

Table S1. GenBank accessions of representative taxa from *Bionectriaceae*, *Cordycipitaceae* and outgroups included in the phylogenetic analyses.

Species	Strain number	GenBank accession numbers ¹			Citation
		ITS	LSU	<i>tef1</i>	
<i>Acremonium alternatum</i>	CBS 407.66 ^T	NR_144913.1	MH870479.1	NA	[1,2]
<i>Ac. behniae</i>	CBS 146824 ^T	NR_171996.1	NG_074497.1	NA	[3]
<i>Ac. curvum</i>	GZUIFR 22.035 ^T	ON041034	ON041050	ON494579	[4]
<i>Ac. egyptiacum</i>	CBS 303.64	MH858438.1	MH870069.1	NA	[1]
<i>Ac. globosporium</i>	GZUIFR 22.036 ^T	ON041035	ON041051	ON494580	[4]
<i>Ac. sclerotigenum</i>	A101	KC987139	KC987215	KC998961	[5]
<i>Ac. sordidulum</i>	CBS 385.73 ^T	NR_159618.1	MH872418.1	NA	[1]
<i>Beauveria bassiana</i>	ARSEF 1564 ^T	NR_111594.1	-	NA	[6]
<i>B. caledonica</i>	ARSEF 2567 ^T	HQ880817.1	NG_058620.1	NA	[6]
<i>Clonostachys buxi</i>	CBS 696.93	KM231840.1	KM231721.1	NA	[7]
<i>C. grammiscospora</i>	CBS 209.93 ^T	NR_137650.1	MH874052.1	NA	[1,8]
<i>C. leucaenae</i>	MFLU 19-0970 ^T	ON230050.1	ON230058.1	NA	[9]
<i>C. rosea</i>	CBS 710.86	MH862010.1	MH873700.1	NA	[1]
<i>C. spinulosa</i>	MFLU 18-2730 ^T	ON230049.1	ON230057.1	NA	[9]
<i>Cordyceps javanica</i>	CBS 134.22 ^T	MH854719.1	MG665231.1	NA	[1,10]
<i>Emericellopsis salmosynnemata</i>	CBS 182.56 ^T	MH857571.1	MH869115.1	NA	[1]
<i>E. terricola</i>	CBS 120.40 ^T	MH856058.1	MH867553.1	NA	[1]
<i>Fusariella atrovirens</i>	CBS 311.73	MH860688.1	MH872395.1	NA	[1]
<i>Fusariella curvata</i>	MFLUCC 15.0844	KX025152.1	KX025154.1	NA	[11]
<i>Geosmithia brunnea</i>	CBS 142633 ^T	NR_158517.1	-	NA	[12]
<i>G. lavendula</i>	CBS 582.67	MH859054.1	MH870774.1	NA	[1]
<i>G. microcorthyli</i>	CCF 3861 ^T	NR_137566.1	NG_067560.1	NA	[13]
<i>Gliomastix murorum</i>	CBS 154.25	MH854827.1	MH866327.1	NA	[1]
<i>Gl. polychroma</i>	CBS 181.27 ^T	NR_119408.1	MH866417.1	NA	[14]
<i>Gl. roseogrisea</i>	CBS 134.56 ^T	MH857544.1	MH869081.1	NA	[1]
<i>Hapsidospora irregularis</i>	CBS 510.70 ^T	MH859824.1	MH871595.1	NA	[1]
<i>Heleococcum aurantiacum</i>	CBS 201.35	MH855645.1	MH867154.1	NA	[1]
<i>Heleococcum japonense</i>	CBS 397.67	JX158420.1	JX158442.1	NA	[5]
<i>Lasionectria germanica</i>	CBS 143538 ^T	-	NG_073659.1	NA	[15]
<i>L. marigotensis</i>	CBS 131606 ^T	KR105612.1	KR105613.1	NA	[16]
<i>Lasionectriopsis pteridii</i>	CBS 782.69 ^T	MH859425.1	MH871198.1	NA	[1]
<i>Metapochonia suchlasporia</i>	CBS 251.83 ^T	MH861580.1	MH873311.1	NA	[1]
<i>Nectriopsis fuliginicola</i>	CBS 400.82 ^T	NR_154234.1	-	NA	[17]
<i>N. lindauiana</i>	CBS 897.70 ^T	NR_154235.1	-	NA	[17]
<i>Nigrosabulum globosum</i>	CBS 512.70 ^T	MH859825.1	MH871597.1	NA	[1]
	CBS 514.70	MH859826.1	MH871598.1	NA	[1]
<i>Ochronectria calami</i>	CBS 125.87	-	AY489717.1	NA	[18]
<i>O. thailandica</i>	MFLUCC 15-0140 ^T	NR_168756.1	KU564069.1	NA	[1]
<i>Paracylindrocarpon aloicola</i>	CBA 141300 ^T	NR_154346.1	NG_058238.1	NA	[19]
<i>P. pandanicola</i>	KUMCC 17-0272 ^T	NR_168197.1	NG_068837.1	NA	[20]
<i>Pochonia chlamydospora</i>	CBS 504.66	MH858871.1	MH870512.1	NA	[1]
<i>Septofusidium berolinense</i>	CBS 731.70	KM231841.1	KM231722.1	NA	[7]
<i>Simplicillium lamellicola</i>	CBS 116.25 ^T	MH854806.1	MH866307.1	NA	[1]
<i>S. lanosoniveum</i>	CBS 123.42 ^T	MH856100.1	MH867593.1	NA	[1]
<i>Stephanonectria chromolaenae</i>	MFLUCC 18-0589 ^T	ON230051.1	ON230059.1	NA	[9]
<i>St. keithii</i>	CBS 100005	AF210671.1	-	NA	[8]

	CBS 434.70	MH859783.1	MH871546.1	NA	[1]
<i>Stl. colubrensis</i>	CBS 141857 [†]	NR_173884.1	NG_088099.1	NA	[21]
<i>Stl. gracilipes</i>	MFLUCC 17-2614	ON230052.1	ON230060.1	NA	[9]
<i>Stl. macrostoma</i>	CLLG18033	MN497402.1	MN497411.1	NA	[21]
<i>Stl. walteri</i>	CBS 144627	NR_160063.1	-	NA	[22]
<i>Synnemellisia aurantia</i>	COAD 2070 [†]	NR_154444.1	NG_059728.1	NA	[23]
<i>Sy. urenae</i>	BRIP 71652 [†]	NR_175758.1	OK342134.1	NA	
<i>Verrucostoma freycinetiae</i>	MAFF 240100 [†]	NR_137761.1	NG_059924.1	NA	[24,25]

ARSEF: Agricultural Research Service Collection of Entomopathogenic Fungal Cultures, USA; CBS: Culture Collection of the Westerdijk Fungal Biodiversity Institute, Utrecht, the Netherlands; CCF: Culture Collection of Fungi, Prague, Czech Republic; FMR: Facultat de Medicina i Ciències de la Salut, Reus, Spain; GZUIFR: Institute of Fungus Resources, Guizhou University, Guiyang City, Guizhou, China; MAFF: National Institute of Agrobiological Sciences, Ibaraki, Japan; MFLUCC: Mae Fah Luang University Culture Collection, Thailand. [†] indicates ex-type strains. “NA” indicates sequences not used in this study. “-” indicates the absence of that sequence. [†]ITS: Internal transcribed spacer region of the rDNA and 5.8S gene; LSU: 28S large ribosomal subunit; *tef1*: translation elongation factor 1 α .

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