_002496385.1. The GC content of the type genome is 53.98 % and the genome length is 2.0 Mbp.

#### **Description of *Candidatus Sanabarcha* gen. nov.**

*Candidatus Sanabarcha* (NL. fem. n. *Sanabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA147*. The type species for the genus is *Candidatus Sanabarcha didacitoga*.

According to the original version of GTDB R06-RS202, this genus belongs to the family SG8-5. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Seniparchaceae.

#### **Description of *Candidatus Sanabarcha nucifatio* sp. nov.**

*Candidatus Sanabarcha nucifatio* (NL. fem. n. *nucifatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA147 sp002499085*. The type genome for the species is the GenBank assembly GCA\_002497815.1. The GC content of the type genome is 56.26 % and the genome length is 1.25 Mbp.

#### **Description of *Candidatus Sanabarcha vinolugo* sp. nov.**

*Candidatus Sanabarcha vinolugo* (NL. fem. n. *vinolugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA147 sp013791785*. The type genome for the species is the GenBank assembly GCA\_013791785.1. The GC content of the type genome is 48.81 % and the genome length is 2.62 Mbp.

#### **Description of *Candidatus Sarabarcha taxilitoga* sp. nov.**

*Candidatus Sarabarcha taxilitoga* (NL. fem. n. *taxilitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTJS01 sp011333755*. The type genome for the species is the GenBank assembly GCA\_011333755.1. The GC content of the type genome is 28.52 % and the genome length is 0.66 Mbp.

#### **Description of *Candidatus Sarabarcha* gen. nov.**

*Candidatus Sarabarcha* (NL. fem. n. *Sarabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this genus is *DTJS01*. The type species for the genus is *Candidatus* Sarabarcha taxilitoga .

According to the original version of GTDB R06-RS202, this genus belongs to the family *CSSed11-243R1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Cuferarchaceae.

#### **Description of *Candidatus* Satacarcha casabibula sp. nov.**

*Candidatus* Satacarcha casabibula (NL. fem. n. *casabibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA472 sp8940u*. The type genome for the species is the GenBank assembly GCA\_013329565.1. The GC content of the type genome is 59.4 % and the genome length is 1.42 Mbp.

#### **Description of *Candidatus* Satacarcha gen. nov.**

*Candidatus* Satacarcha (NL. fem. n. *Satacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA472*. The type species for the genus is *Candidatus* Satacarcha casabibula .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA472*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Satacarchaceae.

#### **Description of *Candidatus* Satacarchaceae fam. nov.**

*Candidatus* Satacarchaceae (NL. fem. n. *Satacarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA472*. The type genus for the taxon is *Candidatus* Satacarcha .

According to GTDB R06-RS202, this family belongs to the order *Methanomassiliicoccales*.

#### **Description of *Candidatus* Satacarcha curotisca sp. nov.**

*Candidatus* Satacarcha curotisca (NL. fem. n. *curotisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA472 sp002497075*. The type genome for the species is the GenBank assembly GCA\_002497075.1. The GC content of the type genome is 57.94 % and the genome length is 1.83 Mbp.

**Description of *Candidatus Satacarcha denupifica* sp. nov.**

*Candidatus Satacarcha denupifica* (NL. fem. n. *denupifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA472 sp004525545*. The type genome for the species is the GenBank assembly GCA\_004525545.1. The GC content of the type genome is 55.37 % and the genome length is 1.6 Mbp.

**Description of *Candidatus Satacarcha detumitio* sp. nov.**

*Candidatus Satacarcha detumitio* (NL. fem. n. *detumitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA472 sp002067045*. The type genome for the species is the GenBank assembly GCA\_002067045.1. The GC content of the type genome is 62.09 % and the genome length is 1.75 Mbp.

**Description of *Candidatus Satacarcha turilentia* sp. nov.**

*Candidatus Satacarcha turilentia* (NL. fem. n. *turilentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA472 sp012729095*. The type genome for the species is the GenBank assembly GCA\_012729095.1. The GC content of the type genome is 59.71 % and the genome length is 1.68 Mbp.

**Description of *Candidatus Saxifarcha dimidugo* sp. nov.**

*Candidatus Saxifarcha dimidugo* (NL. fem. n. *dimidugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *LC-2 sp001940725*. The type genome for the species is the GenBank assembly GCA\_001940725.1. The GC content of the type genome is 32.64 % and the



genome length is 4.84 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "LokiAmp MDA-amplified sample from Loki s castle hydrothermal vent sediment".

#### **Description of *Candidatus Saxifarcha* gen. nov.**

*Candidatus Saxifarcha* (NL. fem. n. *Saxifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *LC-2*. The type species for the genus is *Candidatus Saxifarcha dimidugo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *LC-2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Saxifarchaceae*.

#### **Description of *Candidatus Saxifarchaceae* fam. nov.**

*Candidatus Saxifarchaceae* (NL. fem. n. *Saxifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *LC-2*. The type genus for the taxon is *Candidatus Saxifarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *LC-2*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Saxifarchales*.

#### **Description of *Candidatus Saxifarchales* ord. nov.**

*Candidatus Saxifarchales* (NL. fem. n. *Saxifarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *LC-2*. The type genus for the taxon is *Candidatus Saxifarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Heimdallarchaeia*.

#### **Description of *Candidatus Saxoparcha vagabago* sp. nov.**

*Candidatus Saxoparcha vagabago* (NL. fem. n. *vagabago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTJL01 sp011333845*. The type genome for the species is the

GenBank assembly GCA\_011333845.1. The GC content of the type genome is 57.97 % and the genome length is 1.57 Mbp.

#### **Description of *Candidatus Saxoparcha* gen. nov.**

*Candidatus Saxoparcha* (NL. fem. n. *Saxoparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTJL01*. The type species for the genus is *Candidatus Saxoparcha vagabago*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTJL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Saxoparchaceae*.

#### **Description of *Candidatus Saxoparchaceae* fam. nov.**

*Candidatus Saxoparchaceae* (NL. fem. n. *Saxoparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTJL01*. The type genus for the taxon is *Candidatus Saxoparcha*.

According to GTDB R06-RS202, this family belongs to the order *Conexivisphaerales*.

#### **Description of *Candidatus Secunarcha bacifitrix* sp. nov.**

*Candidatus Secunarcha bacifitrix* (NL. fem. n. *bacifitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SG8-52-3 sp001595915*. The type genome for the species is the GenBank assembly GCA\_001595915.1. The GC content of the type genome is 30.37 % and the genome length is 1.91 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Sulfate-rich zone estuary sediments 8-12 cm".

#### **Description of *Candidatus Secunarcha* gen. nov.**

*Candidatus Secunarcha* (NL. fem. n. *Secunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SG8-52-3*. The type species for the genus is *Candidatus Secunarcha bacifitrix*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DHVEG-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pedifarchaceae.

**Description of *Candidatus* Selecarcha bifaretta sp. nov.**

*Candidatus* Selecarcha bifaretta (NL. fem. n. *bifaretta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp002496635*. The type genome for the species is the GenBank assembly GCA\_002496635.1. The GC content of the type genome is 44.61 % and the genome length is 1.62 Mbp.

**Description of *Candidatus* Selecarcha gen. nov.**

*Candidatus* Selecarcha (NL. fem. n. *Selecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIa-L2*. The type species for the genus is *Candidatus* Selecarcha bifaretta .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus* Selecarcha celumatica sp. nov.**

*Candidatus* Selecarcha celumatica (NL. fem. n. *celumatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp002171315*. The type genome for the species is the GenBank assembly GCA\_002171315.2. The GC content of the type genome is 44.47 % and the genome length is 1.48 Mbp.

**Description of *Candidatus* Selecarcha cepuressa sp. nov.**

*Candidatus* Selecarcha cepuressa (NL. fem. n. *cepuressa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp002726845*. The type genome for the species is the GenBank assembly GCA\_902625045.1. The GC content of the type genome is 47.67 %

and the genome length is 1.7 Mbp.

**Description of *Candidatus Selecarcha cibiciforma* sp. nov.**

*Candidatus Selecarcha cibiciforma* (NL. fem. n. *cibiciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp8574u*. The type genome for the species is the GenBank assembly GCA\_013330015.1. The GC content of the type genome is 48.64 % and the genome length is 1.3 Mbp.

**Description of *Candidatus Selecarcha cucuritoga* sp. nov.**

*Candidatus Selecarcha cucuritoga* (NL. fem. n. *cucuritoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp002698145*. The type genome for the species is the GenBank assembly GCA\_003672655.1. The GC content of the type genome is 48.62 % and the genome length is 1.46 Mbp.

**Description of *Candidatus Selecarcha deluciforma* sp. nov.**

*Candidatus Selecarcha deluciforma* (NL. fem. n. *deluciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp002722615*. The type genome for the species is the GenBank assembly GCA\_002703075.2. The GC content of the type genome is 47.12 % and the genome length is 1.91 Mbp.

**Description of *Candidatus Selecarcha divulgibra* sp. nov.**

*Candidatus Selecarcha divulgibra* (NL. fem. n. *divulgibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp002692685*. The type genome for the species is the GenBank assembly GCA\_002692685.1. The GC content of the type genome is 48.75 % and the genome length is 1.12 Mbp.

**Description of *Candidatus Selecarcha duricastra* sp. nov.**

*Candidatus* Selecarcha duricastra (NL. fem. n. *duricastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp002706065*. The type genome for the species is the GenBank assembly GCA\_002706065.1. The GC content of the type genome is 48.06 % and the genome length is 1.89 Mbp.

**Description of *Candidatus* Selecarcha lucerimonas sp. nov.**

*Candidatus* Selecarcha lucerimonas (NL. fem. n. *lucerimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp002719815*. The type genome for the species is the GenBank assembly GCA\_002719815.1. The GC content of the type genome is 47.3 % and the genome length is 1.57 Mbp.

**Description of *Candidatus* Selecarcha melilitrix sp. nov.**

*Candidatus* Selecarcha melilitrix (NL. fem. n. *melilitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp013911465*. The type genome for the species is the GenBank assembly GCA\_013911465.1. The GC content of the type genome is 47.37 % and the genome length is 1.42 Mbp.

**Description of *Candidatus* Selecarcha mirabicella sp. nov.**

*Candidatus* Selecarcha mirabicella (NL. fem. n. *mirabicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp002502215*. The type genome for the species is the GenBank assembly GCA\_002502215.1. The GC content of the type genome is 48.43 % and the genome length is 1.88 Mbp.

**Description of *Candidatus* Selecarcha subabugo sp. nov.**

*Candidatus* Selecarcha subabugo (NL. fem. n. *subabugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp003602665*. The type genome for the species is the GenBank assembly GCA\_003602665.1. The GC content of the type genome is 44.86 % and the genome length is 1.76 Mbp.

**Description of *Candidatus Selecarcha tumefugo* sp. nov.**

*Candidatus Selecarcha tumefugo* (NL. fem. n. *tumefugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp012270265*. The type genome for the species is the GenBank assembly GCA\_012270265.1. The GC content of the type genome is 49.29 % and the genome length is 1.65 Mbp.

**Description of *Candidatus Selecarcha vicecifica* sp. nov.**

*Candidatus Selecarcha vicecifica* (NL. fem. n. *vicecifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp009887135*. The type genome for the species is the GenBank assembly GCA\_009887135.1. The GC content of the type genome is 44.9 % and the genome length is 1.87 Mbp.

**Description of *Candidatus Selecarcha vilitedo* sp. nov.**

*Candidatus Selecarcha vilitedo* (NL. fem. n. *vilitedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L2 sp002499195*. The type genome for the species is the GenBank assembly GCA\_002499195.1. The GC content of the type genome is 45.75 % and the genome length is 1.85 Mbp.

**Description of *Candidatus Selibarcha nehalibula* sp. nov.**

*Candidatus Selibarcha nehalibula* (NL. fem. n. *nehalibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA492 sp002688315*. The type genome for the species is the GenBank assembly GCA\_002503745.1. The GC content of the type genome is 36.79 %

and the genome length is 0.83 Mbp.

**Description of *Candidatus Selibarcha* gen. nov.**

*Candidatus Selibarcha* (NL. fem. n. *Selibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA492*. The type species for the genus is *Candidatus Selibarcha nehalibula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10216*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Cicatarchaceae*.

**Description of *Candidatus Semaparcha dilecetta* sp. nov.**

*Candidatus Semaparcha dilecetta* (NL. fem. n. *dilecetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QNYQ01 sp013153105*. The type genome for the species is the GenBank assembly GCA\_013153105.1. The GC content of the type genome is 65.54 % and the genome length is 1.22 Mbp.

**Description of *Candidatus Semaparcha* gen. nov.**

*Candidatus Semaparcha* (NL. fem. n. *Semaparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QNYQ01*. The type species for the genus is *Candidatus Semaparcha dilecetta*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Semaparcha gasomatica* sp. nov.**

*Candidatus Semaparcha gasomatica* (NL. fem. n. *gasomatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QNYQ01 sp013540595*. The type genome for the species is the GenBank assembly GCA\_013540595.1. The GC content of the type genome is 48.32 % and the genome length is 1.46 Mbp.

### **Description of *Candidatus Semaparcha subacifica* sp. nov.**

*Candidatus Semaparcha subacifica* (NL. fem. n. *subacifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QNYQ01 sp003978665*. The type genome for the species is the GenBank assembly GCA\_003978665.1. The GC content of the type genome is 53.4 % and the genome length is 0.97 Mbp.

### **Description of *Candidatus Semibarcha horomisca* sp. nov.**

*Candidatus Semibarcha horomisca* (NL. fem. n. *horomisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B65-G9 sp003662765*. The type genome for the species is the GenBank assembly GCA\_003662765.1. The GC content of the type genome is 53.77 % and the genome length is 2.32 Mbp.

### **Description of *Candidatus Semibarcha* gen. nov.**

*Candidatus Semibarcha* (NL. fem. n. *Semibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B65-G9*. The type species for the genus is *Candidatus Semibarcha horomisca* .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Semidarcha volucitura* sp. nov.**

*Candidatus Semidarcha volucitura* (NL. fem. n. *volucitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4572-64 sp002254895*. The type genome for the species is the GenBank assembly GCA\_002254895.1. The GC content of the type genome is 34.24 % and the genome length is 0.68 Mbp.

### **Description of *Candidatus Semidarcha* gen. nov.**

*Candidatus Semidarcha* (NL. fem. n. *Semidarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).



A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4572-64*. The type species for the genus is *Candidatus Semidarcha volucitura*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Semifarcha caseligena* sp. nov.**

*Candidatus Semifarcha caseligena* (NL. fem. n. *caseligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EA-19 sp005878955*. The type genome for the species is the GenBank assembly GCA\_005878955.1. The GC content of the type genome is 67.8 % and the genome length is 2.15 Mbp.

#### **Description of *Candidatus Semifarcha* gen. nov.**

*Candidatus Semifarcha* (NL. fem. n. *Semifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EA-19*. The type species for the genus is *Candidatus Semifarcha caseligena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *RBG-16-68-12*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Desorarchaceae*.

#### **Description of *Candidatus Semifarcha filifugo* sp. nov.**

*Candidatus Semifarcha filifugo* (NL. fem. n. *filifugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EA-19 sp005878915*. The type genome for the species is the GenBank assembly GCA\_005878915.1. The GC content of the type genome is 64.9 % and the genome length is 2.12 Mbp.

#### **Description of *Candidatus Semigarcha fumifilega* sp. nov.**

*Candidatus Semigarcha fumifilega* (NL. fem. n. *fumifilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B88-G9 sp003660555*. The type genome for the species is the GenBank assembly GCA\_003660555.1. The GC content of the type genome is 43.25 % and the genome length is 1.3 Mbp.

#### **Description of *Candidatus Semigarcha* gen. nov.**

*Candidatus Semigarcha* (NL. fem. n. *Semigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B88-G9*. The type species for the genus is *Candidatus Semigarcha fumifilega*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B88-G9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Semigarchaceae*.

#### **Description of *Candidatus Semigarchaceae* fam. nov.**

*Candidatus Semigarchaceae* (NL. fem. n. *Semigarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B88-G9*. The type genus for the taxon is *Candidatus Semigarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *B88-G9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Semigarchales*.

#### **Description of *Candidatus Semigarchales* ord. nov.**

*Candidatus Semigarchales* (NL. fem. n. *Semigarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B88-G9*. The type genus for the taxon is *Candidatus Semigarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the class *B88-G9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Semigarchae*.

#### **Description of *Candidatus Semigarchae* class. nov.**

*Candidatus Semigarchae* (NL. fem. n. *c\_\_Semigarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B88-G9*. The type genus for the taxon is *Candidatus Semigarcha*.

According to GTDB R06-RS202, this class belongs to the phylum *Hadarchaeota*.

#### **Description of *Candidatus Semilarcha ficulastra* sp. nov.**

*Candidatus Semilarcha ficulastra* (NL. fem. n. *ficulastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *NP1466 sp002731115*. The type genome for the species is the GenBank assembly GCA\_002731115.1. The GC content of the type genome is 28.46 % and the genome length is 0.48 Mbp.

#### **Description of *Candidatus Semilarcha* gen. nov.**

*Candidatus Semilarcha* (NL. fem. n. *Semilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *NP1466*. The type species for the genus is *Candidatus Semilarcha ficulastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deseparchaceae*.

#### **Description of *Candidatus Semilarcha manupitura* sp. nov.**

*Candidatus Semilarcha manupitura* (NL. fem. n. *manupitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *NP1466 sp002689985*. The type genome for the species is the GenBank assembly GCA\_002689985.1. The GC content of the type genome is 26.36 % and the genome length is 0.43 Mbp.

#### **Description of *Candidatus Semiparcha desomitica* sp. nov.**

*Candidatus Semiparcha desomitica* (NL. fem. n. *desomitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B47-G15 sp003660975*. The type genome for the species is the GenBank assembly GCA\_003660975.1. The GC content of the type genome is 43.48 % and the genome length is 1.33 Mbp.

#### **Description of *Candidatus Semiparcha* gen. nov.**

*Candidatus Semiparcha* (NL. fem. n. *Semiparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B47-G15*. The type species for the genus is *Candidatus Semiparcha desomitica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B47-G15*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Semiparchaceae*.

#### **Description of *Candidatus Semiparchaceae* fam. nov.**

*Candidatus Semiparchaceae* (NL. fem. n. *Semiparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B47-G15*. The type genus for the taxon is *Candidatus Semiparcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *B1Sed10-29*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Deforarchales*.

#### **Description of *Candidatus Semivarcha conarigena* sp. nov.**

*Candidatus Semivarcha conarigena* (NL. fem. n. *conarigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-I sp002696315*. The type genome for the species is the GenBank assembly GCA\_002504695.1. The GC content of the type genome is 34.49 % and the genome length is 1.66 Mbp.

#### **Description of *Candidatus Semivarcha* gen. nov.**

*Candidatus Semivarcha* (NL. fem. n. *Semivarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this genus is *MGIIa-I*. The type species for the genus is *Candidatus Semivarcha conarigena*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Semivarcha defacitas* sp. nov.**

*Candidatus Semivarcha defacitas* (NL. fem. n. *defacitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-I sp002699515*. The type genome for the species is the GenBank assembly GCA\_002699515.1. The GC content of the type genome is 33.74 % and the genome length is 1.59 Mbp.

#### **Description of *Candidatus Semivarcha denunimonas* sp. nov.**

*Candidatus Semivarcha denunimonas* (NL. fem. n. *denunimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-I sp002692465*. The type genome for the species is the GenBank assembly GCA\_002692465.1. The GC content of the type genome is 34.75 % and the genome length is 1.5 Mbp.

