Deletion of *LeuRS* influenced osmotic stress tolerance, nitrogen and carbon metabolism, and sexual development of *Aspergillus montevidensis*

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Fig. S1 Knock-out of the gene *LeuRS* in *A*. *montevidensis* (WT). (a) The gene replacement strategy for the construction of the Δ*leuRS* strain. (b) Sequencing verification of Δ*leuRS* mutant of *A*. *montevidensis.*

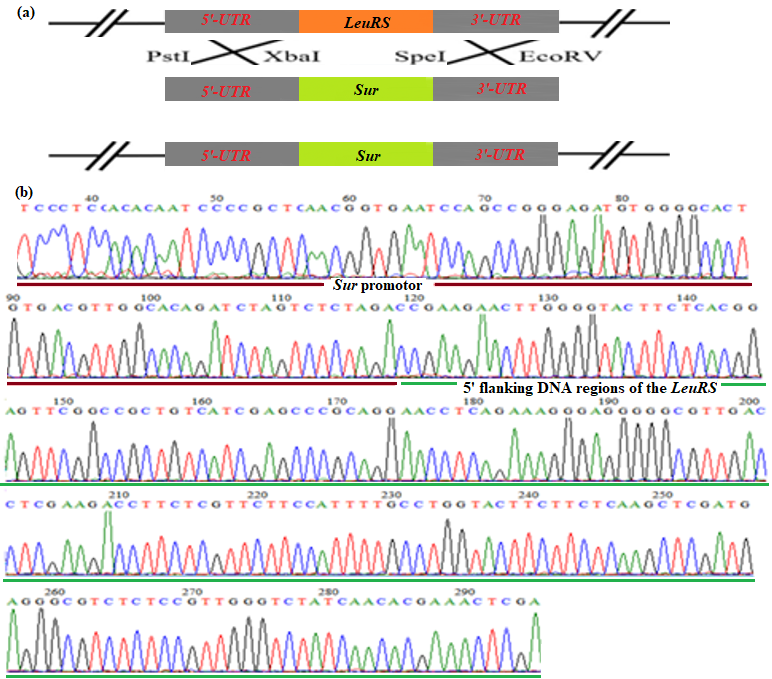


Fig. S2 Growth rates of mycelia of Δ*leuRS* mutants and WT strains.

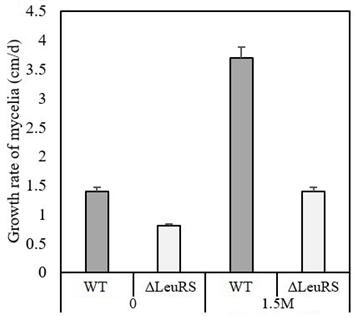


Fig. S3 Morphological characteristics of Δ*leuRS* mutants and WT strains grown on the YPD media without salt. Colonial traits of Δ*leuRS* mutants (a) and WT strains (b). Microscopic characters of Δ*leuRS* mutants (c) and WT strains (d).