#### **Description of *Candidatus Semivarcha doxolitio* sp. nov.**

*Candidatus Semivarcha doxolitio* (NL. fem. n. *doxolitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-I sp002720275*. The type genome for the species is the GenBank assembly GCA\_002498135.1. The GC content of the type genome is 34.72 % and the genome length is 1.73 Mbp.

#### **Description of *Candidatus Semivarcha giganigena* sp. nov.**

*Candidatus Semivarcha giganigena* (NL. fem. n. *giganigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-I sp002720095*. The type genome for the species is the GenBank assembly GCA\_002497845.1. The GC content of the type genome is 34.51 %

and the genome length is 2.79 Mbp.

**Description of *Candidatus Semivarcha hexamigena* sp. nov.**

*Candidatus Semivarcha hexamigena* (NL. fem. n. *hexamigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-I sp002498205*. The type genome for the species is the GenBank assembly GCA\_002498205.1. The GC content of the type genome is 34.32 % and the genome length is 1.31 Mbp.

**Description of *Candidatus Semunarcha buxifitura* sp. nov.**

*Candidatus Semunarcha buxifitura* (NL. fem. n. *buxifitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-13 sp002011075*. The type genome for the species is the GenBank assembly GCA\_002011075.1. The GC content of the type genome is 37.62 % and the genome length is 1.67 Mbp.

**Description of *Candidatus Semunarcha* gen. nov.**

*Candidatus Semunarcha* (NL. fem. n. *Semunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-13*. The type species for the genus is *Candidatus Semunarcha buxifitura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JDFR-13*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Semunarchaceae*.

**Description of *Candidatus Semunarchaceae* fam. nov.**

*Candidatus Semunarchaceae* (NL. fem. n. *Semunarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JDFR-13*. The type genus for the taxon is *Candidatus Semunarcha*.

According to GTDB R06-RS202, this family belongs to the order *Geothermarchaeales*.

### **Description of *Candidatus Senacarcha nugivatica* sp. nov.**

*Candidatus Senacarcha nugivatica* (NL. fem. n. *nugivatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMJK01 sp902386535*. The type genome for the species is the GenBank assembly GCA\_902386535.1. The GC content of the type genome is 57.63 % and the genome length is 1.2 Mbp.

### **Description of *Candidatus Senacarcha* gen. nov.**

*Candidatus Senacarcha* (NL. fem. n. *Senacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMJK01*. The type species for the genus is *Candidatus Senacarcha nugivatica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B9-G16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Lacinarchaceae*.

### **Description of *Candidatus Seniparcha direcibula* sp. nov.**

*Candidatus Seniparcha direcibula* (NL. fem. n. *direcibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SG8-5 sp001595885*. The type genome for the species is the GenBank assembly GCA\_001595885.1. The GC content of the type genome is 55.51 % and the genome length is 1.25 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Sulfate-rich zone estuary sediments 8-12 cm".

### **Description of *Candidatus Seniparcha* gen. nov.**

*Candidatus Seniparcha* (NL. fem. n. *Seniparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SG8-5*. The type species for the genus is *Candidatus Seniparcha direcibula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SG8-5*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Seniparchaceae*.

### **Description of *Candidatus* Seniparchaceae fam. nov.**

*Candidatus* Seniparchaceae (NL. fem. n. *Seniparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SG8-5*. The type genus for the taxon is *Candidatus* Seniparcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *SG8-5*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Seniparchales.

### **Description of *Candidatus* Seniparchales ord. nov.**

*Candidatus* Seniparchales (NL. fem. n. *Seniparchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SG8-5*. The type genus for the taxon is *Candidatus* Seniparcha .

According to the GTDB R06-RS202, this order belongs to the class *Thermoplasmata*.

### **Description of *Candidatus* Seposarcha cosigedo sp. nov.**

*Candidatus* Seposarcha cosigedo (NL. fem. n. *cosigedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADDK01 sp013154005*. The type genome for the species is the GenBank assembly GCA\_013154005.1. The GC content of the type genome is 46.96 % and the genome length is 1.64 Mbp.

### **Description of *Candidatus* Seposarcha gen. nov.**

*Candidatus* Seposarcha (NL. fem. n. *Seposarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADDK01*. The type species for the genus is *Candidatus* Seposarcha cosigedo .

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus* Serotarcha detecax sp. nov.**

*Candidatus* Serotarcha detecax (NL. fem. n. *detecax* a species epithet created arbitrarily,



while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CSBR16-182 sp007117145*. The type genome for the species is the GenBank assembly GCA\_007117145.1. The GC content of the type genome is 33.99 % and the genome length is 0.64 Mbp.

#### **Description of *Candidatus Serotarcha* gen. nov.**

*Candidatus Serotarcha* (NL. fem. n. *Serotarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CSBR16-182*. The type species for the genus is *Candidatus Serotarcha detecax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family 21-14-0-10-32-9. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Colimarchaceae*.

#### **Description of *Candidatus Sicararcha salubitas* sp. nov.**

*Candidatus Sicararcha salubitas* (NL. fem. n. *salubitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG1-02-47-18 sp002763335*. The type genome for the species is the GenBank assembly GCA\_002763335.1. The GC content of the type genome is 46.74 % and the genome length is 1.22 Mbp.

#### **Description of *Candidatus Sicararcha* gen. nov.**

*Candidatus Sicararcha* (NL. fem. n. *Sicararcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CG1-02-47-18*. The type species for the genus is *Candidatus Sicararcha salubitas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG1-02-47-18*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Sicararchaceae*.

#### **Description of *Candidatus Sicararchaceae* fam. nov.**

*Candidatus* Sicararchaceae (NL. fem. n. *Sicararchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CG1-02-47-18*. The type genus for the taxon is *Candidatus* Sicararcha .

According to GTDB R06-RS202, this family belongs to the order *Woeseearchaeales*.

#### **Description of *Candidatus* Sicinarcha taxilifica sp. nov.**

*Candidatus* Sicinarcha taxilifica (NL. fem. n. *taxilifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J156 sp003693875*. The type genome for the species is the GenBank assembly GCA\_003693875.1. The GC content of the type genome is 38.68 % and the genome length is 0.52 Mbp.

#### **Description of *Candidatus* Sicinarcha gen. nov.**

*Candidatus* Sicinarcha (NL. fem. n. *Sicinarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J156*. The type species for the genus is *Candidatus* Sicinarcha taxilifica .

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1160*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Navicarchaceae.

#### **Description of *Candidatus* Sicubarcha cilotivita sp. nov.**

*Candidatus* Sicubarcha cilotivita (NL. fem. n. *cilotivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA203 sp012961645*. The type genome for the species is the GenBank assembly GCA\_012961645.1. The GC content of the type genome is 50.05 % and the genome length is 1.66 Mbp.

#### **Description of *Candidatus* Sicubarcha gen. nov.**

*Candidatus* Sicubarcha (NL. fem. n. *Sicubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA203*. The type species for the genus is *Candidatus Sicubarcha cilotivita*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ANME-2c*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Conifarchaceae*.

#### **Description of *Candidatus Sicubarcha defunetta* sp. nov.**

*Candidatus Sicubarcha defunetta* (NL. fem. n. *defunetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA203 sp003194445*. The type genome for the species is the GenBank assembly GCA\_003194445.1. The GC content of the type genome is 48.68 % and the genome length is 3.61 Mbp.

#### **Description of *Candidatus Sicubarcha deparugo* sp. nov.**

*Candidatus Sicubarcha deparugo* (NL. fem. n. *deparugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA203 sp002506015*. The type genome for the species is the GenBank assembly GCA\_002506015.1. The GC content of the type genome is 50.34 % and the genome length is 2.37 Mbp.

#### **Description of *Candidatus Sicubarcha detosisca* sp. nov.**

*Candidatus Sicubarcha detosisca* (NL. fem. n. *detosisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA203 sp003601535*. The type genome for the species is the GenBank assembly GCA\_003601535.1. The GC content of the type genome is 48.69 % and the genome length is 1.67 Mbp.

#### **Description of *Candidatus Sicubarcha domabicella* sp. nov.**

*Candidatus Sicubarcha domabicella* (NL. fem. n. *domabicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA203 sp013572355*. The type genome for the species is the GenBank assembly GCA\_013572355.1. The GC content of the type genome is 52.6 % and the genome length is 1.69 Mbp.

**Description of *Candidatus Sicubarcha siligitoga* sp. nov.**

*Candidatus Sicubarcha siligitoga* (NL. fem. n. *siligitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA203 sp003661105*. The type genome for the species is the GenBank assembly GCA\_003661105.1. The GC content of the type genome is 48.97 % and the genome length is 2.25 Mbp.

**Description of *Candidatus Sicubarcha telefatio* sp. nov.**

*Candidatus Sicubarcha telefatio* (NL. fem. n. *telefatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA203 sp002503595*. The type genome for the species is the GenBank assembly GCA\_002503595.1. The GC content of the type genome is 50.2 % and the genome length is 2.39 Mbp.

**Description of *Candidatus Sicubarcha verifentia* sp. nov.**

*Candidatus Sicubarcha verifentia* (NL. fem. n. *verifentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA203 sp004211975*. The type genome for the species is the GenBank assembly GCA\_004211975.1. The GC content of the type genome is 48.45 % and the genome length is 2.66 Mbp.

**Description of *Candidatus Sicunarcha manupitica* sp. nov.**

*Candidatus Sicunarcha manupitica* (NL. fem. n. *manupitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA153 sp003694385*. The type genome for the species is the GenBank assembly GCA\_003694385.1. The GC content of the type genome is 57.03 %

and the genome length is 0.89 Mbp.

**Description of *Candidatus Sicunarcha* gen. nov.**

*Candidatus Sicunarcha* (NL. fem. n. *Sicunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA153*. The type species for the genus is *Candidatus Sicunarcha manupitica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA525*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Fibicarchaceae*.

**Description of *Candidatus Sicunarcha subinifica* sp. nov.**

*Candidatus Sicunarcha subinifica* (NL. fem. n. *subinifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA153 sp002503705*. The type genome for the species is the GenBank assembly GCA\_002503705.1. The GC content of the type genome is 59.63 % and the genome length is 1.24 Mbp.

**Description of *Candidatus Sifunarcha desuritudo* sp. nov.**

*Candidatus Sifunarcha desuritudo* (NL. fem. n. *desuritudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QS-1-68-20 sp007122875*. The type genome for the species is the GenBank assembly GCA\_007122875.1. The GC content of the type genome is 64.69 % and the genome length is 1.9 Mbp.

**Description of *Candidatus Sifunarcha* gen. nov.**

*Candidatus Sifunarcha* (NL. fem. n. *Sifunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QS-1-68-20*. The type species for the genus is *Candidatus Sifunarcha desuritudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QS-1-68-20*. According to the renamed version of GTDB R06-RS202, this taxon belongs

to the family *Candidatus* Sifunarchaceae.

**Description of *Candidatus* Sifunarchaceae fam. nov.**

*Candidatus* Sifunarchaceae (NL. fem. n. *Sifunarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *QS-I-68-20*. The type genus for the taxon is *Candidatus* Sifunarcha .

According to GTDB R06-RS202, this family belongs to the order *Halobacteriales*.

**Description of *Candidatus* Siligarcha cilibibula sp. nov.**

*Candidatus* Siligarcha cilibibula (NL. fem. n. *cilibibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10161 sp10161u*. The type genome for the species is the GenBank assembly GCA\_013332015.1. The GC content of the type genome is 52.89 % and the genome length is 1.11 Mbp.

**Description of *Candidatus* Siligarcha gen. nov.**

*Candidatus* Siligarcha (NL. fem. n. *Siligarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10161*. The type species for the genus is *Candidatus* Siligarcha cilibibula .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10161*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Siligarchaceae.

**Description of *Candidatus* Siligarchaceae fam. nov.**

*Candidatus* Siligarchaceae (NL. fem. n. *Siligarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10161*. The type genus for the taxon is *Candidatus* Siligarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Volubarchales.

### **Description of *Candidatus Siligarcha citocimonia* sp. nov.**

*Candidatus Siligarcha citocimonia* (NL. fem. n. *citocimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10161 sp903892905*. The type genome for the species is the GenBank assembly GCA\_903892905.1. The GC content of the type genome is 54.68 % and the genome length is 1.33 Mbp.

### **Description of *Candidatus Siminarcha repagitrix* sp. nov.**

*Candidatus Siminarcha repagitrix* (NL. fem. n. *repagitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR10 sp000830275*. The type genome for the species is the GenBank assembly GCA\_013332025.1. The GC content of the type genome is 43.05 % and the genome length is 1.22 Mbp.

### **Description of *Candidatus Siminarcha* gen. nov.**

*Candidatus Siminarcha* (NL. fem. n. *Siminarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GW2011-AR10*. The type species for the genus is *Candidatus Siminarcha repagitrix*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR10*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Siminarchaceae*.

### **Description of *Candidatus Siminarchaceae* fam. nov.**

*Candidatus Siminarchaceae* (NL. fem. n. *Siminarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GW2011-AR10*. The type genus for the taxon is *Candidatus Siminarcha*.

According to GTDB R06-RS202, this family belongs to the order *Iainarchaeales*.

### **Description of *Candidatus Sitelarcha decapitoga* sp. nov.**

*Candidatus* Sitelarcha decapitoga (NL. fem. n. *decapitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA226 sp002505935*. The type genome for the species is the GenBank assembly GCA\_002505935.1. The GC content of the type genome is 46.87 % and the genome length is 1.62 Mbp.

#### **Description of *Candidatus* Sitelarcha gen. nov.**

*Candidatus* Sitelarcha (NL. fem. n. *Sitelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA226*. The type species for the genus is *Candidatus* Sitelarcha decapitoga .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Sitelarcha rorulitas sp. nov.**

*Candidatus* Sitelarcha rorulitas (NL. fem. n. *rorulitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA226 sp012959275*. The type genome for the species is the GenBank assembly GCA\_012959275.1. The GC content of the type genome is 44.67 % and the genome length is 1.92 Mbp.

#### **Description of *Candidatus* Sitelarcha semidastra sp. nov.**

*Candidatus* Sitelarcha semidastra (NL. fem. n. *semidastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA226 sp002719475*. The type genome for the species is the GenBank assembly GCA\_002719475.1. The GC content of the type genome is 46.05 % and the genome length is 1.89 Mbp.

#### **Description of *Candidatus* Sitelarcha velivtudo sp. nov.**

*Candidatus* Sitelarcha velivtudo (NL. fem. n. *velivtudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).



A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA226 sp014240385*. The type genome for the species is the GenBank assembly GCA\_014240385.1. The GC content of the type genome is 44.66 % and the genome length is 1.51 Mbp.

**Description of *Candidatus Socagarcha duricimonia* sp. nov.**

*Candidatus Socagarcha duricimonia* (NL. fem. n. *duricimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SG8-32-3 sp007050895*. The type genome for the species is the GenBank assembly GCA\_007050895.1. The GC content of the type genome is 43.31 % and the genome length is 1.59 Mbp.

**Description of *Candidatus Socagarcha* gen. nov.**

*Candidatus Socagarcha* (NL. fem. n. *Socagarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SG8-32-3*. The type species for the genus is *Candidatus Socagarcha duricimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA233*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugacarchaceae*.

**Description of *Candidatus Socagarcha horomedo* sp. nov.**

*Candidatus Socagarcha horomedo* (NL. fem. n. *horomedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SG8-32-3 sp001273335*. The type genome for the species is the GenBank assembly GCA\_001273335.1. The GC content of the type genome is 44.01 % and the genome length is 0.67 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Sulfate-rich zone estuary sediments 8-12 cm".

**Description of *Candidatus Solacarcha cacalastra* sp. nov.**

*Candidatus Solacarcha cacalastra* (NL. fem. n. *cacalastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Tc-Br11-E2g8 sp003552885*. The type genome for the species is the GenBank assembly GCA\_003552885.1. The GC content of the type genome is 68.78 % and the genome length is 1.7 Mbp.

**Description of *Candidatus Solacarcha* gen. nov.**

*Candidatus Solacarcha* (NL. fem. n. *Solacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *Tc-Br11-E2g8*. The type species for the genus is *Candidatus Solacarcha cacalastra*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Solacarcha ratifetta* sp. nov.**

*Candidatus Solacarcha ratifetta* (NL. fem. n. *ratifetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Tc-Br11-E2g8 sp001564115*. The type genome for the species is the GenBank assembly GCA\_001564115.1. The GC content of the type genome is 68.58 % and the genome length is 2.29 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample Tc-Br; brine of Tanatar trona crystallizer".

**Description of *Candidatus Solifarcha docibedo* sp. nov.**

*Candidatus Solifarcha docibedo* (NL. fem. n. *docibedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA285 sp011364525*. The type genome for the species is the GenBank assembly GCA\_011366445.1. The GC content of the type genome is 49.06 % and the genome length is 1.4 Mbp.

**Description of *Candidatus Solifarcha* gen. nov.**

*Candidatus Solifarcha* (NL. fem. n. *Solifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this genus is *UBA285*. The type species for the genus is *Candidatus Solifarcha docibedo*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Solifarcha fetifousia* sp. nov.**

*Candidatus Solifarcha fetifousia* (NL. fem. n. *fetifousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA285 sp011380145*. The type genome for the species is the GenBank assembly GCA\_011380145.1. The GC content of the type genome is 39.58 % and the genome length is 1.15 Mbp.

#### **Description of *Candidatus Solifarcha fibicifica* sp. nov.**

*Candidatus Solifarcha fibicifica* (NL. fem. n. *fibicifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA285 sp011375785*. The type genome for the species is the GenBank assembly GCA\_011375785.1. The GC content of the type genome is 44.86 % and the genome length is 0.43 Mbp.

#### **Description of *Candidatus Solifarcha laxitago* sp. nov.**

*Candidatus Solifarcha laxitago* (NL. fem. n. *laxitago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA285 sp011380285*. The type genome for the species is the GenBank assembly GCA\_011380285.1. The GC content of the type genome is 45.65 % and the genome length is 1.06 Mbp.

#### **Description of *Candidatus Solifarcha luticago* sp. nov.**

*Candidatus Solifarcha luticago* (NL. fem. n. *luticago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA285 sp011056815*. The type genome for the species is the GenBank assembly GCA\_011056815.1. The GC content of the type genome is 42.53 %

and the genome length is 1.36 Mbp.

**Description of *Candidatus Solifarcha recucetta* sp. nov.**

*Candidatus Solifarcha recucetta* (NL. fem. n. *recucetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA285 sp002495025*. The type genome for the species is the GenBank assembly GCA\_002496045.1. The GC content of the type genome is 38.98 % and the genome length is 1.36 Mbp.

**Description of *Candidatus Soliparcha vepalibula* sp. nov.**

*Candidatus Soliparcha vepalibula* (NL. fem. n. *vepalibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG1-02-31-27 sp002763115*. The type genome for the species is the GenBank assembly GCA\_001872145.1. The GC content of the type genome is 31.33 % and the genome length is 0.78 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "groundwater filtered through a 3.0 µm filter and then through a 0.2 µm filter".

**Description of *Candidatus Soliparcha* gen. nov.**

*Candidatus Soliparcha* (NL. fem. n. *Soliparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CG1-02-31-27*. The type species for the genus is *Candidatus Soliparcha vepalibula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG1-02-31-27*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Soliparchaceae*.

**Description of *Candidatus Soliparchaceae* fam. nov.**

*Candidatus Soliparchaceae* (NL. fem. n. *Soliparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CG1-02-31-27*. The type genus for the taxon is *Candidatus Soliparcha*.

According to GTDB R06-RS202, this family belongs to the order *Pacearchaeales*.

### **Description of *Candidatus Solivarcha defosatica* sp. nov.**

*Candidatus Solivarcha defosatica* (NL. fem. n. *defosatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKIA01 sp007117065*. The type genome for the species is the GenBank assembly GCA\_007117065.1. The GC content of the type genome is 39.78 % and the genome length is 0.91 Mbp.