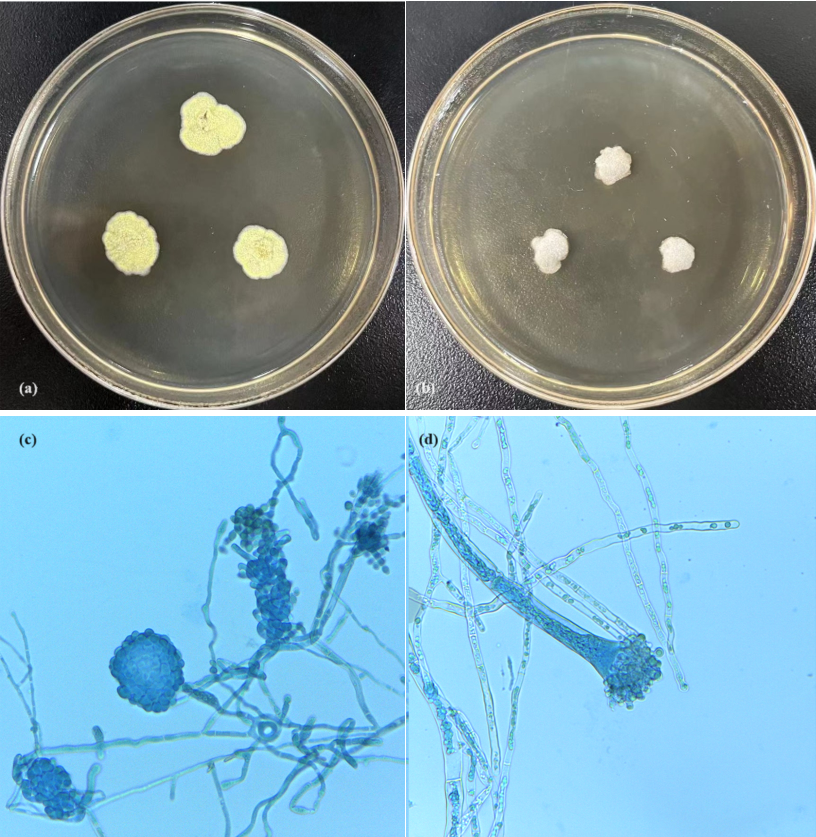


Fig. S4 Antioxidative enzymatic activities of Δ*leuRS* mutants and WT strains.

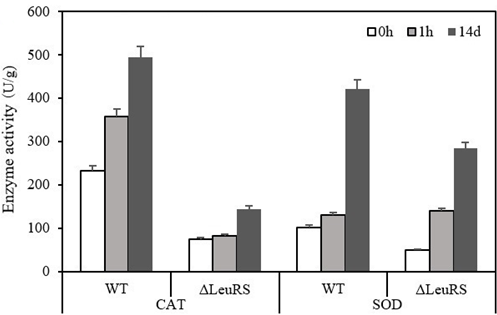


Fig. S5 GO terms of DEGs of Δ*leuRS* mutants and WT strains treated with 1.5 M NaCl for 0h, 1h, and 14 days, respectively.

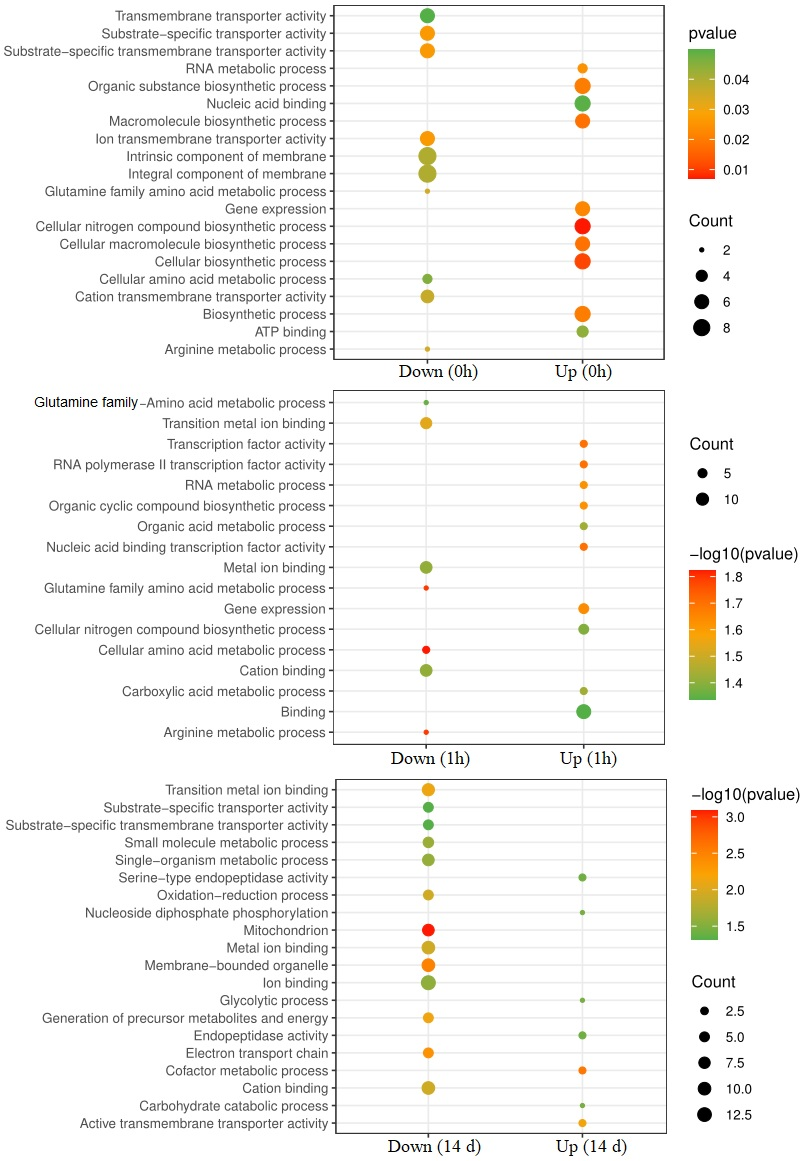


Fig. S6 PCA of differential metabolites between Δ*leuRS* mutants and WT strains treated with 1.5 M NaCl for 0h, 1h, and 14 days, respectively.

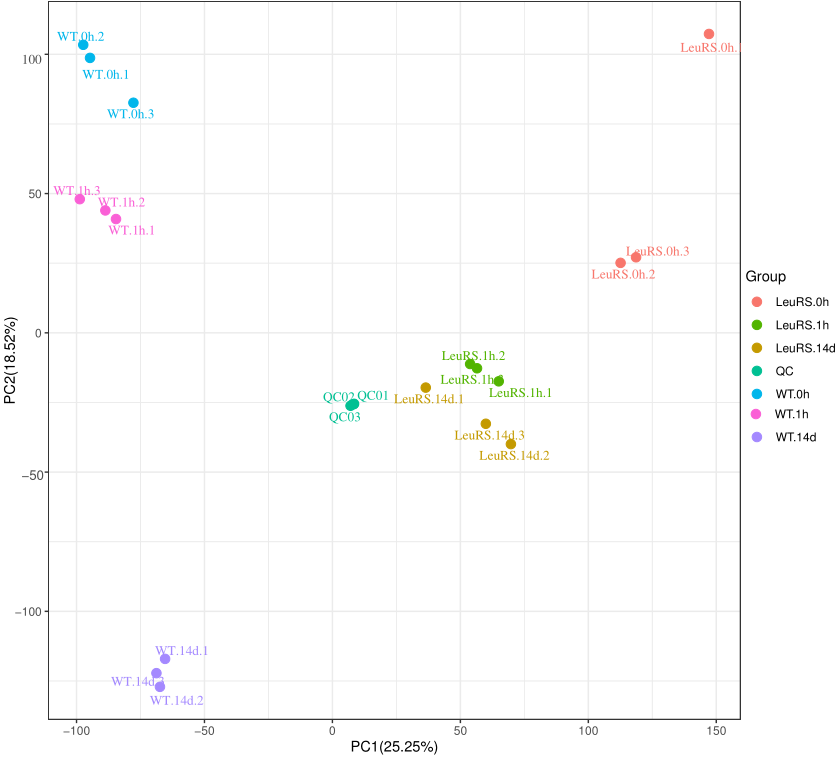


Fig. S7 KEGG enrichment analysis of differential metabolites between Δ*leuRS* mutants and WT strains treated with 1.5 M NaCl for 0h, 1h, and 14 days, respectively.