### **Description of *Candidatus Solivarcha* gen. nov.**

*Candidatus Solivarcha* (NL. fem. n. *Solivarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SKIA01*. The type species for the genus is *Candidatus Solivarcha defosatica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SKIA01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Solivarchaceae*.

### **Description of *Candidatus Solivarchaceae* fam. nov.**

*Candidatus Solivarchaceae* (NL. fem. n. *Solivarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SKIA01*. The type genus for the taxon is *Candidatus Solivarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

### **Description of *Candidatus Solivarcha nugacivita* sp. nov.**

*Candidatus Solivarcha nugacivita* (NL. fem. n. *nugacivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKIA01 sp007116645*. The type genome for the species is the GenBank assembly GCA\_007116645.1. The GC content of the type genome is 44.85 % and the genome length is 0.9 Mbp.

### **Description of *Candidatus Solivarcha peridimonas* sp. nov.**

*Candidatus* Solivarcha peridimonas (NL. fem. n. *peridimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SKIA01 sp007128245*. The type genome for the species is the GenBank assembly GCA\_007128245.1. The GC content of the type genome is 47.23 % and the genome length is 0.92 Mbp.

#### **Description of *Candidatus* Sonabarcha decucastra sp. nov.**

*Candidatus* Sonabarcha decucastra (NL. fem. n. *decucastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TEKIR-12S sp004524435*. The type genome for the species is the GenBank assembly GCA\_004524435.1. The GC content of the type genome is 50.44 % and the genome length is 2.77 Mbp.

#### **Description of *Candidatus* Sonabarcha gen. nov.**

*Candidatus* Sonabarcha (NL. fem. n. *Sonabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *TEKIR-12S*. The type species for the genus is *Candidatus* Sonabarcha decucastra .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Soniparcha tolutatio sp. nov.**

*Candidatus* Soniparcha tolutatio (NL. fem. n. *tolutatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SHMX01 sp008080745*. The type genome for the species is the GenBank assembly GCA\_008080745.1. The GC content of the type genome is 41.23 % and the genome length is 3.16 Mbp.

#### **Description of *Candidatus* Soniparcha gen. nov.**

*Candidatus* Soniparcha (NL. fem. n. *Soniparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SHMX01*. The type species for the genus is *Candidatus Sonivarcha tolutatio*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Sonivarcha nutabastra* sp. nov.**

*Candidatus Sonivarcha nutabastra* (NL. fem. n. *nutabastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JWKY01 sp000806015*. The type genome for the species is the GenBank assembly GCA\_000806015.1. The GC content of the type genome is 30.12 % and the genome length is 0.68 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle groundwater metagenome at time 1".

#### **Description of *Candidatus Sonivarcha* gen. nov.**

*Candidatus Sonivarcha* (NL. fem. n. *Sonivarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JWKY01*. The type species for the genus is *Candidatus Sonivarcha nutabastra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deseparchaceae*.

#### **Description of *Candidatus Sotularcha butubicella* sp. nov.**

*Candidatus Sotularcha butubicella* (NL. fem. n. *butubicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B24-G9 sp003651045*. The type genome for the species is the GenBank assembly GCA\_003651045.1. The GC content of the type genome is 34.77 % and the genome length is 1.4 Mbp.

#### **Description of *Candidatus Sotularcha* gen. nov.**

*Candidatus Sotularcha* (NL. fem. n. *Sotularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B24-G9*. The type species for the genus is *Candidatus Sotularcha butubicella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DHVEG-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pedifarchaceae*.

#### **Description of *Candidatus Stygiolobus siticita* sp. nov.**

*Candidatus Stygiolobus siticita* (NL. fem. n. *siticita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Stygiolobus sp003086555*. The type genome for the species is the GenBank assembly GCA\_003086555.1. The GC content of the type genome is 37.98 % and the genome length is 1.03 Mbp.

#### **Description of *Candidatus Subabarcha milipicula* sp. nov.**

*Candidatus Subabarcha milipicula* (NL. fem. n. *milipicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *AAA261-N23 sp000375685*. The type genome for the species is the GenBank assembly GCA\_000375685.1. The GC content of the type genome is 32.04 % and the genome length is 1.2 Mbp.

#### **Description of *Candidatus Subabarcha* gen. nov.**

*Candidatus Subabarcha* (NL. fem. n. *Subabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *AAA261-N23*. The type species for the genus is *Candidatus Subabarcha milipicula*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Subacarcha lanifitrix* sp. nov.**

*Candidatus Subacarcha lanifitrix* (NL. fem. n. *lanifitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).



A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QH-10-67-22 sp003021305*. The type genome for the species is the GenBank assembly GCA\_003021305.1. The GC content of the type genome is 67.13 % and the genome length is 2.52 Mbp.

**Description of *Candidatus Subacarcha* gen. nov.**

*Candidatus Subacarcha* (NL. fem. n. *Subacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QH-10-67-22*. The type species for the genus is *Candidatus Subacarcha lanifitrix*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Subadarcha subabimonia* sp. nov.**

*Candidatus Subadarcha subabimonia* (NL. fem. n. *subabimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L4 sp002495405*. The type genome for the species is the GenBank assembly GCA\_002495405.1. The GC content of the type genome is 40.78 % and the genome length is 2.33 Mbp.

**Description of *Candidatus Subadarcha* gen. nov.**

*Candidatus Subadarcha* (NL. fem. n. *Subadarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIa-L4*. The type species for the genus is *Candidatus Subadarcha subabimonia*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Subadarcha vicatimonas* sp. nov.**

*Candidatus Subadarcha vicatimonas* (NL. fem. n. *vicatimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIa-L4 sp002718195*. The type genome for the species is the

GenBank assembly GCA\_002718195.1. The GC content of the type genome is 41.95 % and the genome length is 2.03 Mbp.

#### **Description of *Candidatus Subinarcha depecitio* sp. nov.**

*Candidatus Subinarcha depecitio* (NL. fem. n. *depecitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSQZ01 sp011331665*. The type genome for the species is the GenBank assembly GCA\_011331665.1. The GC content of the type genome is 26.43 % and the genome length is 0.5 Mbp.

#### **Description of *Candidatus Subinarcha* gen. nov.**

*Candidatus Subinarcha* (NL. fem. n. *Subinarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSQZ01*. The type species for the genus is *Candidatus Subinarcha depecitio*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Subodarcha gemebentia* sp. nov.**

*Candidatus Subodarcha gemebentia* (NL. fem. n. *gemebentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B82-G9 sp003649715*. The type genome for the species is the GenBank assembly GCA\_003649715.1. The GC content of the type genome is 37.7 % and the genome length is 1.5 Mbp.

#### **Description of *Candidatus Subodarcha* gen. nov.**

*Candidatus Subodarcha* (NL. fem. n. *Subodarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B82-G9*. The type species for the genus is *Candidatus Subodarcha gemebentia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DHVEG-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pedifarchaceae*.

### **Description of *Candidatus Subofarcha famelitas* sp. nov.**

*Candidatus Subofarcha famelitas* (NL. fem. n. *famelitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SBBD01 sp005239845*. The type genome for the species is the GenBank assembly GCA\_005239845.1. The GC content of the type genome is 54.69 % and the genome length is 1.19 Mbp.

### **Description of *Candidatus Subofarcha* gen. nov.**

*Candidatus Subofarcha* (NL. fem. n. *Subofarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SBBD01*. The type species for the genus is *Candidatus Subofarcha famelitas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SBBD01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Subofarchaceae*.

### **Description of *Candidatus Subofarchaceae* fam. nov.**

*Candidatus Subofarchaceae* (NL. fem. n. *Subofarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SBBD01*. The type genus for the taxon is *Candidatus Subofarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA8480*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Colubarchales*.

### **Description of *Candidatus Subucarcha nucifitia* sp. nov.**

*Candidatus Subucarcha nucifitia* (NL. fem. n. *nucifitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA148 sp013415795*. The type genome for the species is the GenBank assembly GCA\_013415795.1. The GC content of the type genome is 40.7 % and the genome length is 0.94 Mbp.

### **Description of *Candidatus Subucarcha* gen. nov.**

*Candidatus Subucarcha* (NL. fem. n. *Subucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA148*. The type species for the genus is *Candidatus Subucarcha nucifitia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA148*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Subucarchaceae*.

### **Description of *Candidatus Subucarchaceae* fam. nov.**

*Candidatus Subucarchaceae* (NL. fem. n. *Subucarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA148*. The type genus for the taxon is *Candidatus Subucarcha*.

According to GTDB R06-RS202, this family belongs to the order *Methanocellales*.

### **Description of *Candidatus Subucarcha vinuligena* sp. nov.**

*Candidatus Subucarcha vinuligena* (NL. fem. n. *vinuligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA148 sp002495885*. The type genome for the species is the GenBank assembly GCA\_002495885.1. The GC content of the type genome is 42.6 % and the genome length is 1.65 Mbp.

### **Description of *Candidatus Sugilarcha defasilega* sp. nov.**

*Candidatus Sugilarcha defasilega* (NL. fem. n. *defasilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-36 sp002254765*. The type genome for the species is the GenBank assembly GCA\_002254765.1. The GC content of the type genome is 54.25 % and the genome length is 1.02 Mbp.

### **Description of *Candidatus Sugilarcha* gen. nov.**

*Candidatus Sugilarcha* (NL. fem. n. *Sugilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-36*. The type species for the genus is *Candidatus Sugilarcha defasilega*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4484-36*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Sugilarchaceae*.

#### **Description of *Candidatus Sugilarchaceae* fam. nov.**

*Candidatus Sugilarchaceae* (NL. fem. n. *Sugilarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-36*. The type genus for the taxon is *Candidatus Sugilarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-6*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Denixarchales*.

#### **Description of *Candidatus Sulfuracidifex gerunatica* sp. nov.**

*Candidatus Sulfuracidifex gerunatica* (NL. fem. n. *gerunatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Sulfuracidifex sp002495845*. The type genome for the species is the GenBank assembly GCA\_002495845.1. The GC content of the type genome is 43.06 % and the genome length is 1.71 Mbp.

#### **Description of *Candidatus Sulfurisphaera bonifago* sp. nov.**

*Candidatus Sulfurisphaera bonifago* (NL. fem. n. *bonifago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Sulfurisphaera sp012222305*. The type genome for the species is the GenBank assembly RS\_GCF\_012222305.1. The GC content of the type genome is 32.64 % and the genome length is 2.79 Mbp.

#### **Description of *Candidatus Supelarcha detumessa* sp. nov.**

*Candidatus* Supelarcha detumessa (NL. fem. n. *detumessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA582 sp002502705*. The type genome for the species is the GenBank assembly GCA\_002502705.1. The GC content of the type genome is 41.26 % and the genome length is 1.48 Mbp.

#### **Description of *Candidatus* Supelarcha gen. nov.**

*Candidatus* Supelarcha (NL. fem. n. *Supelarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA582*. The type species for the genus is *Candidatus* Supelarcha detumessa .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Supelarcha halucastra sp. nov.**

*Candidatus* Supelarcha halucastra (NL. fem. n. *halucastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA582 sp011370275*. The type genome for the species is the GenBank assembly GCA\_011370275.1. The GC content of the type genome is 44.24 % and the genome length is 1.49 Mbp.

#### **Description of *Candidatus* Susicarcha cetaritura sp. nov.**

*Candidatus* Susicarcha cetaritura (NL. fem. n. *cetaritura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *1-14-0-10-32-24 sp013204355*. The type genome for the species is the GenBank assembly GCA\_013204355.1. The GC content of the type genome is 32.5 % and the genome length is 1.04 Mbp.

#### **Description of *Candidatus* Susicarcha gen. nov.**

*Candidatus* Susicarcha (NL. fem. n. *Susicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *1-14-0-10-32-24*. The type species for the genus is *Candidatus Susicarcha cetaritura*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tirocarchaceae*.

#### **Description of *Candidatus Susicarcha nocenastra* sp. nov.**

*Candidatus Susicarcha nocenastra* (NL. fem. n. *nocenastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *1-14-0-10-32-24 sp002763025*. The type genome for the species is the GenBank assembly GCA\_002763025.1. The GC content of the type genome is 32.14 % and the genome length is 0.78 Mbp.

#### **Description of *Candidatus Tabifarcha doxolimonia* sp. nov.**

*Candidatus Tabifarcha doxolimonia* (NL. fem. n. *doxolimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-135 sp002255025*. The type genome for the species is the GenBank assembly GCA\_002255025.1. The GC content of the type genome is 58.77 % and the genome length is 0.98 Mbp.

#### **Description of *Candidatus Tabifarcha* gen. nov.**

*Candidatus Tabifarcha* (NL. fem. n. *Tabifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-135*. The type species for the genus is *Candidatus Tabifarcha doxolimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4484-135*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tabifarchaceae*.

#### **Description of *Candidatus Tabifarchaceae* fam. nov.**

*Candidatus Tabifarchaceae* (NL. fem. n. *Tabifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-135*. The type genus for the taxon is *Candidatus* Tabifarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-135*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Tabifarchales.

### **Description of *Candidatus* Tabifarchales ord. nov.**

*Candidatus* Tabifarchales (NL. fem. n. *Tabifarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-135*. The type genus for the taxon is *Candidatus* Tabifarcha .

According to the GTDB R06-RS202, this order belongs to the class *Bathyarchaeia*.

### **Description of *Candidatus* Tabifarcha fuligitura sp. nov.**

*Candidatus* Tabifarcha fuligitura (NL. fem. n. *fuligitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-135 sp011040545*. The type genome for the species is the GenBank assembly GCA\_011040545.1. The GC content of the type genome is 54.89 % and the genome length is 1.06 Mbp.

### **Description of *Candidatus* Tabitarcha lugubibra sp. nov.**

*Candidatus* Tabitarcha lugubibra (NL. fem. n. *lugubibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR20 sp000830315*. The type genome for the species is the GenBank assembly GCA\_000830315.1. The GC content of the type genome is 31.67 % and the genome length is 0.83 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "groundwater".

### **Description of *Candidatus* Tabitarcha gen. nov.**

*Candidatus* Tabitarcha (NL. fem. n. *Tabitarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this genus is *GW2011-AR20*. The type species for the genus is *Candidatus* Tabitarcha lugubibra .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR20*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Tabitarchaceae.

#### **Description of *Candidatus* Tabitarchaceae fam. nov.**

*Candidatus* Tabitarchaceae (NL. fem. n. *Tabitarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GW2011-AR20*. The type genus for the taxon is *Candidatus* Tabitarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Lanifarchales.

#### **Description of *Candidatus* Taraxarcha benemessa sp. nov.**

*Candidatus* Taraxarcha benemessa (NL. fem. n. *benemessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B15-G16 sp003649205*. The type genome for the species is the GenBank assembly GCA\_003649205.1. The GC content of the type genome is 43.25 % and the genome length is 2.07 Mbp.

#### **Description of *Candidatus* Taraxarcha gen. nov.**

*Candidatus* Taraxarcha (NL. fem. n. *Taraxarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B15-G16*. The type species for the genus is *Candidatus* Taraxarcha benemessa .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B15-G16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Taraxarchaceae.

#### **Description of *Candidatus* Taraxarchaceae fam. nov.**

*Candidatus* Taraxarchaceae (NL. fem. n. *Taraxarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B15-G16*. The type genus for the taxon is *Candidatus* Taraxarcha .

According to GTDB R06-RS202, this family belongs to the order *Thermoproteales*.

#### **Description of *Candidatus* Taxilarcha culibastra sp. nov.**

*Candidatus* Taxilarcha culibastra (NL. fem. n. *culibastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DRBY01 sp011042755*. The type genome for the species is the GenBank assembly GCA\_011042755.1. The GC content of the type genome is 57.12 % and the genome length is 1.09 Mbp.

#### **Description of *Candidatus* Taxilarcha gen. nov.**

*Candidatus* Taxilarcha (NL. fem. n. *Taxilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DRBY01*. The type species for the genus is *Candidatus* Taxilarcha culibastra .

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* Tegimarcha decucetta sp. nov.**

*Candidatus* Tegimarcha decucetta (NL. fem. n. *decucetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MVRC01 sp013415865*. The type genome for the species is the GenBank assembly GCA\_013415865.1. The GC content of the type genome is 52.34 % and the genome length is 1.82 Mbp.

#### **Description of *Candidatus* Tegimarcha gen. nov.**

*Candidatus* Tegimarcha (NL. fem. n. *Tegimarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MVRC01*. The type species for the genus is *Candidatus* Tegimarcha decucetta .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA472*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Satacarchaceae*.

**Description of *Candidatus Tegimarcha masocimonia* sp. nov.**

*Candidatus Tegimarcha masocimonia* (NL. fem. n. *masocimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MVRC01 sp002067865*. The type genome for the species is the GenBank assembly GCA\_002067865.1. The GC content of the type genome is 56.99 % and the genome length is 2.22 Mbp.

**Description of *Candidatus Telefarcha denunedo* sp. nov.**

*Candidatus Telefarcha denunedo* (NL. fem. n. *denunedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Sv326 sp013425405*. The type genome for the species is the GenBank assembly GCA\_013425405.1. The GC content of the type genome is 47.06 % and the genome length is 0.95 Mbp.

**Description of *Candidatus Telefarcha* gen. nov.**

*Candidatus Telefarcha* (NL. fem. n. *Telefarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *Sv326*. The type species for the genus is *Candidatus Telefarcha denunedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTGH01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Xenoparchaceae*.

**Description of *Candidatus Telefarcha homicitio* sp. nov.**

*Candidatus Telefarcha homicitio* (NL. fem. n. *homicitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *Sv326 sp013425335*. The type genome for the species is the GenBank assembly GCA\_013425335.1. The GC content of the type genome is 47.74 % and the genome length is 1.0 Mbp.

#### **Description of *Candidatus* *Telefarcha repurousia* sp. nov.**

*Candidatus* *Telefarcha repurousia* (NL. fem. n. *repurousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Sv326 sp013426015*. The type genome for the species is the GenBank assembly GCA\_013426015.1. The GC content of the type genome is 48.53 % and the genome length is 1.2 Mbp.

#### **Description of *Candidatus* *Telegarcha depacisca* sp. nov.**

*Candidatus* *Telegarcha depacisca* (NL. fem. n. *depacisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMDW01 sp902385045*. The type genome for the species is the GenBank assembly GCA\_902385045.1. The GC content of the type genome is 32.5 % and the genome length is 0.93 Mbp.

#### **Description of *Candidatus* *Telegarcha* gen. nov.**

*Candidatus* *Telegarcha* (NL. fem. n. *Telegarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMDW01*. The type species for the genus is *Candidatus* *Telegarcha depacisca*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CABMDW01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* *Telegarchaceae*.

#### **Description of *Candidatus* *Telegarchaceae* fam. nov.**

*Candidatus* *Telegarchaceae* (NL. fem. n. *Telegarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CABMDW01*. The type genus for the taxon is *Candidatus* *Telegarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order

UBA8480. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Colubarchales.

**Description of *Candidatus* Televarcha baditifica sp. nov.**

*Candidatus* Televarcha baditifica (NL. fem. n. *baditifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O5 sp002505775*. The type genome for the species is the GenBank assembly GCA\_002505775.1. The GC content of the type genome is 47.71 % and the genome length is 1.35 Mbp.

**Description of *Candidatus* Televarcha gen. nov.**

*Candidatus* Televarcha (NL. fem. n. *Televarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIb-O5*. The type species for the genus is *Candidatus* Televarcha baditifica .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus* Televarcha betacago sp. nov.**

*Candidatus* Televarcha betacago (NL. fem. n. *betacago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O5 sp002499865*. The type genome for the species is the GenBank assembly GCA\_002499865.1. The GC content of the type genome is 46.5 % and the genome length is 1.3 Mbp.