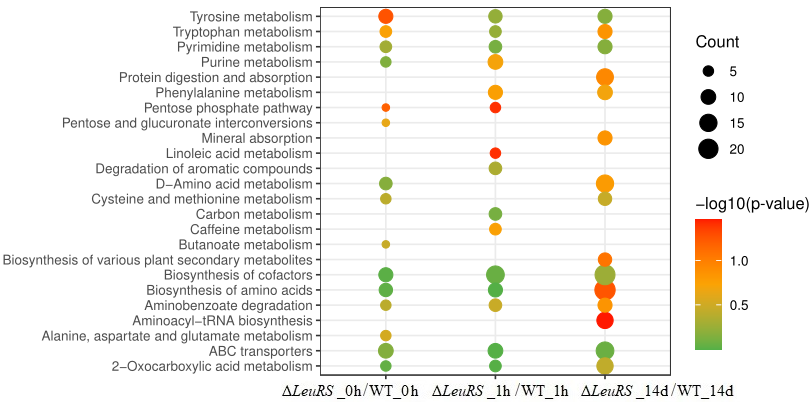


Table S1 Differentially expressed genes of in compared groups of Δ*leuRS* mutants and WT strains treated with 1.5 M NaCl for 0h, 1h, and 14 days, respectively.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | KEGG pathways | Gene ID | Putative functions | Log2 fold change |
| **Transporter** | ABC transporter (ΔLeuRS.0h-VS-WT.0h) | Unigene0005868 | Brefeldin A efflux transporter Bfr1 | 9.2 |
| Unigene0001685 | ABC transporter G family member 21 | 5.2 |
| Unigene0004891 | ABC a-pheromone efflux pump AtrD | -1.9 |
| Unigene0002816 | ABC transporter subfamily D | -3.6 |
| Unigene0001016 | ABC transporter, subfamily G | -4.7 |
| Unigene0001056 | ABC transporter, subfamily G | -5.5 |
| Unigene0001160 | ABC transporter, subfamily G | -6 |
| Unigene0004149 | Polysaccharide transport protein (ABC-2 type transporter) | -8.1 |
| Unigene0003060 | ABC transporter, subfamily B | -9.6 |
| **Nitrogen metabolism** | Nitrogen metabolism (ΔLeuRS.1h-VS-WT.1h) | Unigene0003950 | Carbonic anhydrase | 4.1 |
| Unigene0000422 | Nitronate monooxygenase | -1.8 |
| Unigene0001007 | Nitrate reductase | -1.4 |
| Unigene0003764 | Nitrate reductase | -3.7 |
| Unigene0002426 | Nitrite reductase | -4.4 |
| Alanine, aspartate and glutamate metabolism (ΔLeuRS.1h-VS-WT.1h) | Unigene0006877 | Aspartate carbamoyl transferase | 2.2 |
| Unigene0005890 | Glutamine synthetase | 7.3 |
| Unigene0001465 | Aspartate aminotransferase | -2.5 |
| Unigene0004583 | Glutamate dehydrogenase | -1 |
| Unigene0003221 | Glutamine synthetase | 1.4 |
| Unigene0000761 | 1-Pyrroline-5-carboxylate dehydrogenase | -1.7 |
| Unigene0001320 | 1-Pyrroline-5-carboxylate dehydrogenase | -4.8 |
| Unigene0001538 | Succinate-semialdehyde dehydrogenase | -1.9 |
| Unigene0001335 | Succinate semialdehyde dehydrogenase | -3.1 |
| Unigene0003008 | Adenylosuccinate synthase | -2.1 |
| Unigene0001305 | Adenylosuccinate synthase | -2.4 |
| Unigene0001073 | Argininosuccinate synthase | -3 |
| Unigene0005058 | Argininosuccinate synthase | -12.6 |
| Unigene0002828 | Argininosuccinate synthase | -13.2 |
| Unigene0000069 | Carbamoyl-phosphate synthase | -2.3 |
| Arginine and proline metabolism (ΔLeuRS.14d-VS-WT.14d) | Unigene0000832 | Agmatinase | 3.1 |
| Unigene0005572 | D-Amino-acid oxidase | 3.1 |
| Unigene0001647 | Agmatine deiminase | 2.9 |
| Unigene0007057 | Ornithine decarboxylase | 1.6 |
| Unigene0000297 | Amidase | -1.8 |
|  | Unigene0003641 | Agmatine deiminase | -1.9 |
| Unigene0002559 | S-Adenosylmethionine decarboxylase proenzyme | -2.9 |
| Unigene0004935 | Arginase | -14.5 |
| Unigene0006346 | Arginase | -15.5 |
| Arginine biosynthesis (ΔLeuRS.14d-VS-WT.14d) | Unigene0000121 | Ornithine carbamoyl transferase | -3 |
| Unigene0000425 | Argininosuccinate lyase | -3.1 |
| Tryptophan metabolism (ΔLeuRS.14d-VS-WT.14d) | Unigene0002356 | Kynurenine aminotransferase | -1.6 |
| Unigene0000297 | Amidase | -1.8 |
| Unigene0000864 | Kynureninase | -1.9 |
| Unigene0003544 | Amidase | -2 |
| Unigene0003677 | NADPH-cytochrome P450 reductase | -2.5 |
| Unigene0005590 | Aminocarboxymuconate-semialdehyde decarboxylase | -10.6 |
| Unigene0006491 | L-Amino-acid oxidase | -3 |
| Unigene0000117 | 3-(3-Hydroxy-phenyl) propionate hydroxylase | -1.3 |
| Cysteine and methionine metabolism (ΔLeuRS.14d-VS-WT.14d) | Unigene0000789 | Cysteine synthase | 1.6 |
| Unigene0002764 | Phosphoserine aminotransferase | -2.1 |
| Unigene0002160 | 3-Phosphoglycerate dehydrogenase | -2.3 |
| Unigene0002871 | Threonine dehydratase | -4 |
| Valine, leucine and isoleucine (ΔLeuRS.14d-VS-WT.14d) | Unigene0001706 | Methylmalonate-semialdehyde dehydrogenase | 2.1 |
| Glycine, serine and threonine metabolism (ΔLeuRS.14d-VS-WT.14d) | Unigene0001414 | Dimethylglycine oxidase | 1.3 |
| **Carbon metabolism** | Glyoxylate and dicarboxylate metabolism (ΔLeuRS.1h-VS-WT.1h) | Unigene0005896 | Oxalate decarboxylase | 7.8 |
| Unigene0000101 | Catalase | 1.3 |
| Unigene0003313 | Catalase | -2.5 |
| Unigene0000920 | Catalase | -3.5 |
| Unigene0001315 | Catalase | -4 |
| Unigene0002534 | Glycine hydroxymethyltransferase | 4.4 |
| Unigene0001732 | Malate synthase | -2.2 |
| Unigene0006438 | Aminomethyltransferase | -2.5 |
| Unigene0001841 | Aconitate hydratase | -4.2 |
| Unigene0003026 | (S)-2-Hydroxy-acid oxidase | -10.6 |
|  | Degradation of aromatic compounds (ΔLeuRS.1h-VS-WT.1h) | Unigene0006805 | 2,4-Dichlorophenol 6-monooxygenase | 2.7 |
| Unigene0005187 | 2,4-Dichlorophenol 6-monooxygenase | 2 |
| Unigene0007002 | Benzaldehyde dehydrogenase | -1.7 |
| Unigene0007085 | Catechol 1,2-dioxygenase | 2.5 |
| Unigene0001567 | Cyclohexanone monooxygenase | -2.8 |
| Unigene0003057 | Cyclohexanone monooxygenase | -2.8 |
| Unigene0000541 | Salicylate hydroxylase | 2.2 |
| Unigene0002548 | Salicylate hydroxylase | -1.2 |
| Unigene0001505 | Salicylate hydroxylase | -1.3 |
| Unigene0000894 | Salicylate hydroxylase | -1.3 |
| Unigene0000935 | Salicylate hydroxylase | -3.5 |
| Unigene0004389 | Cytochrome P450 monooxygenase | -1.1 |
| Unigene0002791 | Benzoate 4-monooxygenase | 1.7 |
| Unigene0002732 | Benzoate 4-monooxygenase | -4.1 |
| Unigene0002878 | Benzoate 4-monooxygenase | -9.5 |
| Unigene0001254 | Benzoate 4-monooxygenase | -2.2 |
| Butanoate metabolism (ΔLeuRS.1h-VS-WT.1h) | Unigene0002461 | Acetolactate synthase | 2.5 |
| Linoleic acid metabolism (ΔLeuRS.1h-VS-WT.1h) | Unigene0000345 | Tartrate dehydrogenase | 2.1 |
| Unigene0002091 | Aldo-keto reductase (YakC) | -2.7 |
| Unigene0001954 | Acetoacetyl-CoA synthetase | -3.8 |
| Unigene0001220 | Cytosolic phospholipase | 2 |
| Unigene0001243 | Linoleate 10R-lipoxygenase | -1.8 |
| Unigene0002291 | Short-chain dehydrogenase | -4 |
| Unigene0003617 | Short chain dehydrogenase | -2.1 |
| Unigene0005446 | Short-chain dehydrogenase | 2.2 |
| Unigene0006189 | Short chain dehydrogenase | -1.6 |
| Sugar metabolism (ΔLeuRS.14d-VS-WT.14d) | Unigene0001181 | MFS monosaccharide transporter | 2 |
| Unigene0002542 | MFS monosaccharide transporter | -6.7 |
| Unigene0005333 | Pyruvate decarboxylase | 4.4 |
| Unigene0003461 | Pyruvate decarboxylase | 1.6 |
| Unigene0005671 | Enolase | 2 |
| Unigene0003085 | Hexokinase | 9.8 |
| Unigene0007022 | Phosphoenolpyruvate carboxykinase | 2 |
| Unigene0000622 | Phosphoenolpyruvate carboxykinase | -1.8 |
| Unigene0004585 | Glyceraldehyde 3-phosphate dehydrogenase | 1.8 |
| Unigene0003587 | Glyceraldehyde 3-phosphate dehydrogenase | -9.6 |
| Unigene0001574 | Formaldehyde dehydrogenase | -1.8 |
| Unigene0001853 | Alcohol dehydrogenase | -1.8 |
| Unigene0002392 | Alcohol dehydrogenase | 1.9 |
| Unigene0004713 | Alcohol dehydrogenase | 2.8 |
| Unigene0000517 | Alcohol dehydrogenase | 2.9 |
| Unigene0001392 | Citrate synthase | 8.5 |
| Unigene0006966 | Citrate synthase | -2.6 |
| Unigene0000380 | Succinyl-CoA synthetase | 1.7 |
| Unigene0003564 | Malate dehydrogenase | 1.6 |
| Unigene0000160 | Malate dehydrogenase | 2.4 |
| Unigene0003272 | Ribulose-phosphate 3-epimerase/ | 2.1 |
| Unigene0001107 | 6-Phosphogluconate dehydrogenase | 1.5 |
| Propanoate metabolism (ΔLeuRS.14d-VS-WT.14d) | Unigene0005640 | 2-Methylcitrate dehydratase | -3 |
| Unigene0003886 | Methylisocitrate lyase | -8.4 |
| Unigene0001311 | Methyl acetate hydrolase/ Butanoate metabolism | -8.6 |
| Biosynthesis of unsaturated fatty acids (ΔLeuRS.14d-VS-WT.14d) | Unigene0002929 | 1,3,6,8-Tetrahydroxynaphthalene reductase | 5.8 |
| Unigene0000258 | Acyl-CoA oxidase | 2 |
| Unigene0001147 | 3-Oxoacyl-[acyl-carrier protein] reductase | 1.5 |
| Unigene0001456 | 3-Ketoacyl-ACP reductase | 1.5 |
| Unigene0001668 | Stearic acid desaturase | -1.9 |
| **Reproduction-related genes** | Sexual/asexual genes (ΔLeuRS.14d-VS-WT.14d) | Unigene0001820 | Sexual development activator *VeA* | -1.2 |
| Unigene0001807 | Sexual development activator *VeA* | -2.7 |
| Unigene0006340 | *VelB* | -1.5 |
| Unigene0006340 | *wetA* | -1.5 |
| Unigene0001761 | *sidC* | -1.8 |
| Unigene0000774 | *sakA* | -1.2 |
| Unigene0007108 | *BrlA* | 2.1 |
| Unigene0003472 | *Arp1/2* | 5.4 |
| Unigene0002929 | *Arp1/2* | 5.8 |
| Unigene0003245 | *Arp1/2* | 7.8 |