**Description of *Candidatus* Televarcha catalibula sp. nov.**

*Candidatus* Televarcha catalibula (NL. fem. n. *catalibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O5 sp002499345*. The type genome for the species is the GenBank assembly GCA\_002499345.1. The GC content of the type genome is 46.76 % and the genome length is 1.12 Mbp.

### **Description of *Candidatus Televarcha cocolimonas* sp. nov.**

*Candidatus Televarcha cocolimonas* (NL. fem. n. *cocolimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002730095*. The type genome for the species is the GenBank assembly GCA\_002702715.1. The GC content of the type genome is 47.78 % and the genome length is 0.9 Mbp.

### **Description of *Candidatus Televarcha defulitrix* sp. nov.**

*Candidatus Televarcha defulitrix* (NL. fem. n. *defulitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002506825*. The type genome for the species is the GenBank assembly GCA\_002704585.1. The GC content of the type genome is 47.07 % and the genome length is 1.22 Mbp.

### **Description of *Candidatus Televarcha denecicula* sp. nov.**

*Candidatus Televarcha denecicula* (NL. fem. n. *denecicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002504435*. The type genome for the species is the GenBank assembly GCA\_002504435.1. The GC content of the type genome is 52.36 % and the genome length is 1.28 Mbp.

### **Description of *Candidatus Televarcha depasilenta* sp. nov.**

*Candidatus Televarcha depasilenta* (NL. fem. n. *depasilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002718995*. The type genome for the species is the GenBank assembly GCA\_002711985.1. The GC content of the type genome is 51.37 % and the genome length is 1.02 Mbp.

### **Description of *Candidatus Televarcha depeatica* sp. nov.**

*Candidatus Televarcha depeatica* (NL. fem. n. *depeatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002502095*. The type genome for the species is the GenBank assembly GCA\_003673035.1. The GC content of the type genome is 46.66 % and the genome length is 1.18 Mbp.

**Description of *Candidatus Televarcha depicibra* sp. nov.**

*Candidatus Televarcha depicibra* (NL. fem. n. *depicibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002499325*. The type genome for the species is the GenBank assembly GCA\_002502085.1. The GC content of the type genome is 46.54 % and the genome length is 1.08 Mbp.

**Description of *Candidatus Televarcha funebatica* sp. nov.**

*Candidatus Televarcha funebatica* (NL. fem. n. *funebatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002496725*. The type genome for the species is the GenBank assembly GCA\_002496725.1. The GC content of the type genome is 46.8 % and the genome length is 1.33 Mbp.

**Description of *Candidatus Televarcha labecedo* sp. nov.**

*Candidatus Televarcha labecedo* (NL. fem. n. *labecedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002497985*. The type genome for the species is the GenBank assembly GCA\_002497985.1. The GC content of the type genome is 51.68 % and the genome length is 0.93 Mbp.

**Description of *Candidatus Televarcha latibitrix* sp. nov.**

*Candidatus Televarcha latibitrix* (NL. fem. n. *latibitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *MGIIB-O5 sp002719635*. The type genome for the species is the GenBank assembly GCA\_002719635.1. The GC content of the type genome is 51.93 % and the genome length is 0.89 Mbp.

**Description of *Candidatus Televarcha mutabitudo* sp. nov.**

*Candidatus Televarcha mutabitudo* (NL. fem. n. *mutabitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002501805*. The type genome for the species is the GenBank assembly GCA\_002494905.1. The GC content of the type genome is 46.83 % and the genome length is 1.26 Mbp.

**Description of *Candidatus Televarcha remedilega* sp. nov.**

*Candidatus Televarcha remedilega* (NL. fem. n. *remedilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002498925*. The type genome for the species is the GenBank assembly GCA\_002499645.1. The GC content of the type genome is 52.09 % and the genome length is 1.06 Mbp.

**Description of *Candidatus Televarcha saxifilenta* sp. nov.**

*Candidatus Televarcha saxifilenta* (NL. fem. n. *saxifilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002501605*. The type genome for the species is the GenBank assembly GCA\_002499265.1. The GC content of the type genome is 47.66 % and the genome length is 1.34 Mbp.

**Description of *Candidatus Televarcha siminitas* sp. nov.**

*Candidatus Televarcha siminitas* (NL. fem. n. *siminitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O5 sp002726275*. The type genome for the species is the GenBank assembly GCA\_002726275.1. The GC content of the type genome is 52.17 % and the genome length is 1.24 Mbp.



### **Description of *Candidatus Tenebarcha bucoligena* sp. nov.**

*Candidatus Tenebarcha bucoligena* (NL. fem. n. *bucoligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA183 sp002495205*. The type genome for the species is the GenBank assembly GCA\_002495205.1. The GC content of the type genome is 61.67 % and the genome length is 0.81 Mbp.

### **Description of *Candidatus Tenebarcha* gen. nov.**

*Candidatus Tenebarcha* (NL. fem. n. *Tenebarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA183*. The type species for the genus is *Candidatus Tenebarcha bucoligena*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA183*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tenebarchaceae*.

### **Description of *Candidatus Tenebarchaceae* fam. nov.**

*Candidatus Tenebarchaceae* (NL. fem. n. *Tenebarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA183*. The type genus for the taxon is *Candidatus Tenebarcha*.

According to GTDB R06-RS202, this family belongs to the order *Nitrososphaerales*.

### **Description of *Candidatus Tenebarcha curotousia* sp. nov.**

*Candidatus Tenebarcha curotousia* (NL. fem. n. *curotousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA183 sp005877185*. The type genome for the species is the GenBank assembly GCA\_005877185.1. The GC content of the type genome is 57.54 % and the genome length is 1.86 Mbp.

### **Description of *Candidatus Tenebarcha navifitas* sp. nov.**

*Candidatus* Tenebarcha navifitas (NL. fem. n. *navifitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA183 sp005877365*. The type genome for the species is the GenBank assembly GCA\_005877365.1. The GC content of the type genome is 56.97 % and the genome length is 1.79 Mbp.

**Description of *Candidatus* Tenebarcha redacago sp. nov.**

*Candidatus* Tenebarcha redacago (NL. fem. n. *redacago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA183 sp005877225*. The type genome for the species is the GenBank assembly GCA\_005877455.1. The GC content of the type genome is 56.5 % and the genome length is 1.74 Mbp.

**Description of *Candidatus* Tenemarcha pacifitio sp. nov.**

*Candidatus* Tenemarcha pacifitio (NL. fem. n. *pacifitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-22 sp002010045*. The type genome for the species is the GenBank assembly GCA\_002010045.1. The GC content of the type genome is 39.8 % and the genome length is 2.06 Mbp.

**Description of *Candidatus* Tenemarcha gen. nov.**

*Candidatus* Tenemarcha (NL. fem. n. *Tenemarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-22*. The type species for the genus is *Candidatus* Tenemarcha pacifitio .

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus* Tenilarcha revecatio sp. nov.**

*Candidatus* Tenilarcha revecatio (NL. fem. n. *revecatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA93 sp002792915*. The type genome for the species is the GenBank assembly GCA\_001871655.1. The GC content of the type genome is 59.85 % and the genome length is 0.83 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "groundwater filtered through a 3.0 um filter and then through a 0.2 um filter".

**Description of *Candidatus Tenilarcha* gen. nov.**

*Candidatus Tenilarcha* (NL. fem. n. *Tenilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA93*. The type species for the genus is *Candidatus Tenilarcha* revectio .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA93*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tenilarchaceae*.

**Description of *Candidatus Tenilarchaceae* fam. nov.**

*Candidatus Tenilarchaceae* (NL. fem. n. *Tenilarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA93*. The type genus for the taxon is *Candidatus Tenilarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA8480*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Colubarchales*.

**Description of *Candidatus Tetenarcha cibicitudo* sp. nov.**

*Candidatus Tetenarcha cibicitudo* (NL. fem. n. *cibicitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PZKD01 sp003034855*. The type genome for the species is the GenBank assembly GCA\_003034855.1. The GC content of the type genome is 35.52 % and the genome length is 1.42 Mbp.

**Description of *Candidatus Tetenarcha* gen. nov.**

*Candidatus Tetenarcha* (NL. fem. n. *Tetenarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PZKD01*. The type species for the genus is *Candidatus Tetenarcha cibicitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *PZKD01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tetenarchaceae*.

#### **Description of *Candidatus Tetenarchaceae* fam. nov.**

*Candidatus Tetenarchaceae* (NL. fem. n. *Tetenarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *PZKD01*. The type genus for the taxon is *Candidatus Tetenarcha*.

According to GTDB R06-RS202, this family belongs to the order *Methanonatronarchaeales*.

#### **Description of *Candidatus Thalassarchaeum celumatio* sp. nov.**

*Candidatus Thalassarchaeum celumatio* (NL. fem. n. *celumatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thalassarchaeum* sp002507125. The type genome for the species is the GenBank assembly GCA\_013214115.1. The GC content of the type genome is 59.14 % and the genome length is 1.2 Mbp.

#### **Description of *Candidatus Thalassarchaeum conubimonia* sp. nov.**

*Candidatus Thalassarchaeum conubimonia* (NL. fem. n. *conubimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thalassarchaeum* sp002727275. The type genome for the species is the GenBank assembly GCA\_002727275.1. The GC content of the type genome is 50.2 % and the genome length is 1.38 Mbp.

#### **Description of *Candidatus Thalassarchaeum dehinitia* sp. nov.**

*Candidatus Thalassarchaeum dehinitia* (NL. fem. n. *dehinitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thalassarchaeum sp014240285*. The type genome for the species is the GenBank assembly GCA\_014240285.1. The GC content of the type genome is 55.8 % and the genome length is 1.33 Mbp.

**Description of *Candidatus Thalassarchaeum delecedo* sp. nov.**

*Candidatus Thalassarchaeum delecedo* (NL. fem. n. *delecedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thalassarchaeum sp002501885*. The type genome for the species is the GenBank assembly GCA\_002497525.1. The GC content of the type genome is 48.58 % and the genome length is 1.24 Mbp.

**Description of *Candidatus Thalassarchaeum dilacicella* sp. nov.**

*Candidatus Thalassarchaeum dilacicella* (NL. fem. n. *dilacicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thalassarchaeum sp004195715*. The type genome for the species is the GenBank assembly GCA\_012960685.1. The GC content of the type genome is 55.57 % and the genome length is 1.41 Mbp.

**Description of *Candidatus Thalassarchaeum ducilimonia* sp. nov.**

*Candidatus Thalassarchaeum ducilimonia* (NL. fem. n. *ducilimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thalassarchaeum sp002495735*. The type genome for the species is the GenBank assembly GCA\_002495735.1. The GC content of the type genome is 55.94 % and the genome length is 1.13 Mbp.

**Description of *Candidatus Thalassarchaeum ficedax* sp. nov.**

*Candidatus Thalassarchaeum ficedax* (NL. fem. n. *ficedax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *Thalassarchaeum* sp002505325. The type genome for the species is the GenBank assembly GCA\_002505325.1. The GC content of the type genome is 54.1 % and the genome length is 1.22 Mbp.

**Description of *Candidatus* *Thalassarchaeum* *locupago* sp. nov.**

*Candidatus* *Thalassarchaeum* *locupago* (NL. fem. n. *locupago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thalassarchaeum* sp002714745. The type genome for the species is the GenBank assembly GCA\_002501685.1. The GC content of the type genome is 52.22 % and the genome length is 0.99 Mbp.

**Description of *Candidatus* *Thalassarchaeum* *milifedo* sp. nov.**

*Candidatus* *Thalassarchaeum* *milifedo* (NL. fem. n. *milifedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thalassarchaeum* sp002457605. The type genome for the species is the GenBank assembly GCA\_002457605.1. The GC content of the type genome is 53.64 % and the genome length is 1.03 Mbp.

**Description of *Candidatus* *Thalassarchaeum* *turicitrix* sp. nov.**

*Candidatus* *Thalassarchaeum* *turicitrix* (NL. fem. n. *turicitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thalassarchaeum* sp002698225. The type genome for the species is the GenBank assembly GCA\_002698225.1. The GC content of the type genome is 51.42 % and the genome length is 1.19 Mbp.

**Description of *Candidatus* *Thalassarchaeum* *vicatibra* sp. nov.**

*Candidatus* *Thalassarchaeum* *vicatibra* (NL. fem. n. *vicatibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thalassarchaeum* sp002503055. The type genome for the species is the GenBank assembly GCA\_002506495.1. The GC content of the type genome is 49.28 % and the genome length is 1.08 Mbp.

#### **Description of *Candidatus Thermocladium socagitio* sp. nov.**

*Candidatus Thermocladium socagitio* (NL. fem. n. *socagitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermocladium sp002508315*. The type genome for the species is the GenBank assembly GCA\_002508315.1. The GC content of the type genome is 53.69 % and the genome length is 1.31 Mbp.

#### **Description of *Candidatus Thermocladium velifitica* sp. nov.**

*Candidatus Thermocladium velifitica* (NL. fem. n. *velifitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermocladium sp001516585*. The type genome for the species is the GenBank assembly GCA\_001516585.1. The GC content of the type genome is 46.83 % and the genome length is 1.88 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "coculture of 3 archaeal species originally obtained from terrestrial hot spring (Echinus Geyser; YNP)".

#### **Description of *Candidatus Thermococcus bicipastras* sp. nov.**

*Candidatus Thermococcus bicipastras* (NL. fem. n. *bicipastras* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp000221185*. The type genome for the species is the GenBank assembly RS\_GCF\_000221185.1. The GC content of the type genome is 56.08 % and the genome length is 2.01 Mbp.

#### **Description of *Candidatus Thermococcus bisuligena* sp. nov.**

*Candidatus Thermococcus bisuligena* (NL. fem. n. *bisuligena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp012027645*. The type genome for the species is the GenBank assembly RS\_GCF\_012027645.1. The GC content of the type genome is 55.37 % and the genome length is 1.99 Mbp.

#### **Description of *Candidatus Thermococcus cacalitio* sp. nov.**

*Candidatus Thermococcus cacalitio* (NL. fem. n. *cacalitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp000151205*. The type genome for the species is the GenBank assembly RS\_GCF\_000151205.2. The GC content of the type genome is 54.78 % and the genome length is 2.09 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "2600 m depth".

#### **Description of *Candidatus Thermococcus cuticatio* sp. nov.**

*Candidatus Thermococcus cuticatio* (NL. fem. n. *cuticatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp012027635*. The type genome for the species is the GenBank assembly RS\_GCF\_012027635.1. The GC content of the type genome is 54.59 % and the genome length is 1.92 Mbp.

#### **Description of *Candidatus Thermococcus denecibula* sp. nov.**

*Candidatus Thermococcus denecibula* (NL. fem. n. *denecibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp012027395*. The type genome for the species is the GenBank assembly RS\_GCF\_012027395.1. The GC content of the type genome is 51.87 % and the genome length is 2.0 Mbp.

#### **Description of *Candidatus Thermococcus denomitas* sp. nov.**

*Candidatus Thermococcus denomitas* (NL. fem. n. *denomitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp900198835*. The type genome for the species is the GenBank assembly RS\_GCF\_900198835.1. The GC content of the type genome is 54.58 % and the genome length is 2.16 Mbp.

#### **Description of *Candidatus Thermococcus detoretta* sp. nov.**

*Candidatus Thermococcus detoretta* (NL. fem. n. *detoretta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).



A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp006274605*. The type genome for the species is the GenBank assembly RS\_GCF\_006274605.1. The GC content of the type genome is 54.86 % and the genome length is 2.23 Mbp.

**Description of *Candidatus Thermococcus fatilitia* sp. nov.**

*Candidatus Thermococcus fatilitia* (NL. fem. n. *fatilitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp012027555*. The type genome for the species is the GenBank assembly RS\_GCF\_012027555.1. The GC content of the type genome is 52.58 % and the genome length is 1.8 Mbp.

**Description of *Candidatus Thermococcus letifigena* sp. nov.**

*Candidatus Thermococcus letifigena* (NL. fem. n. *letifigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp012027595*. The type genome for the species is the GenBank assembly RS\_GCF\_012027595.1. The GC content of the type genome is 52.21 % and the genome length is 2.05 Mbp.

**Description of *Candidatus Thermococcus notabitura* sp. nov.**

*Candidatus Thermococcus notabitura* (NL. fem. n. *notabitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp904067545*. The type genome for the species is the GenBank assembly RS\_GCF\_904067545.1. The GC content of the type genome is 54.63 % and the genome length is 2.02 Mbp.

**Description of *Candidatus Thermococcus nugacitica* sp. nov.**

*Candidatus Thermococcus nugacitica* (NL. fem. n. *nugacitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus sp011050175*. The type genome for the species is the GenBank assembly GCA\_011050175.1. The GC content of the type genome is 54.42 %

and the genome length is 1.17 Mbp.

**Description of *Candidatus Thermococcus nutabetta* sp. nov.**

*Candidatus Thermococcus nutabetta* (NL. fem. n. *nutabetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus* sp012027355. The type genome for the species is the GenBank assembly RS\_GCF\_012027355.1. The GC content of the type genome is 52.6 % and the genome length is 2.17 Mbp.

**Description of *Candidatus Thermococcus podagousia* sp. nov.**

*Candidatus Thermococcus podagousia* (NL. fem. n. *podagousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus* sp012027615. The type genome for the species is the GenBank assembly RS\_GCF\_012027615.1. The GC content of the type genome is 54.39 % and the genome length is 2.37 Mbp.

**Description of *Candidatus Thermococcus ratifimonas* sp. nov.**

*Candidatus Thermococcus ratifimonas* (NL. fem. n. *ratifimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus* sp012027495. The type genome for the species is the GenBank assembly RS\_GCF\_012027495.1. The GC content of the type genome is 55.69 % and the genome length is 2.14 Mbp.

**Description of *Candidatus Thermococcus retunugo* sp. nov.**

*Candidatus Thermococcus retunugo* (NL. fem. n. *retunugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus* sp012027305. The type genome for the species is the GenBank assembly RS\_GCF\_012027305.1. The GC content of the type genome is 53.52 % and the genome length is 2.02 Mbp.

**Description of *Candidatus Thermococcus semimimonas* sp. nov.**

*Candidatus Thermococcus semimimonas* (NL. fem. n. *semimimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus* sp002214525. The type genome for the species is the GenBank assembly RS\_GCF\_002214525.1. The GC content of the type genome is 54.88 % and the genome length is 1.52 Mbp.

**Description of *Candidatus Thermococcus valefilega* sp. nov.**

*Candidatus Thermococcus valefilega* (NL. fem. n. *valefilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus* sp013153595. The type genome for the species is the GenBank assembly GCA\_013153595.1. The GC content of the type genome is 56.6 % and the genome length is 1.18 Mbp.

**Description of *Candidatus Thermococcus conigousia* sp. nov.**

*Candidatus Thermococcus conigousia* (NL. fem. n. *conigousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus\_A* sp012027425. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly RS\_GCF\_012027425.1. The GC content of the type genome is 39.7 % and the genome length is 1.98 Mbp.

**Description of *Candidatus Thermococcus denigentia* sp. nov.**

*Candidatus Thermococcus denigentia* (NL. fem. n. *denigentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus\_A* sp003663535. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003663535.1. The GC content of the type genome is 40.34 % and the genome length is 1.65 Mbp.

**Description of *Candidatus Thermococcus desupedo* sp. nov.**

*Candidatus Thermococcus desupedo* (NL. fem. n. *desupedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus\_A sp001317345*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly RS\_GCF\_001317345.1. The GC content of the type genome is 39.28 % and the genome length is 1.82 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sediment".

#### **Description of *Candidatus Thermococcus fidenetta* sp. nov.**

*Candidatus Thermococcus fidenetta* (NL. fem. n. *fidenetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus\_A sp001484685*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly RS\_GCF\_902813195.1. The GC content of the type genome is 44.39 % and the genome length is 1.99 Mbp.

#### **Description of *Candidatus Thermococcus herinitia* sp. nov.**

*Candidatus Thermococcus herinitia* (NL. fem. n. *herinitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus\_A sp000430485*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_013330365.1. The GC content of the type genome is 43.2 % and the genome length is 1.85 Mbp.

#### **Description of *Candidatus Thermococcus negotedo* sp. nov.**

*Candidatus Thermococcus negotedo* (NL. fem. n. *negotedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus\_A sp003663525*. Although GTDB has assigned a genus

name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_003650075.1. The GC content of the type genome is 40.03 % and the genome length is 1.46 Mbp.

#### **Description of *Candidatus Thermococcus semimago* sp. nov.**

*Candidatus Thermococcus semimago* (NL. fem. n. *semimago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus\_B sp012027325*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly RS\_GCF\_012027325.1. The GC content of the type genome is 41.2 % and the genome length is 2.28 Mbp.

#### **Description of *Candidatus Thermococcus citipetta* sp. nov.**

*Candidatus Thermococcus citipetta* (NL. fem. n. *citipetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermococcus\_C sp002009975*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002009975.1. The GC content of the type genome is 38.13 % and the genome length is 2.36 Mbp.

#### **Description of *Candidatus Thermofilum vicecitrix* sp. nov.**

*Candidatus Thermofilum vicecitrix* (NL. fem. n. *vicecitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermofilum\_A sp002855745*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_002855745.1. The GC content of the type genome is 56.7 % and the genome length is 1.88 Mbp.

#### **Description of *Candidatus Thermofilum pepenimonia* sp. nov.**

*Candidatus Thermofilum pepenimonia* (NL. fem. n. *pepenimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a

noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermofilum\_C sp011364825*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_011364205.1. The GC content of the type genome is 56.03 % and the genome length is 0.91 Mbp.

**Description of *Candidatus Thermofilum verecivita* sp. nov.**

*Candidatus Thermofilum verecivita* (NL. fem. n. *verecivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermofilum\_C sp011047595*. Although GTDB has assigned a genus name with an alphabetic suffix, this genus designation cannot be incorporated into a well-formed binomial, so in naming this species, we have used the basonym for the genus. The type genome for the species is the GenBank assembly GCA\_011047595.1. The GC content of the type genome is 54.68 % and the genome length is 0.4 Mbp.

**Description of *Candidatus Thermoplasma nocumibra* sp. nov.**

*Candidatus Thermoplasma nocumibra* (NL. fem. n. *nocumibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermoplasma sp003205235*. The type genome for the species is the GenBank assembly RS\_GCF\_003205235.1. The GC content of the type genome is 43.96 % and the genome length is 1.79 Mbp.

**Description of *Candidatus Thermoplasma siticigena* sp. nov.**

*Candidatus Thermoplasma siticigena* (NL. fem. n. *siticigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermoplasma sp008709555*. The type genome for the species is the GenBank assembly GCA\_008709555.1. The GC content of the type genome is 46.83 % and the genome length is 1.45 Mbp.

**Description of *Candidatus Thermoproteus loripentia* sp. nov.**

*Candidatus Thermoproteus loripentia* (NL. fem. n. *loripentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermoproteus sp009903945*. The type genome for the species is the GenBank assembly GCA\_009903945.1. The GC content of the type genome is 62.52 % and the genome length is 2.02 Mbp.

**Description of *Candidatus Thermoproteus manomitio* sp. nov.**

*Candidatus Thermoproteus manomitio* (NL. fem. n. *manomitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermoproteus sp002497345*. The type genome for the species is the GenBank assembly GCA\_002497345.1. The GC content of the type genome is 58.91 % and the genome length is 1.36 Mbp.

**Description of *Candidatus Thermoproteus morigago* sp. nov.**

*Candidatus Thermoproteus morigago* (NL. fem. n. *morigago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermoproteus sp000960885*. The type genome for the species is the GenBank assembly GCA\_000960885.1. The GC content of the type genome is 57.95 % and the genome length is 1.69 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "muddy water from acid hot spring".

**Description of *Candidatus Thermoproteus venefentia* sp. nov.**

*Candidatus Thermoproteus venefentia* (NL. fem. n. *venefentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Thermoproteus sp002077075*. The type genome for the species is the GenBank assembly GCA\_011056725.1. The GC content of the type genome is 61.71 % and the genome length is 2.17 Mbp.

**Description of *Candidatus Tibicarcha rurigatica* sp. nov.**

*Candidatus Tibicarcha rurigatica* (NL. fem. n. *rurigatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSDF01 sp011048835*. The type genome for the species is the GenBank assembly GCA\_011048835.1. The GC content of the type genome is 61.25 % and the genome length is 1.99 Mbp.

**Description of *Candidatus Tibicarcha* gen. nov.**

*Candidatus Tibicarcha* (NL. fem. n. *Tibicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSDF01*. The type species for the genus is *Candidatus Tibicarcha rurigatica*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Tigurarcha senacitas* sp. nov.**

*Candidatus Tigurarcha senacitas* (NL. fem. n. *senacitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *BE-D sp003019595*. The type genome for the species is the GenBank assembly GCA\_003019595.1. The GC content of the type genome is 43.81 % and the genome length is 2.19 Mbp.

**Description of *Candidatus Tigurarcha* gen. nov.**

*Candidatus Tigurarcha* (NL. fem. n. *Tigurarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *BE-D*. The type species for the genus is *Candidatus Tigurarcha senacitas*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Timefarcha curotax* sp. nov.**

*Candidatus Timefarcha curotax* (NL. fem. n. *curotax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIVOO01 sp903907555*. The type genome for the species is the GenBank assembly GCA\_903892325.1. The GC content of the type genome is 40.23 %



and the genome length is 1.32 Mbp.

**Description of *Candidatus Timefarcha* gen. nov.**

*Candidatus Timefarcha* (NL. fem. n. *Timefarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIVOO01*. The type species for the genus is *Candidatus Timefarcha curotax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CAIVOO01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Timefarchaceae*.

**Description of *Candidatus Timefarchaceae* fam. nov.**

*Candidatus Timefarchaceae* (NL. fem. n. *Timefarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CAIVOO01*. The type genus for the taxon is *Candidatus Timefarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

**Description of *Candidatus Tirocarcha minagifica* sp. nov.**

*Candidatus Tirocarcha minagifica* (NL. fem. n. *minagifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR9 sp10194u*. The type genome for the species is the GenBank assembly GCA\_000805935.1. The GC content of the type genome is 42.18 % and the genome length is 0.49 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle groundwater metagenome at time 1".

**Description of *Candidatus Tirocarcha* gen. nov.**

*Candidatus Tirocarcha* (NL. fem. n. *Tirocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GW2011-AR9*. The type species for the genus is *Candidatus Tirocarcha minagifica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tirocarchaceae*.

#### **Description of *Candidatus Tirocarchaceae* fam. nov.**

*Candidatus Tirocarchaceae* (NL. fem. n. *Tirocarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GW2011-AR9*. The type genus for the taxon is *Candidatus Tirocarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Tirunarcha telefitrix* sp. nov.**

*Candidatus Tirunarcha telefitrix* (NL. fem. n. *telefitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYZ-LMO11 sp004348015*. The type genome for the species is the GenBank assembly GCA\_004212145.1. The GC content of the type genome is 28.44 % and the genome length is 1.05 Mbp.

#### **Description of *Candidatus Tirunarcha* gen. nov.**

*Candidatus Tirunarcha* (NL. fem. n. *Tirunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WYZ-LMO11*. The type species for the genus is *Candidatus Tirunarcha telefitrix*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Tolutarcha pavimedo* sp. nov.**

*Candidatus Tolutarcha pavimedo* (NL. fem. n. *pavimedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTMW01 sp011355145*. The type genome for the species is the GenBank assembly GCA\_011355145.1. The GC content of the type genome is 53.59 % and the genome length is 1.57 Mbp.

### **Description of *Candidatus Tolutarcha* gen. nov.**

*Candidatus Tolutarcha* (NL. fem. n. *Tolutarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTMW01*. The type species for the genus is *Candidatus Tolutarcha pavimedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTMW01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tolutarchaceae*.

### **Description of *Candidatus Tolutarchaceae* fam. nov.**

*Candidatus Tolutarchaceae* (NL. fem. n. *Tolutarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTMW01*. The type genus for the taxon is *Candidatus Tolutarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA10834*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Cilotarchales*.

### **Description of *Candidatus Tomacarcha bulapax* sp. nov.**

*Candidatus Tomacarcha bulapax* (NL. fem. n. *bulapax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B1-Br10-U2g21 sp001564035*. The type genome for the species is the GenBank assembly GCA\_001564035.1. The GC content of the type genome is 43.15 % and the genome length is 0.58 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample PL-Br10; brine of Picturesque Lake".

### **Description of *Candidatus Tomacarcha* gen. nov.**

*Candidatus Tomacarcha* (NL. fem. n. *Tomacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B1-Br10-U2g21*. The type species for the genus is *Candidatus Tomacarcha bulapax*.

According to GTDB R06-RS202, this genus belongs to the family .

**Description of *Candidatus Tomacarcha repecilega* sp. nov.**

*Candidatus Tomacarcha repecilega* (NL. fem. n. *repecilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B1-Br10-U2g21 sp001563915*. The type genome for the species is the GenBank assembly GCA\_001563915.1. The GC content of the type genome is 39.37 % and the genome length is 0.82 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample B1-Br-g2; brine of Lake Bitter-1".

**Description of *Candidatus Tomacarcha resacitudo* sp. nov.**

*Candidatus Tomacarcha resacitudo* (NL. fem. n. *resacitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B1-Br10-U2g21 sp001564145*. The type genome for the species is the GenBank assembly GCA\_001564145.1. The GC content of the type genome is 40.1 % and the genome length is 0.53 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "sample B1-Br-g2; brine of Lake Bitter-1".

**Description of *Candidatus Tomogarcha foricetta* sp. nov.**

*Candidatus Tomogarcha foricetta* (NL. fem. n. *foricetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADFO01 sp013152815*. The type genome for the species is the GenBank assembly GCA\_013152815.1. The GC content of the type genome is 53.34 % and the genome length is 1.49 Mbp.

**Description of *Candidatus Tomogarcha* gen. nov.**

*Candidatus Tomogarcha* (NL. fem. n. *Tomogarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADFO01*. The type species for the genus is *Candidatus Tomogarcha foricetta* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JAADFO01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tomogarchaceae*.

#### **Description of *Candidatus Tomogarchaceae* fam. nov.**

*Candidatus Tomogarchaceae* (NL. fem. n. *Tomogarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JAADFO01*. The type genus for the taxon is *Candidatus Tomogarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Totidarcha cimeliforma* sp. nov.**

*Candidatus Totidarcha cimeliforma* (NL. fem. n. *cimeliforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SCGC-AAA471-B05 sp000380705*. The type genome for the species is the GenBank assembly GCA\_011380355.1. The GC content of the type genome is 28.71 % and the genome length is 1.43 Mbp.

#### **Description of *Candidatus Totidarcha* gen. nov.**

*Candidatus Totidarcha* (NL. fem. n. *Totidarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SCGC-AAA471-B05*. The type species for the genus is *Candidatus Totidarcha cimeliforma*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Tubicarcha retunitudo* sp. nov.**

*Candidatus Tubicarcha retunitudo* (NL. fem. n. *retunitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10200 sp10200u*. The type genome for the species is the GenBank assembly GCA\_013331615.1. The GC content of the type genome is 36.25 % and the genome length is 1.54 Mbp.

### **Description of *Candidatus Tubicarcha* gen. nov.**

*Candidatus Tubicarcha* (NL. fem. n. *Tubicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10200*. The type species for the genus is *Candidatus Tubicarcha retunitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10200*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tubicarchaceae*.

### **Description of *Candidatus Tubicarchaceae* fam. nov.**

*Candidatus Tubicarchaceae* (NL. fem. n. *Tubicarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10200*. The type genus for the taxon is *Candidatus Tubicarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

### **Description of *Candidatus Tumefarcha funivedo* sp. nov.**

*Candidatus Tumefarcha funivedo* (NL. fem. n. *funivedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *0-14-0-20-30-16 sp002779075*. The type genome for the species is the GenBank assembly GCA\_002779075.1. The GC content of the type genome is 29.71 % and the genome length is 0.75 Mbp.

### **Description of *Candidatus Tumefarcha* gen. nov.**

*Candidatus Tumefarcha* (NL. fem. n. *Tumefarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *0-14-0-20-30-16*. The type species for the genus is *Candidatus Tumefarcha funivedo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *0-14-0-20-30-16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tumefarchaceae*.

### **Description of *Candidatus Tumefarchaceae* fam. nov.**

*Candidatus Tumefarchaceae* (NL. fem. n. *Tumefarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *0-14-0-20-30-16*. The type genus for the taxon is *Candidatus Tumefarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *0-14-0-20-30-16*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Tumefarchales*.

### **Description of *Candidatus Tumefarchales* ord. nov.**

*Candidatus Tumefarchales* (NL. fem. n. *Tumefarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *0-14-0-20-30-16*. The type genus for the taxon is *Candidatus Tumefarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Iainarchaeia*.

### **Description of *Candidatus Tumefarcha pinigigena* sp. nov.**

*Candidatus Tumefarcha pinigigena* (NL. fem. n. *pinigigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *0-14-0-20-30-16 sp903916665*. The type genome for the species is the GenBank assembly GCA\_903916665.1. The GC content of the type genome is 27.68 % and the genome length is 0.97 Mbp.

### **Description of *Candidatus Turibarcha vitigigena* sp. nov.**

*Candidatus Turibarcha vitigigena* (NL. fem. n. *vitigigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *1-14-0-10-45-29 sp002778455*. The type genome for the species is the GenBank assembly GCA\_002778455.1. The GC content of the type genome is 45.16 % and the genome length is 1.15 Mbp.

### **Description of *Candidatus Turibarcha* gen. nov.**

*Candidatus* Turibarcha (NL. fem. n. *Turibarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *1-14-0-10-45-29*. The type species for the genus is *Candidatus* Turibarcha vitigigena .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10161*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Siligarchaceae.

### **Description of *Candidatus* Turicarcha medimimonia sp. nov.**

*Candidatus* Turicarcha medimimonia (NL. fem. n. *medimimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTIP01 sp011333955*. The type genome for the species is the GenBank assembly GCA\_011333955.1. The GC content of the type genome is 36.6 % and the genome length is 0.46 Mbp.

### **Description of *Candidatus* Turicarcha gen. nov.**

*Candidatus* Turicarcha (NL. fem. n. *Turicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTIP01*. The type species for the genus is *Candidatus* Turicarcha medimimonia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10117*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Pinigarchaceae.

### **Description of *Candidatus* Turifarcha demagitoga sp. nov.**

*Candidatus* Turifarcha demagitoga (NL. fem. n. *demagitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CAIYYO01 sp903930485*. The type genome for the species is the GenBank assembly GCA\_903930485.1. The GC content of the type genome is 51.54 % and the genome length is 1.69 Mbp.



### **Description of *Candidatus Turifarcha* gen. nov.**

*Candidatus Turifarcha* (NL. fem. n. *Turifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CAIYYO01*. The type species for the genus is *Candidatus Turifarcha demagitoga*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZM01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nugivarchaceae*.

### **Description of *Candidatus Turilarcha peribitudo* sp. nov.**

*Candidatus Turilarcha peribitudo* (NL. fem. n. *peribitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMGN01 sp902385635*. The type genome for the species is the GenBank assembly GCA\_902385635.1. The GC content of the type genome is 34.86 % and the genome length is 0.59 Mbp.

### **Description of *Candidatus Turilarcha* gen. nov.**

*Candidatus Turilarcha* (NL. fem. n. *Turilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMGN01*. The type species for the genus is *Candidatus Turilarcha peribitudo*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Deseparchaceae*.

### **Description of *Candidatus Undinarchaeum maxilitica* sp. nov.**

*Candidatus Undinarchaeum maxilitica* (NL. fem. n. *maxilitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Undinarchaeum sp002687935*. The type genome for the species is the GenBank assembly GCA\_002494525.1. The GC content of the type genome is 40.91 % and the genome length is 0.64 Mbp.

### **Description of *Candidatus Undinarchaeum turibatio* sp. nov.**

*Candidatus Undinarchaeum turibatio* (NL. fem. n. *turibatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Undinarchaeum sp014189675*. The type genome for the species is the GenBank assembly GCA\_014189675.1. The GC content of the type genome is 41.76 % and the genome length is 0.62 Mbp.

### **Description of *Candidatus Vacilarcha rumifimonas* sp. nov.**

*Candidatus Vacilarcha rumifimonas* (NL. fem. n. *rumifimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-965745 sp000965745*. The type genome for the species is the GenBank assembly GCA\_000965745.1. The GC content of the type genome is 46.42 % and the genome length is 2.23 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Acid sulfate soils".

### **Description of *Candidatus Vacilarcha* gen. nov.**

*Candidatus Vacilarcha* (NL. fem. n. *Vacilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-965745*. The type species for the genus is *Candidatus Vacilarcha rumifimonas*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Vagabarcha foricilega* sp. nov.**

*Candidatus Vagabarcha foricilega* (NL. fem. n. *forcilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA168 sp011055275*. The type genome for the species is the GenBank assembly GCA\_011055275.1. The GC content of the type genome is 51.03 % and the genome length is 0.81 Mbp.

### **Description of *Candidatus Vagabarcha* gen. nov.**

*Candidatus Vagabarcha* (NL. fem. n. *Vagabarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA168*. The type species for the genus is *Candidatus Vagabarcha foricilega*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA168*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Vagabarchaceae*.

### **Description of *Candidatus Vagabarchaceae* fam. nov.**

*Candidatus Vagabarchaceae* (NL. fem. n. *Vagabarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA168*. The type genus for the taxon is *Candidatus Vagabarcha*.

According to GTDB R06-RS202, this family belongs to the order *Marsarchaeales*.

### **Description of *Candidatus Vagabarcha resulicella* sp. nov.**

*Candidatus Vagabarcha resulicella* (NL. fem. n. *resulicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA168 sp002507085*. The type genome for the species is the GenBank assembly GCA\_002507085.1. The GC content of the type genome is 53.38 % and the genome length is 0.89 Mbp.

### **Description of *Candidatus Valefarcha selecicula* sp. nov.**

*Candidatus Valefarcha selecicula* (NL. fem. n. *selecicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *TH5893 sp014523685*. The type genome for the species is the GenBank assembly GCA\_014523685.1. The GC content of the type genome is 38.25 % and the genome length is 1.88 Mbp.

### **Description of *Candidatus Valefarcha* gen. nov.**

*Candidatus Valefarcha* (NL. fem. n. *Valefarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *TH5893*. The type species for the genus is *Candidatus* *Valefarcha selecicula*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* *Vanidarcha cenacax* sp. nov.**

*Candidatus* *Vanidarcha cenacax* (NL. fem. n. *cenacax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWHV01 sp003557905*. The type genome for the species is the GenBank assembly GCA\_003557905.1. The GC content of the type genome is 54.87 % and the genome length is 1.56 Mbp.

#### **Description of *Candidatus* *Vanidarcha* gen. nov.**

*Candidatus* *Vanidarcha* (NL. fem. n. *Vanidarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *PWHV01*. The type species for the genus is *Candidatus* *Vanidarcha cenacax*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus* *Vanidarcha colapitrix* sp. nov.**

*Candidatus* *Vanidarcha colapitrix* (NL. fem. n. *colapitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWHV01 sp003560875*. The type genome for the species is the GenBank assembly GCA\_003560875.1. The GC content of the type genome is 56.75 % and the genome length is 1.05 Mbp.

#### **Description of *Candidatus* *Vanidarcha decatigena* sp. nov.**

*Candidatus* *Vanidarcha decatigena* (NL. fem. n. *decatigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *PWHV01 sp007116915*. The type genome for the species is the GenBank assembly GCA\_007116915.1. The GC content of the type genome is 53.91 % and the genome length is 0.96 Mbp.

**Description of *Candidatus Vanidarcha filifitas* sp. nov.**

*Candidatus Vanidarcha filifitas* (NL. fem. n. *filifitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWHV01 sp003555025*. The type genome for the species is the GenBank assembly GCA\_003555025.1. The GC content of the type genome is 61.98 % and the genome length is 1.41 Mbp.

**Description of *Candidatus Vanidarcha retecisca* sp. nov.**

*Candidatus Vanidarcha retecisca* (NL. fem. n. *retecisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWHV01 sp003550345*. The type genome for the species is the GenBank assembly GCA\_003550345.1. The GC content of the type genome is 62.57 % and the genome length is 1.4 Mbp.

**Description of *Candidatus Vanidarcha tegumimonas* sp. nov.**

*Candidatus Vanidarcha tegumimonas* (NL. fem. n. *tegunimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *PWHV01 sp007117455*. The type genome for the species is the GenBank assembly GCA\_007117455.1. The GC content of the type genome is 55.58 % and the genome length is 1.14 Mbp.

**Description of *Candidatus Vanitarcha conifax* sp. nov.**

*Candidatus Vanitarcha conifax* (NL. fem. n. *conifax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QENJ01 sp013180585*. The type genome for the species is the GenBank assembly GCA\_013180585.1. The GC content of the type genome is 42.67 % and the genome length is 2.19 Mbp.

### **Description of *Candidatus Vanitarcha* gen. nov.**

*Candidatus Vanitarcha* (NL. fem. n. *Vanitarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *QENJ01*. The type species for the genus is *Candidatus Vanitarcha conifax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ANME-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Loriparchaceae*.

### **Description of *Candidatus Vanitarcha semimatio* sp. nov.**

*Candidatus Vanitarcha semimatio* (NL. fem. n. *semimatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *QENJ01 sp013374505*. The type genome for the species is the GenBank assembly GCA\_013374505.1. The GC content of the type genome is 43.28 % and the genome length is 2.57 Mbp.

### **Description of *Candidatus Vatilarcha bicinousia* sp. nov.**

*Candidatus Vatilarcha bicinousia* (NL. fem. n. *bicinousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9949 sp002068435*. The type genome for the species is the GenBank assembly GCA\_002068435.1. The GC content of the type genome is 53.36 % and the genome length is 2.25 Mbp.

### **Description of *Candidatus Vatilarcha* gen. nov.**

*Candidatus Vatilarcha* (NL. fem. n. *Vatilarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA9949*. The type species for the genus is *Candidatus Vatilarcha bicinousia*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Vatilarcha cataliforma* sp. nov.**

*Candidatus* Vatilarcha cataliforma (NL. fem. n. *cataliforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9949 sp013415565*. The type genome for the species is the GenBank assembly GCA\_013415565.1. The GC content of the type genome is 59.03 % and the genome length is 1.69 Mbp.

**Description of *Candidatus* Vatilarcha ceromicula sp. nov.**

*Candidatus* Vatilarcha ceromicula (NL. fem. n. *ceromicula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9949 sp10516u*. The type genome for the species is the GenBank assembly GCA\_013331415.1. The GC content of the type genome is 58.85 % and the genome length is 1.73 Mbp.

**Description of *Candidatus* Vatilarcha dicanitura sp. nov.**

*Candidatus* Vatilarcha dicanitura (NL. fem. n. *dicanitura* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9949 sp002499905*. The type genome for the species is the GenBank assembly GCA\_002497785.1. The GC content of the type genome is 57.74 % and the genome length is 1.81 Mbp.

**Description of *Candidatus* Vatilarcha docibax sp. nov.**

*Candidatus* Vatilarcha docibax (NL. fem. n. *docibax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9949 sp012516785*. The type genome for the species is the GenBank assembly GCA\_012516785.1. The GC content of the type genome is 53.82 % and the genome length is 1.96 Mbp.

**Description of *Candidatus* Vatilarcha semodigena sp. nov.**

*Candidatus* Vatilarcha semodigena (NL. fem. n. *semodigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA9949 sp013415575*. The type genome for the species is the GenBank assembly GCA\_013415575.1. The GC content of the type genome is 57.63 % and the genome length is 1.41 Mbp.

**Description of *Candidatus Vavasarcha resuritoga* sp. nov.**

*Candidatus Vavasarcha resuritoga* (NL. fem. n. *resuritoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DSBS01 sp011045925*. The type genome for the species is the GenBank assembly GCA\_011045925.1. The GC content of the type genome is 41.87 % and the genome length is 0.94 Mbp.

**Description of *Candidatus Vavasarcha* gen. nov.**

*Candidatus Vavasarcha* (NL. fem. n. *Vavasarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DSBS01*. The type species for the genus is *Candidatus Vavasarcha resuritoga*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA119*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Foricarchaceae*.

**Description of *Candidatus Vecorarcha carecatio* sp. nov.**

*Candidatus Vecorarcha carecatio* (NL. fem. n. *carecatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABLXE01 sp013178225*. The type genome for the species is the GenBank assembly GCA\_013178225.1. The GC content of the type genome is 53.74 % and the genome length is 2.98 Mbp.

**Description of *Candidatus Vecorarcha* gen. nov.**

*Candidatus Vecorarcha* (NL. fem. n. *Vecorarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this genus is *JABLXE01*. The type species for the genus is *Candidatus Vecorarcha carecatio*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Vehemarcha munimibra* sp. nov.**

*Candidatus Vehemarcha munimibra* (NL. fem. n. *munimibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA447 sp002503205*. The type genome for the species is the GenBank assembly GCA\_002499685.1. The GC content of the type genome is 42.98 % and the genome length is 1.67 Mbp.

#### **Description of *Candidatus Vehemarcha* gen. nov.**

*Candidatus Vehemarcha* (NL. fem. n. *Vehemarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA447*. The type species for the genus is *Candidatus Vehemarcha munimibra*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Vehicarcha loraribra* sp. nov.**

*Candidatus Vehicarcha loraribra* (NL. fem. n. *loraribra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA12382 sp002503845*. The type genome for the species is the GenBank assembly GCA\_002496825.1. The GC content of the type genome is 41.55 % and the genome length is 1.12 Mbp.

#### **Description of *Candidatus Vehicarcha* gen. nov.**

*Candidatus Vehicarcha* (NL. fem. n. *Vehicarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA12382*. The type species for the genus is *Candidatus Vehicarcha loraribra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA12382*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Vehicarchaceae*.

### **Description of *Candidatus Vehicarchaceae* fam. nov.**

*Candidatus Vehicarchaceae* (NL. fem. n. *Vehicarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA12382*. The type genus for the taxon is *Candidatus Vehicarcha*.

According to GTDB R06-RS202, this family belongs to the order *Halobacteriales*.

### **Description of *Candidatus Vehicarcha lucifitudo* sp. nov.**

*Candidatus Vehicarcha lucifitudo* (NL. fem. n. *lucifitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA12382 sp009889625*. The type genome for the species is the GenBank assembly GCA\_009889625.1. The GC content of the type genome is 40.24 % and the genome length is 1.07 Mbp.

### **Description of *Candidatus Vehicarcha mimogilenta* sp. nov.**

*Candidatus Vehicarcha mimogilenta* (NL. fem. n. *mimogilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA12382 sp009889685*. The type genome for the species is the GenBank assembly GCA\_009889685.1. The GC content of the type genome is 40.72 % and the genome length is 0.92 Mbp.

### **Description of *Candidatus Velifarcha saxifatio* sp. nov.**

*Candidatus Velifarcha saxifatio* (NL. fem. n. *saxifatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GW2011-AR18 sp000806155*. The type genome for the species is the GenBank assembly GCA\_000806155.1. The GC content of the type genome is 29.72 % and the genome length is 0.82 Mbp. The isolation source for the NCBI BioSample

associated with the type genome is described as "Rifle groundwater metagenome at time 1".

#### **Description of *Candidatus Velifarcha* gen. nov.**

*Candidatus Velifarcha* (NL. fem. n. *Velifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GW2011-AR18*. The type species for the genus is *Candidatus Velifarcha saxifatio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR18*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Velifarchaceae*.

#### **Description of *Candidatus Velifarchaceae* fam. nov.**

*Candidatus Velifarchaceae* (NL. fem. n. *Velifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GW2011-AR18*. The type genus for the taxon is *Candidatus Velifarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *SCGC-AAA011-G17*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Lanifarchales*.

#### **Description of *Candidatus Velivarcha legifibra* sp. nov.**

*Candidatus Velivarcha legifibra* (NL. fem. n. *legifibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-218 sp002254975*. The type genome for the species is the GenBank assembly GCA\_002254975.1. The GC content of the type genome is 33.1 % and the genome length is 0.63 Mbp.

#### **Description of *Candidatus Velivarcha* gen. nov.**

*Candidatus Velivarcha* (NL. fem. n. *Velivarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-218*. The type species for the genus is *Candidatus Velivarcha legifibra*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B25*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Diponarchaceae*.

**Description of *Candidatus Velivarcha solipedo* sp. nov.**

*Candidatus Velivarcha solipedo* (NL. fem. n. *solipedo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-218 sp003661965*. The type genome for the species is the GenBank assembly GCA\_003661965.1. The GC content of the type genome is 39.11 % and the genome length is 1.3 Mbp.

**Description of *Candidatus Venabarcha hibisetta* sp. nov.**

*Candidatus Venabarcha hibisetta* (NL. fem. n. *hibisetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GLR71 sp013138805*. The type genome for the species is the GenBank assembly GCA\_013138805.1. The GC content of the type genome is 40.32 % and the genome length is 1.33 Mbp.

**Description of *Candidatus Venabarcha* gen. nov.**

*Candidatus Venabarcha* (NL. fem. n. *Venabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GLR71*. The type species for the genus is *Candidatus Venabarcha hibisetta* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GLR71*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Venabarchaceae*.

**Description of *Candidatus Venabarchaceae* fam. nov.**

*Candidatus Venabarchaceae* (NL. fem. n. *Venabarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GLR71*. The type genus for the taxon is *Candidatus Venabarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-52*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Bifararchales*.

**Description of *Candidatus Venabarcha manuficula* sp. nov.**

*Candidatus Venabarcha manuficula* (NL. fem. n. *manuficula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GLR71 sp013138765*. The type genome for the species is the GenBank assembly GCA\_013138765.1. The GC content of the type genome is 36.39 % and the genome length is 1.26 Mbp.

**Description of *Candidatus Venefarcha purulitas* sp. nov.**

*Candidatus Venefarcha purulitas* (NL. fem. n. *purulitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4484-15 sp002254595*. The type genome for the species is the GenBank assembly GCA\_002254595.1. The GC content of the type genome is 42.59 % and the genome length is 0.72 Mbp.

**Description of *Candidatus Venefarcha* gen. nov.**

*Candidatus Venefarcha* (NL. fem. n. *Venefarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4484-15*. The type species for the genus is *Candidatus Venefarcha purulitas*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *EX4484-15*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Venefarchaceae*.

**Description of *Candidatus Venefarchaceae* fam. nov.**

*Candidatus Venefarchaceae* (NL. fem. n. *Venefarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *EX4484-15*. The type genus for the taxon is *Candidatus Venefarcha*.

According to GTDB R06-RS202, this family belongs to the order *Thermofilales*.

**Description of *Candidatus Venunarcha saxopitica* sp. nov.**

*Candidatus Venunarcha saxopitica* (NL. fem. n. *saxopitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *J072 sp003695265*. The type genome for the species is the GenBank assembly GCA\_003695265.1. The GC content of the type genome is 40.33 % and the genome length is 1.06 Mbp.

**Description of *Candidatus Venunarcha* gen. nov.**

*Candidatus Venunarcha* (NL. fem. n. *Venunarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *J072*. The type species for the genus is *Candidatus Venunarcha saxopitica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *J072*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Venunarchaceae*.

**Description of *Candidatus Venunarchaceae* fam. nov.**

*Candidatus Venunarchaceae* (NL. fem. n. *Venunarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *J072*. The type genus for the taxon is *Candidatus Venunarcha*.

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

**Description of *Candidatus Vepalarcha pulegibula* sp. nov.**

*Candidatus Vepalarcha pulegibula* (NL. fem. n. *pulegibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABLT101 sp013166835*. The type genome for the species is the GenBank assembly GCA\_013166835.1. The GC content of the type genome is 33.72 % and the genome length is 3.56 Mbp.

### **Description of *Candidatus Vepalarcha* gen. nov.**

*Candidatus Vepalarcha* (NL. fem. n. *Vepalarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JABLT101*. The type species for the genus is *Candidatus Vepalarcha pulegibula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JABLT101*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Vepalarchaceae*.

### **Description of *Candidatus Vepalarchaceae* fam. nov.**

*Candidatus Vepalarchaceae* (NL. fem. n. *Vepalarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JABLT101*. The type genus for the taxon is *Candidatus Vepalarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *JABLT101*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Vepalarchales*.

### **Description of *Candidatus Vepalarchales* ord. nov.**

*Candidatus Vepalarchales* (NL. fem. n. *Vepalarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JABLT101*. The type genus for the taxon is *Candidatus Vepalarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Heimdallarchaeia*.

### **Description of *Candidatus Veridarcha decatilenta* sp. nov.**

*Candidatus Veridarcha decatilenta* (NL. fem. n. *decatilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-57-9 sp013619005*. The type genome for the species is the GenBank assembly GCA\_013619005.1. The GC content of the type genome is 53.78 % and the genome length is 1.75 Mbp.

### **Description of *Candidatus Veridarcha* gen. nov.**

*Candidatus Veridarcha* (NL. fem. n. *Veridarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *RBG-16-57-9*. The type species for the genus is *Candidatus Veridarcha decatilenta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *TCS64*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tegumarchaceae*.

#### **Description of *Candidatus Veridarcha desuletta* sp. nov.**

*Candidatus Veridarcha desuletta* (NL. fem. n. *desuletta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-57-9 sp001776015*. The type genome for the species is the GenBank assembly GCA\_001776015.1. The GC content of the type genome is 59.46 % and the genome length is 1.52 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 16ft depth".

#### **Description of *Candidatus Veridarcha sicubimonia* sp. nov.**

*Candidatus Veridarcha sicubimonia* (NL. fem. n. *sicubimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *RBG-16-57-9 sp001775965*. The type genome for the species is the GenBank assembly GCA\_001775965.1. The GC content of the type genome is 61.18 % and the genome length is 1.22 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Rifle background sediment; well D04 at 13ft depth".

#### **Description of *Candidatus Viburarcha metabicella* sp. nov.**

*Candidatus Viburarcha metabicella* (NL. fem. n. *metabicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA11998 sp11998u*. The type genome for the species is the GenBank assembly GCA\_013330875.1. The GC content of the type genome is 38.96 % and the genome length is 1.3 Mbp.



### **Description of *Candidatus Viburarcha* gen. nov.**

*Candidatus Viburarcha* (NL. fem. n. *Viburarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA11998*. The type species for the genus is *Candidatus Viburarcha metabicella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Tirocarchaceae*.

### **Description of *Candidatus Viburarcha resacimonia* sp. nov.**

*Candidatus Viburarcha resacimonia* (NL. fem. n. *resacimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA11998 sp002762785*. The type genome for the species is the GenBank assembly GCA\_002762785.1. The GC content of the type genome is 44.81 % and the genome length is 1.18 Mbp.

### **Description of *Candidatus Viburarcha resalugo* sp. nov.**

*Candidatus Viburarcha resalugo* (NL. fem. n. *resalugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA11998 sp002686315*. The type genome for the species is the GenBank assembly GCA\_002686315.1. The GC content of the type genome is 39.19 % and the genome length is 1.15 Mbp.

### **Description of *Candidatus Vicatarcha lucubugo* sp. nov.**

*Candidatus Vicatarcha lucubugo* (NL. fem. n. *lucubugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACGMN01 sp014061035*. The type genome for the species is the GenBank assembly GCA\_014061035.1. The GC content of the type genome is 44.52 % and the genome length is 1.07 Mbp.

### **Description of *Candidatus Vicatarcha* gen. nov.**

*Candidatus* Vicatarcha (NL. fem. n. *Vicatarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JACGMN01*. The type species for the genus is *Candidatus* Vicatarcha lucubugo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *ANME-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Loriparchaceae.

### **Description of *Candidatus* Vicatarcha solivastra sp. nov.**

*Candidatus* Vicatarcha solivastra (NL. fem. n. *solivastra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JACGMN01 sp011049045*. The type genome for the species is the GenBank assembly GCA\_011049045.1. The GC content of the type genome is 55.24 % and the genome length is 2.0 Mbp.

### **Description of *Candidatus* Vicecarcha munifentia sp. nov.**

*Candidatus* Vicecarcha munifentia (NL. fem. n. *munifentia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTNT01 sp011358475*. The type genome for the species is the GenBank assembly GCA\_011358475.1. The GC content of the type genome is 41.69 % and the genome length is 0.82 Mbp.

### **Description of *Candidatus* Vicecarcha gen. nov.**

*Candidatus* Vicecarcha (NL. fem. n. *Vicecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTNT01*. The type species for the genus is *Candidatus* Vicecarcha munifentia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Volubarchaceae.

### **Description of *Candidatus Videlarcha categoriforma* sp. nov.**

*Candidatus Videlarcha categoriforma* (NL. fem. n. *categoriforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *EX4572-165 sp002254885*. The type genome for the species is the GenBank assembly GCA\_002254885.1. The GC content of the type genome is 32.07 % and the genome length is 1.2 Mbp.

### **Description of *Candidatus Videlarcha* gen. nov.**

*Candidatus Videlarcha* (NL. fem. n. *Videlarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *EX4572-165*. The type species for the genus is *Candidatus Videlarcha categoriforma*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DHVEG-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Pedifarchaceae*.

### **Description of *Candidatus Vigenarcha* gen. nov.**

*Candidatus Vigenarcha* (NL. fem. n. *Vigenarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTBP01*. The type species for the genus is *Candidatus Vigenarcha marinus\_A*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Viginarcha fumifitudo* sp. nov.**

*Candidatus Viginarcha fumifitudo* (NL. fem. n. *fumifitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *AMARA-1 sp004524545*. The type genome for the species is the GenBank assembly GCA\_004524545.1. The GC content of the type genome is 35.73 % and the genome length is 2.55 Mbp.

### **Description of *Candidatus Viginarcha* gen. nov.**

*Candidatus* Viginarcha (NL. fem. n. *Viginarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *AMARA-1*. The type species for the genus is *Candidatus* Viginarcha fumifitudo .

According to the original version of GTDB R06-RS202, this genus belongs to the family *AMARA-1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Viginarchaceae.

### **Description of *Candidatus* Viginarchaceae fam. nov.**

*Candidatus* Viginarchaceae (NL. fem. n. *Viginarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *AMARA-1*. The type genus for the taxon is *Candidatus* Viginarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *CR-4*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Lametarchales.

### **Description of *Candidatus* Viliparcha xeramessa sp. nov.**

*Candidatus* Viliparcha xeramessa (NL. fem. n. *xeramessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-002792115 sp002792115*. The type genome for the species is the GenBank assembly GCA\_002792115.1. The GC content of the type genome is 33.22 % and the genome length is 1.33 Mbp.

### **Description of *Candidatus* Viliparcha gen. nov.**

*Candidatus* Viliparcha (NL. fem. n. *Viliparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-002792115*. The type species for the genus is *Candidatus* Viliparcha xeramessa .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GW2011-AR9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Tirocarchaceae.

### **Description of *Candidatus Vilitarcha monimitrix* sp. nov.**

*Candidatus Vilitarcha monimitrix* (NL. fem. n. *monimitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA588 sp003558085*. The type genome for the species is the GenBank assembly GCA\_003558085.1. The GC content of the type genome is 35.42 % and the genome length is 1.86 Mbp.

### **Description of *Candidatus Vilitarcha* gen. nov.**

*Candidatus Vilitarcha* (NL. fem. n. *Vilitarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA588*. The type species for the genus is *Candidatus Vilitarcha monimitrix*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Vilitarcha regifax* sp. nov.**

*Candidatus Vilitarcha regifax* (NL. fem. n. *regifax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA588 sp002509085*. The type genome for the species is the GenBank assembly GCA\_003600755.1. The GC content of the type genome is 36.46 % and the genome length is 2.07 Mbp.

### **Description of *Candidatus Vinacarcha cuticatica* sp. nov.**

*Candidatus Vinacarcha cuticatica* (NL. fem. n. *cuticatica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B79-G9 sp003660865*. The type genome for the species is the GenBank assembly GCA\_003660865.1. The GC content of the type genome is 41.17 % and the genome length is 1.2 Mbp.

### **Description of *Candidatus Vinacarcha* gen. nov.**

*Candidatus Vinacarcha* (NL. fem. n. *Vinacarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B79-G9*. The type species for the genus is *Candidatus Vinacarcha cuticata*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *B79-G9*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Vinacarchaceae*.

#### **Description of *Candidatus Vinacarchaceae* fam. nov.**

*Candidatus Vinacarchaceae* (NL. fem. n. *Vinacarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B79-G9*. The type genus for the taxon is *Candidatus Vinacarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-52*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Bifararchales*.

#### **Description of *Candidatus Vinularcha denavilenta* sp. nov.**

*Candidatus Vinularcha denavilenta* (NL. fem. n. *denavilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *WYEN01 sp009903825*. The type genome for the species is the GenBank assembly GCA\_011380155.1. The GC content of the type genome is 36.46 % and the genome length is 2.03 Mbp.

#### **Description of *Candidatus Vinularcha* gen. nov.**

*Candidatus Vinularcha* (NL. fem. n. *Vinularcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *WYEN01*. The type species for the genus is *Candidatus Vinularcha denavilenta*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *AG1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Purularchaceae*.

#### **Description of *Candidatus Viragarcha decititica* sp. nov.**

*Candidatus* Viragarcha decititica (NL. fem. n. *decititica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *B33-G15 sp003660925*. The type genome for the species is the GenBank assembly GCA\_003660925.1. The GC content of the type genome is 48.89 % and the genome length is 0.67 Mbp.

### **Description of *Candidatus* Viragarcha gen. nov.**

*Candidatus* Viragarcha (NL. fem. n. *Viragarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *B33-G15*. The type species for the genus is *Candidatus* Viragarcha decititica .

According to the original version of GTDB R06-RS202, this genus belongs to the family *B33-G15*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Viragarchaceae.

### **Description of *Candidatus* Viragarchaceae fam. nov.**

*Candidatus* Viragarchaceae (NL. fem. n. *Viragarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B33-G15*. The type genus for the taxon is *Candidatus* Viragarcha .

According to the original version of GTDB R06-RS202, this family belongs to the order *B33-G15*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus* Viragarchales.

### **Description of *Candidatus* Viragarchales ord. nov.**

*Candidatus* Viragarchales (NL. fem. n. *Viragarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *B33-G15*. The type genus for the taxon is *Candidatus* Viragarcha .

According to the GTDB R06-RS202, this order belongs to the class *Nanoarchaeia*.

### **Description of *Candidatus* Virecarcha sonipedo sp. nov.**

*Candidatus* Virecarcha sonipedo (NL. fem. n. *sonipedo* a species epithet created

arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA509 sp002498845*. The type genome for the species is the GenBank assembly GCA\_000447225.1. The GC content of the type genome is 46.23 % and the genome length is 1.99 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "isolated from slime streamers and attached to pyrite surfaces at a sulfide ore body".

#### **Description of *Candidatus Virecarcha* gen. nov.**

*Candidatus Virecarcha* (NL. fem. n. *Virecarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA509*. The type species for the genus is *Candidatus Virecarcha sonipedo*.

According to GTDB R06-RS202, this genus belongs to the family .

#### **Description of *Candidatus Viriparcha cituvitia* sp. nov.**

*Candidatus Viriparcha cituvitia* (NL. fem. n. *cituvitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JABMPP01 sp013202955*. The type genome for the species is the GenBank assembly GCA\_013202955.1. The GC content of the type genome is 32.64 % and the genome length is 1.2 Mbp.

#### **Description of *Candidatus Viriparcha* gen. nov.**

*Candidatus Viriparcha* (NL. fem. n. *Viriparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JABMPP01*. The type species for the genus is *Candidatus Viriparcha cituvitia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *JABMPP01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Viriparchaceae*.

#### **Description of *Candidatus Viriparchaceae* fam. nov.**



*Candidatus* Viriparchaceae (NL. fem. n. *Viriparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *JABMPP01*. The type genus for the taxon is *Candidatus* Viriparcha .

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus* Visifarcha cocodousia sp. nov.**

*Candidatus* Visifarcha cocodousia (NL. fem. n. *cocodousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8886 sp003193815*. The type genome for the species is the GenBank assembly GCA\_003193815.1. The GC content of the type genome is 65.42 % and the genome length is 0.7 Mbp.

#### **Description of *Candidatus* Visifarcha gen. nov.**

*Candidatus* Visifarcha (NL. fem. n. *Visifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA8886*. The type species for the genus is *Candidatus* Visifarcha cocodousia .

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG-Epi1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Volucarchaceae.

#### **Description of *Candidatus* Visifarcha conigigena sp. nov.**

*Candidatus* Visifarcha conigigena (NL. fem. n. *conigigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8886 sp002687355*. The type genome for the species is the GenBank assembly GCA\_002687355.1. The GC content of the type genome is 56.4 % and the genome length is 0.92 Mbp.

#### **Description of *Candidatus* Visifarcha desucugo sp. nov.**

*Candidatus* Visifarcha desucugo (NL. fem. n. *desucugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8886 sp002731905*. The type genome for the species is the GenBank assembly GCA\_002731905.1. The GC content of the type genome is 57.91 % and the genome length is 0.97 Mbp.

**Description of *Candidatus Visifarcha divorilega* sp. nov.**

*Candidatus Visifarcha divorilega* (NL. fem. n. *divorilega* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8886 sp002731655*. The type genome for the species is the GenBank assembly GCA\_004195655.1. The GC content of the type genome is 63.55 % and the genome length is 1.23 Mbp.

**Description of *Candidatus Visifarcha tabifousia* sp. nov.**

*Candidatus Visifarcha tabifousia* (NL. fem. n. *tabifousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA8886 sp002509165*. The type genome for the species is the GenBank assembly GCA\_002495305.1. The GC content of the type genome is 64.9 % and the genome length is 1.17 Mbp.

**Description of *Candidatus Visocarcha taraxicella* sp. nov.**

*Candidatus Visocarcha taraxicella* (NL. fem. n. *taraxicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JAADIF01 sp013151465*. The type genome for the species is the GenBank assembly GCA\_013151465.1. The GC content of the type genome is 42.42 % and the genome length is 0.93 Mbp.

**Description of *Candidatus Visocarcha* gen. nov.**

*Candidatus Visocarcha* (NL. fem. n. *Visocarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JAADIF01*. The type species for the genus is *Candidatus Visocarcha*

taraxicella .

According to the original version of GTDB R06-RS202, this genus belongs to the family *QMZT01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Nitelarchaceae*.

#### **Description of *Candidatus Vitabarcha fetutigena* sp. nov.**

*Candidatus Vitabarcha fetutigena* (NL. fem. n. *fetutigena* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SW-10-69-26 sp003009755*. The type genome for the species is the GenBank assembly GCA\_003009755.1. The GC content of the type genome is 69.28 % and the genome length is 2.82 Mbp.

#### **Description of *Candidatus Vitabarcha* gen. nov.**

*Candidatus Vitabarcha* (NL. fem. n. *Vitabarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SW-10-69-26*. The type species for the genus is *Candidatus Vitabarcha fetutigena* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *SW-10-69-26*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Vitabarchaceae*.

#### **Description of *Candidatus Vitabarchaceae* fam. nov.**

*Candidatus Vitabarchaceae* (NL. fem. n. *Vitabarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SW-10-69-26*. The type genus for the taxon is *Candidatus Vitabarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the order *SW-10-69-26*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Vitabarchales*.

#### **Description of *Candidatus Vitabarchales* ord. nov.**

*Candidatus Vitabarchales* (NL. fem. n. *Vitabarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SW-10-69-26*. The type genus for the taxon is *Candidatus Vitabarcha* .

According to the original version of GTDB R06-RS202, this family belongs to the class *SW-10-69-26*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the class *Candidatus Vitabarchae*.

#### **Description of *Candidatus Vitabarchae* class. nov.**

*Candidatus Vitabarchae* (NL. fem. n. *c\_\_Vitabarchae* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SW-10-69-26*. The type genus for the taxon is *Candidatus Vitabarcha* .

According to GTDB R06-RS202, this class belongs to the phylum *Thermoplasmatota*.

#### **Description of *Candidatus Vitifarcha homagibula* sp. nov.**

*Candidatus Vitifarcha homagibula* (NL. fem. n. *homagibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *JdFR-42 sp002010305*. The type genome for the species is the GenBank assembly GCA\_003935005.1. The GC content of the type genome is 40.22 % and the genome length is 2.13 Mbp.

#### **Description of *Candidatus Vitifarcha* gen. nov.**

*Candidatus Vitifarcha* (NL. fem. n. *Vitifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *JdFR-42*. The type species for the genus is *Candidatus Vitifarcha homagibula* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *JdFR-42*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Vitifarchaceae*.

#### **Description of *Candidatus Vitifarchaceae* fam. nov.**

*Candidatus Vitifarchaceae* (NL. fem. n. *Vitifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this taxon is *JdFR-42*. The type genus for the taxon is *Candidatus Vitifarcha* .  
According to GTDB R06-RS202, this family belongs to the order *Archaeoglobales*.

#### **Description of *Candidatus Vitigarcha defulago* sp. nov.**

*Candidatus Vitigarcha defulago* (NL. fem. n. *defulago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2686295 sp002686295*. The type genome for the species is the GenBank assembly GCA\_002686295.1. The GC content of the type genome is 30.16 % and the genome length is 0.86 Mbp.

#### **Description of *Candidatus Vitigarcha* gen. nov.**

*Candidatus Vitigarcha* (NL. fem. n. *Vitigarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *GCA-2686295*. The type species for the genus is *Candidatus Vitigarcha defulago* .

According to the original version of GTDB R06-RS202, this genus belongs to the family *GCA-2686295*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Vitigarchaceae*.

#### **Description of *Candidatus Vitigarchaceae* fam. nov.**

*Candidatus Vitigarchaceae* (NL. fem. n. *Vitigarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *GCA-2686295*. The type genus for the taxon is *Candidatus Vitigarcha* .

According to GTDB R06-RS202, this family belongs to the order *Woesearchaeales*.

#### **Description of *Candidatus Vitigarcha rutabousia* sp. nov.**

*Candidatus Vitigarcha rutabousia* (NL. fem. n. *rutabousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2686295 sp014384455*. The type genome for the species is the GenBank assembly GCA\_014384455.1. The GC content of the type genome is 33.5 %

and the genome length is 1.31 Mbp.

**Description of *Candidatus Vitigarcha saburax* sp. nov.**

*Candidatus Vitigarcha saburax* (NL. fem. n. *saburax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2686295 sp013202845*. The type genome for the species is the GenBank assembly GCA\_013202845.1. The GC content of the type genome is 34.89 % and the genome length is 1.2 Mbp.

**Description of *Candidatus Vitigarcha sacopax* sp. nov.**

*Candidatus Vitigarcha sacopax* (NL. fem. n. *sacopax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *GCA-2686295 sp014384375*. The type genome for the species is the GenBank assembly GCA\_014384375.1. The GC content of the type genome is 35.56 % and the genome length is 1.27 Mbp.

**Description of *Candidatus Vituparcha derunisca* sp. nov.**

*Candidatus Vituparcha derunisca* (NL. fem. n. *derunisca* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTIM01 sp011333975*. The type genome for the species is the GenBank assembly GCA\_011333975.1. The GC content of the type genome is 27.76 % and the genome length is 0.52 Mbp.

**Description of *Candidatus Vituparcha* gen. nov.**

*Candidatus Vituparcha* (NL. fem. n. *Vituparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTIM01*. The type species for the genus is *Candidatus Vituparcha derunisca*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS1285*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Corocarchaceae*.

### **Description of *Candidatus Vivifarcha betaciforma* sp. nov.**

*Candidatus Vivifarcha betaciforma* (NL. fem. n. *betaciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002172375*. The type genome for the species is the GenBank assembly GCA\_002172375.1. The GC content of the type genome is 36.77 % and the genome length is 1.4 Mbp.

### **Description of *Candidatus Vivifarcha* gen. nov.**

*Candidatus Vivifarcha* (NL. fem. n. *Vivifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *MGIIB-O3*. The type species for the genus is *Candidatus Vivifarcha betaciforma*.

According to GTDB R06-RS202, this genus belongs to the family .

### **Description of *Candidatus Vivifarcha bonitilenta* sp. nov.**

*Candidatus Vivifarcha bonitilenta* (NL. fem. n. *bonitilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002728565*. The type genome for the species is the GenBank assembly GCA\_002728565.1. The GC content of the type genome is 49.69 % and the genome length is 1.38 Mbp.

### **Description of *Candidatus Vivifarcha catabetta* sp. nov.**

*Candidatus Vivifarcha catabetta* (NL. fem. n. *catabetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002730445*. The type genome for the species is the GenBank assembly GCA\_002730445.1. The GC content of the type genome is 50.8 % and the genome length is 1.31 Mbp.

### **Description of *Candidatus Vivifarcha ceromitica* sp. nov.**

*Candidatus Vivifarcha ceromitica* (NL. fem. n. *ceromitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O3 sp002723045*. The type genome for the species is the GenBank assembly GCA\_002723045.1. The GC content of the type genome is 50.94 % and the genome length is 0.87 Mbp.

**Description of *Candidatus Vivifarcha cilibatio* sp. nov.**

*Candidatus Vivifarcha cilibatio* (NL. fem. n. *cilibatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O3 sp902573015*. The type genome for the species is the GenBank assembly GCA\_902573015.1. The GC content of the type genome is 49.95 % and the genome length is 1.08 Mbp.

**Description of *Candidatus Vivifarcha cocolax* sp. nov.**

*Candidatus Vivifarcha cocolax* (NL. fem. n. *cocolax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O3 sp001629205*. The type genome for the species is the GenBank assembly GCA\_001629205.1. The GC content of the type genome is 36.9 % and the genome length is 1.27 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Red Sea water column Station 149 - depth 50m".

**Description of *Candidatus Vivifarcha dedigifica* sp. nov.**

*Candidatus Vivifarcha dedigifica* (NL. fem. n. *dedigifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O3 sp002716085*. The type genome for the species is the GenBank assembly GCA\_002693905.2. The GC content of the type genome is 50.28 % and the genome length is 1.2 Mbp.

**Description of *Candidatus Vivifarcha defenimonia* sp. nov.**

*Candidatus Vivifarcha defenimonia* (NL. fem. n. *defenimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).



A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp001628485*. The type genome for the species is the GenBank assembly GCA\_001628485.1. The GC content of the type genome is 50.98 % and the genome length is 1.3 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Red Sea water column Station 34 - depth 25m".

**Description of *Candidatus Vivifarcha deforivita* sp. nov.**

*Candidatus Vivifarcha deforivita* (NL. fem. n. *deforivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002506755*. The type genome for the species is the GenBank assembly GCA\_002498625.1. The GC content of the type genome is 46.99 % and the genome length is 1.23 Mbp.

**Description of *Candidatus Vivifarcha depacugo* sp. nov.**

*Candidatus Vivifarcha depacugo* (NL. fem. n. *depacugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp004195615*. The type genome for the species is the GenBank assembly GCA\_012960735.1. The GC content of the type genome is 50.89 % and the genome length is 1.53 Mbp.

**Description of *Candidatus Vivifarcha diluvitoga* sp. nov.**

*Candidatus Vivifarcha diluvitoga* (NL. fem. n. *diluvitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002496485*. The type genome for the species is the GenBank assembly GCA\_002496485.1. The GC content of the type genome is 37.18 % and the genome length is 1.34 Mbp.

**Description of *Candidatus Vivifarcha homunibra* sp. nov.**

*Candidatus Vivifarcha homunibra* (NL. fem. n. *homunibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *MGIIB-O3 sp902601345*. The type genome for the species is the GenBank assembly GCA\_902601345.1. The GC content of the type genome is 50.55 % and the genome length is 1.18 Mbp.

**Description of *Candidatus Vivifarcha laculax* sp. nov.**

*Candidatus Vivifarcha laculax* (NL. fem. n. *laculax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002713185*. The type genome for the species is the GenBank assembly GCA\_002713185.1. The GC content of the type genome is 46.64 % and the genome length is 1.35 Mbp.

**Description of *Candidatus Vivifarcha legifitoga* sp. nov.**

*Candidatus Vivifarcha legifitoga* (NL. fem. n. *legifitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002719615*. The type genome for the species is the GenBank assembly GCA\_002719615.1. The GC content of the type genome is 36.04 % and the genome length is 1.67 Mbp.

**Description of *Candidatus Vivifarcha locupifica* sp. nov.**

*Candidatus Vivifarcha locupifica* (NL. fem. n. *locupifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp014239955*. The type genome for the species is the GenBank assembly GCA\_014239955.1. The GC content of the type genome is 51.61 % and the genome length is 1.28 Mbp.

**Description of *Candidatus Vivifarcha lucubitia* sp. nov.**

*Candidatus Vivifarcha lucubitia* (NL. fem. n. *lucubitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002718695*. The type genome for the species is the GenBank assembly GCA\_002718695.1. The GC content of the type genome is 49.73 % and the genome length is 1.36 Mbp.

#### **Description of *Candidatus Vivifarcha manupibula* sp. nov.**

*Candidatus Vivifarcha manupibula* (NL. fem. n. *manupibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002503285*. The type genome for the species is the GenBank assembly GCA\_002503285.1. The GC content of the type genome is 35.72 % and the genome length is 1.52 Mbp.

#### **Description of *Candidatus Vivifarcha necubessa* sp. nov.**

*Candidatus Vivifarcha necubessa* (NL. fem. n. *necubessa* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002683155*. The type genome for the species is the GenBank assembly GCA\_002683155.1. The GC content of the type genome is 49.63 % and the genome length is 0.88 Mbp.

#### **Description of *Candidatus Vivifarcha nidifitrix* sp. nov.**

*Candidatus Vivifarcha nidifitrix* (NL. fem. n. *nidifitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002731195*. The type genome for the species is the GenBank assembly GCA\_002731195.1. The GC content of the type genome is 36.82 % and the genome length is 1.12 Mbp.

#### **Description of *Candidatus Vivifarcha pabilousia* sp. nov.**

*Candidatus Vivifarcha pabilousia* (NL. fem. n. *pabilousia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp001629255*. The type genome for the species is the GenBank assembly GCA\_902578795.1. The GC content of the type genome is 50.64 % and the genome length is 1.18 Mbp.

#### **Description of *Candidatus Vivifarcha peridivita* sp. nov.**

*Candidatus Vivifarcha peridivita* (NL. fem. n. *peridivita* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp902573085*. The type genome for the species is the GenBank assembly GCA\_902573085.1. The GC content of the type genome is 50.2 % and the genome length is 1.16 Mbp.

**Description of *Candidatus Vivifarcha pimenitas* sp. nov.**

*Candidatus Vivifarcha pimenitas* (NL. fem. n. *pimenitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp003602515*. The type genome for the species is the GenBank assembly GCA\_003602515.1. The GC content of the type genome is 51.16 % and the genome length is 1.36 Mbp.

**Description of *Candidatus Vivifarcha pinacugo* sp. nov.**

*Candidatus Vivifarcha pinacugo* (NL. fem. n. *pinacugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002725315*. The type genome for the species is the GenBank assembly GCA\_001629165.1. The GC content of the type genome is 52.14 % and the genome length is 1.1 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "Red Sea water column Station 108 - depth 100m".

**Description of *Candidatus Vivifarcha pomifitica* sp. nov.**

*Candidatus Vivifarcha pomifitica* (NL. fem. n. *pomifitica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002697065*. The type genome for the species is the GenBank assembly GCA\_002697065.1. The GC content of the type genome is 49.28 % and the genome length is 0.94 Mbp.

**Description of *Candidatus Vivifarcha redunimonas* sp. nov.**

*Candidatus Vivifarcha redunimonas* (NL. fem. n. *redunimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp902573115*. The type genome for the species is the GenBank assembly GCA\_902573115.1. The GC content of the type genome is 47.88 % and the genome length is 0.98 Mbp.

**Description of *Candidatus Vivifarcha rorulitudo* sp. nov.**

*Candidatus Vivifarcha rorulitudo* (NL. fem. n. *rorulitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002722735*. The type genome for the species is the GenBank assembly GCA\_002497545.1. The GC content of the type genome is 57.64 % and the genome length is 1.3 Mbp.

**Description of *Candidatus Vivifarcha semiledo* sp. nov.**

*Candidatus Vivifarcha semiledo* (NL. fem. n. *semiledo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002720055*. The type genome for the species is the GenBank assembly GCA\_002720055.1. The GC content of the type genome is 46.54 % and the genome length is 1.56 Mbp.

**Description of *Candidatus Vivifarcha sifunimonas* sp. nov.**

*Candidatus Vivifarcha sifunimonas* (NL. fem. n. *sifunimonas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp902625325*. The type genome for the species is the GenBank assembly GCA\_902625325.1. The GC content of the type genome is 50.35 % and the genome length is 1.42 Mbp.

**Description of *Candidatus Vivifarcha siticilenta* sp. nov.**

*Candidatus Vivifarcha siticilenta* (NL. fem. n. *siticilenta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp003602595*. The type genome for the species is the GenBank assembly GCA\_003602595.1. The GC content of the type genome is 35.88 %

and the genome length is 1.37 Mbp.

**Description of *Candidatus Vivifarcha tenemitrix* sp. nov.**

*Candidatus Vivifarcha tenemitrix* (NL. fem. n. *tenemitrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002457145*. The type genome for the species is the GenBank assembly GCA\_002171445.1. The GC content of the type genome is 35.63 % and the genome length is 1.63 Mbp.

**Description of *Candidatus Vivifarcha tolutitio* sp. nov.**

*Candidatus Vivifarcha tolutitio* (NL. fem. n. *tolutitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002172185*. The type genome for the species is the GenBank assembly GCA\_002689165.1. The GC content of the type genome is 40.84 % and the genome length is 1.94 Mbp.

**Description of *Candidatus Vivifarcha tubicugo* sp. nov.**

*Candidatus Vivifarcha tubicugo* (NL. fem. n. *tubicugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002457155*. The type genome for the species is the GenBank assembly GCA\_002457155.1. The GC content of the type genome is 52.4 % and the genome length is 1.2 Mbp.

**Description of *Candidatus Vivifarcha vehicitud*o sp. nov.**

*Candidatus Vivifarcha vehicitud*o (NL. fem. n. *vehicitud*o a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIB-O3 sp002712575*. The type genome for the species is the GenBank assembly GCA\_002712575.1. The GC content of the type genome is 37.37 % and the genome length is 1.59 Mbp.

**Description of *Candidatus Vivifarcha vitabifica* sp. nov.**

*Candidatus* Vivifarcha vitabifica (NL. fem. n. *vitabifica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *MGIIb-O3 sp001629235*. The type genome for the species is the GenBank assembly GCA\_902530535.1. The GC content of the type genome is 50.7 % and the genome length is 1.11 Mbp.

#### **Description of *Candidatus* Vocamarcha rudecitas sp. nov.**

*Candidatus* Vocamarcha rudecitas (NL. fem. n. *rudecitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SP79 sp002715545*. The type genome for the species is the GenBank assembly GCA\_002715545.1. The GC content of the type genome is 48.36 % and the genome length is 1.94 Mbp.

#### **Description of *Candidatus* Vocamarcha gen. nov.**

*Candidatus* Vocamarcha (NL. fem. n. *Vocamarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SP79*. The type species for the genus is *Candidatus* Vocamarcha rudecitas .

According to the original version of GTDB R06-RS202, this genus belongs to the family *SP79*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus* Vocamarchaceae.

#### **Description of *Candidatus* Vocamarchaceae fam. nov.**

*Candidatus* Vocamarchaceae (NL. fem. n. *Vocamarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SP79*. The type genus for the taxon is *Candidatus* Vocamarcha .

According to GTDB R06-RS202, this family belongs to the order *Poseidoniales*.

#### **Description of *Candidatus* Vocifarcha totidicella sp. nov.**

*Candidatus* Vocifarcha totidicella (NL. fem. n. *totidicella* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in

apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOIM01 sp004377185*. The type genome for the species is the GenBank assembly GCA\_004377185.1. The GC content of the type genome is 50.23 % and the genome length is 2.64 Mbp.

#### **Description of *Candidatus Vocifarcha* gen. nov.**

*Candidatus Vocifarcha* (NL. fem. n. *Vocifarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SOIM01*. The type species for the genus is *Candidatus Vocifarcha totidicella*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *SOIM01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Vocifarchaceae*.

#### **Description of *Candidatus Vocifarchaceae* fam. nov.**

*Candidatus Vocifarchaceae* (NL. fem. n. *Vocifarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *SOIM01*. The type genus for the taxon is *Candidatus Vocifarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *RBG-16-68-12*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Desorarchales*.

#### **Description of *Candidatus Volubarcha ludifitio* sp. nov.**

*Candidatus Volubarcha ludifitio* (NL. fem. n. *ludifitio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10214 sp10214u*. The type genome for the species is the GenBank assembly GCA\_013331535.1. The GC content of the type genome is 42.44 % and the genome length is 1.18 Mbp.

#### **Description of *Candidatus Volubarcha* gen. nov.**

*Candidatus Volubarcha* (NL. fem. n. *Volubarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).



A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10214*. The type species for the genus is *Candidatus Volubarcha ludifitio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Volubarchaceae*.

### **Description of *Candidatus Volubarchaceae* fam. nov.**

*Candidatus Volubarchaceae* (NL. fem. n. *Volubarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10214*. The type genus for the taxon is *Candidatus Volubarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *UBA10214*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Volubarchales*.

### **Description of *Candidatus Volubarchales* ord. nov.**

*Candidatus Volubarchales* (NL. fem. n. *Volubarchales* a name created from the name of the type genus by addition of the appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10214*. The type genus for the taxon is *Candidatus Volubarcha*.

According to the GTDB R06-RS202, this order belongs to the class *Micrarchaeia*.

### **Description of *Candidatus Volucarcha cenoditica* sp. nov.**

*Candidatus Volucarcha cenoditica* (NL. fem. n. *cenoditica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp902531985*. The type genome for the species is the GenBank assembly GCA\_902531985.1. The GC content of the type genome is 36.56 % and the genome length is 0.97 Mbp.

### **Description of *Candidatus Volucarcha* gen. nov.**

*Candidatus Volucarcha* (NL. fem. n. *Volucarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CG-Epi1*. The type species for the genus is *Candidatus Volucarcha cenoditica*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *CG-Epi1*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Volucarchaceae*.

### **Description of *Candidatus Volucarchaceae* fam. nov.**

*Candidatus Volucarchaceae* (NL. fem. n. *Volucarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *CG-Epi1*. The type genus for the taxon is *Candidatus Volucarcha*.

According to GTDB R06-RS202, this family belongs to the order *MGIH*.

### **Description of *Candidatus Volucarcha demogugo* sp. nov.**

*Candidatus Volucarcha demogugo* (NL. fem. n. *demogugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp002497685*. The type genome for the species is the GenBank assembly GCA\_002497685.1. The GC content of the type genome is 36.12 % and the genome length is 0.82 Mbp.

### **Description of *Candidatus Volucarcha detesetta* sp. nov.**

*Candidatus Volucarcha detesetta* (NL. fem. n. *detesetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp001875345*. The type genome for the species is the GenBank assembly GCA\_001875345.1. The GC content of the type genome is 36.57 % and the genome length is 1.18 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "marine water".

### **Description of *Candidatus Volucarcha dupunetta* sp. nov.**

*Candidatus Volucarcha dupunetta* (NL. fem. n. *dupunetta* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp902533295*. The type genome for the species is the GenBank assembly GCA\_902533295.1. The GC content of the type genome is 36.28 % and the genome length is 0.86 Mbp.

#### **Description of *Candidatus Volucarcha femelitas* sp. nov.**

*Candidatus Volucarcha femelitas* (NL. fem. n. *femelitas* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp014240255*. The type genome for the species is the GenBank assembly GCA\_014240255.1. The GC content of the type genome is 35.44 % and the genome length is 1.2 Mbp.

#### **Description of *Candidatus Volucarcha homulitoga* sp. nov.**

*Candidatus Volucarcha homulitoga* (NL. fem. n. *homulitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp902627615*. The type genome for the species is the GenBank assembly GCA\_902627615.1. The GC content of the type genome is 36.7 % and the genome length is 1.31 Mbp.

#### **Description of *Candidatus Volucarcha homunitudo* sp. nov.**

*Candidatus Volucarcha homunitudo* (NL. fem. n. *homunitudo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp002718915*. The type genome for the species is the GenBank assembly GCA\_002718915.1. The GC content of the type genome is 34.93 % and the genome length is 0.88 Mbp.

#### **Description of *Candidatus Volucarcha minagibra* sp. nov.**

*Candidatus Volucarcha minagibra* (NL. fem. n. *minagibra* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp014240055*. The type genome for the species is the GenBank assembly GCA\_014240055.1. The GC content of the type genome is 36.05 % and the genome length is 1.23 Mbp.

#### **Description of *Candidatus Volucarcha nocumitoga* sp. nov.**

*Candidatus Volucarcha nocumitoga* (NL. fem. n. *nocumitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp002724775*. The type genome for the species is the GenBank assembly GCA\_002696565.1. The GC content of the type genome is 36.82 % and the genome length is 1.0 Mbp.

#### **Description of *Candidatus Volucarcha pimenitoga* sp. nov.**

*Candidatus Volucarcha pimenitoga* (NL. fem. n. *pimenitoga* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp002506485*. The type genome for the species is the GenBank assembly GCA\_002506485.1. The GC content of the type genome is 42.99 % and the genome length is 1.1 Mbp.

#### **Description of *Candidatus Volucarcha pinigetia* sp. nov.**

*Candidatus Volucarcha pinigetia* (NL. fem. n. *pinigetia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CG-Epi1 sp001875365*. The type genome for the species is the GenBank assembly GCA\_001875365.1. The GC content of the type genome is 36.43 % and the genome length is 0.71 Mbp. The isolation source for the NCBI BioSample associated with the type genome is described as "marine water".

#### **Description of *Candidatus Volunarcha tubicatio* sp. nov.**

*Candidatus Volunarcha tubicatio* (NL. fem. n. *tubicatio* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTQO01 sp011332645*. The type genome for the species is the GenBank assembly GCA\_011332645.1. The GC content of the type genome is 47.63 % and the genome length is 2.67 Mbp.

#### **Description of *Candidatus Volunarcha* gen. nov.**

*Candidatus Volunarcha* (NL. fem. n. *Volunarcha* a name created arbitrarily, while

preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTQO01*. The type species for the genus is *Candidatus Volunarcha tubicatio*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTQO01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Volunarchaceae*.

### **Description of *Candidatus Volunarchaceae* fam. nov.**

*Candidatus Volunarchaceae* (NL. fem. n. *Volunarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTQO01*. The type genus for the taxon is *Candidatus Volunarcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *EX4484-205*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Bovicarchales*.

### **Description of *Candidatus Voragarcha lavaciforma* sp. nov.**

*Candidatus Voragarcha lavaciforma* (NL. fem. n. *lavaciforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA10219 sp10219u*. The type genome for the species is the GenBank assembly GCA\_013331455.1. The GC content of the type genome is 58.69 % and the genome length is 1.15 Mbp.

### **Description of *Candidatus Voragarcha* gen. nov.**

*Candidatus Voragarcha* (NL. fem. n. *Voragarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *UBA10219*. The type species for the genus is *Candidatus Voragarcha lavaciforma*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *UBA10219*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Voragarchaceae*.

### **Description of *Candidatus Voragarchaceae* fam. nov.**

*Candidatus Voragarchaceae* (NL. fem. n. *Voragarchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *UBA10219*. The type genus for the taxon is *Candidatus Voragarcha*.

According to GTDB R06-RS202, this family belongs to the order *Iainarchaeales*.

### **Description of *Candidatus Vulcanisaeta nubiforma* sp. nov.**

*Candidatus Vulcanisaeta nubiforma* (NL. fem. n. *nubiforma* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Vulcanisaeta sp001316245*. The type genome for the species is the GenBank assembly GCA\_001316245.1. The GC content of the type genome is 46.73 % and the genome length is 2.44 Mbp.

### **Description of *Candidatus Vulcanisaeta pavimax* sp. nov.**

*Candidatus Vulcanisaeta pavimax* (NL. fem. n. *pavimax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Vulcanisaeta sp001316285*. The type genome for the species is the GenBank assembly GCA\_001316285.1. The GC content of the type genome is 45.93 % and the genome length is 2.29 Mbp.

### **Description of *Candidatus Vulcanisaeta recoribula* sp. nov.**

*Candidatus Vulcanisaeta recoribula* (NL. fem. n. *recoribula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Vulcanisaeta sp001516765*. The type genome for the species is the GenBank assembly GCA\_009903725.1. The GC content of the type genome is 45.64 % and the genome length is 2.18 Mbp.

### **Description of *Candidatus Vulcanisaeta subinugo* sp. nov.**

*Candidatus Vulcanisaeta subinugo* (NL. fem. n. *subinugo* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Vulcanisaeta sp002496475*. The type genome for the species is the GenBank assembly GCA\_002496475.1. The GC content of the type genome is 44.57 % and the genome length is 1.6 Mbp.

**Description of *Candidatus Vulcanisaeta venabatrix* sp. nov.**

*Candidatus Vulcanisaeta venabatrix* (NL. fem. n. *venabatrix* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Vulcanisaeta sp001316265*. The type genome for the species is the GenBank assembly GCA\_001316265.1. The GC content of the type genome is 45.28 % and the genome length is 2.25 Mbp.

**Description of *Candidatus Xenodarcha manupax* sp. nov.**

*Candidatus Xenodarcha manupax* (NL. fem. n. *manupax* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *CABMGU01 sp902385765*. The type genome for the species is the GenBank assembly GCA\_902385765.1. The GC content of the type genome is 42.36 % and the genome length is 1.04 Mbp.

**Description of *Candidatus Xenodarcha* gen. nov.**

*Candidatus Xenodarcha* (NL. fem. n. *Xenodarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *CABMGU01*. The type species for the genus is *Candidatus Xenodarcha manupax*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *ARS49*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Terebarchaceae*.

**Description of *Candidatus Xenoparcha lapilibula* sp. nov.**

*Candidatus Xenoparcha lapilibula* (NL. fem. n. *lapilibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy

Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *DTGH01 sp011335015*. The type genome for the species is the GenBank assembly GCA\_011335015.1. The GC content of the type genome is 44.61 % and the genome length is 0.99 Mbp.

#### **Description of *Candidatus Xenoparcha* gen. nov.**

*Candidatus Xenoparcha* (NL. fem. n. *Xenoparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *DTGH01*. The type species for the genus is *Candidatus Xenoparcha lapilibula*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *DTGH01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Xenoparchaceae*.

#### **Description of *Candidatus Xenoparchaceae* fam. nov.**

*Candidatus Xenoparchaceae* (NL. fem. n. *Xenoparchaceae* a name created from the name of the type genus by addition of an appropriate suffix).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this taxon is *DTGH01*. The type genus for the taxon is *Candidatus Xenoparcha*.

According to the original version of GTDB R06-RS202, this family belongs to the order *DTNL01*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the order *Candidatus Nivomarchales*.

#### **Description of *Candidatus Xeramarcha tubificica* sp. nov.**

*Candidatus Xeramarcha tubificica* (NL. fem. n. *tubificica* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *UBA60 sp002503395*. The type genome for the species is the GenBank assembly GCA\_012965105.1. The GC content of the type genome is 52.77 % and the genome length is 1.51 Mbp.

#### **Description of *Candidatus Xeramarcha* gen. nov.**

*Candidatus Xeramarcha* (NL. fem. n. *Xeramarcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation



for this genus is *UBA60*. The type species for the genus is *Candidatus Xeramarcha tubicifica*.

According to GTDB R06-RS202, this genus belongs to the family.

#### **Description of *Candidatus Xeroparcha depupimonia* sp. nov.**

*Candidatus Xeroparcha depupimonia* (NL. fem. n. *depupimonia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *SOJZ01 sp004376295*. The type genome for the species is the GenBank assembly GCA\_004376295.1. The GC content of the type genome is 43.23 % and the genome length is 1.89 Mbp.

#### **Description of *Candidatus Xeroparcha* gen. nov.**

*Candidatus Xeroparcha* (NL. fem. n. *Xeroparcha* a name created arbitrarily, while preserving the phonotactics and morphology of Latin).

A taxon identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this genus is *SOJZ01*. The type species for the genus is *Candidatus Xeroparcha depupimonia*.

According to the original version of GTDB R06-RS202, this genus belongs to the family *BAL*. According to the renamed version of GTDB R06-RS202, this taxon belongs to the family *Candidatus Hemitarchaceae*.

#### **Description of *Candidatus Zestosphaera colapibula* sp. nov.**

*Candidatus Zestosphaera colapibula* (NL. fem. n. *colapibula* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Zestosphaera sp011364565*. The type genome for the species is the GenBank assembly GCA\_011364565.1. The GC content of the type genome is 43.18 % and the genome length is 1.12 Mbp.

#### **Description of *Candidatus Zestosphaera repudago* sp. nov.**

*Candidatus Zestosphaera repudago* (NL. fem. n. *repudago* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation

for this species is *Zestosphaera sp011361945*. The type genome for the species is the GenBank assembly GCA\_011361945.1. The GC content of the type genome is 45.89 % and the genome length is 0.93 Mbp.

**Description of *Candidatus Zestosphaera taraxitia* sp. nov.**

*Candidatus Zestosphaera taraxitia* (NL. fem. n. *taraxitia* a species epithet created arbitrarily, while preserving the phonotactics and morphology of Latin; used as a noun in apposition).

A species identified and delineated according to the algorithms of the Genome Taxonomy Database (GTDB) release R06-RS202. The GTDB R06-RS202 placeholder designation for this species is *Zestosphaera sp011375725*. The type genome for the species is the GenBank assembly GCA\_011375725.1. The GC content of the type genome is 45.98 % and the genome length is 1.51 Mbp.