Table S2 Differentially metabolites of in compared groups of Δ*leuRS* mutants and WT strains treated with 1.5 M NaCl for 0h, 1h, and 14 days, respectively.

|  |  |  |  |
| --- | --- | --- | --- |
| Δ*LeuRS*\_0h/WT\_0h |  | Log2 fold change | P*-*value |
| Amino acid and derivatives | D-Alanyl-D-alanine | 14.2 | 0.001 |
| H-Thr-Phe-OH | 5.7 | 0.031 |
| Alanylglycine | 4.2 | 0.018 |
| γ-Glutamylleucine | 3.6 | 0.013 |
| ε-(γ-Glutamyl)-lysine | 3.5 | 0.005 |
| Glycyl-glycine | 2.1 | 0.000 |
| Glycylproline | 1.7 | 0.003 |
| Norvaline | -4.2 | 0.001 |
| N-(2-Furoyl)glycine | -11.4 | 0.011 |
| H-Leu-Val-OH | 7.3 | 0.035 |
| Carbohydrates and derivatives | D-Mannose | 4.9 | 0.026 |
| 4-O-α-D-Galactopyranuronosyl-D-galacturonic acid | 3.2 | 0.013 |
| Deoxyribose 5-phosphate | 2.9 | 0.027 |
| Sweroside | 2.3 | 0.045 |
| Gluconolactone | 1.4 | 0.044 |
| Uridine diphosphate-N-acetylglucosamine | 1.3 | 0.008 |
| 1-Deoxy-D-xylulose 5-phosphate | 1.3 | 0.003 |
| Ribitol | 1.1 | 0.007 |
| Organic acids | 4-Hydroxy-3-methoxymandelic acid | 5.9 | 0.015 |
| Diaminopimelic acid | 4.9 | 0.048 |
| α-Ketoisovaleric acid | 4.2 | 0.017 |
| Pyruvic acid | 3.9 | 0.014 |
| Succinic acid | 2.4 | 0.034 |
| Quinic acid | 1.9 | 0.042 |
| 3,7-Dimethyluric acid | 1.9 | 0.014 |
| 7-Ketodeoxycholic acid | 1.6 | 0.013 |
| Indole-3-carboxylic acid | 1.5 | 0.003 |
| L-2-Hydroxyglutaric acid | 1.3 | 0.011 |
| 2-(Methylamino) benzoic acid | 1.2 | 0.008 |
| Caffeic acid | 1.2 | 0.042 |
| 4-Acetamidobutanoic acid | -1.2 | 0.036 |
| 4-Methoxyphenylacetic acid | -2.2 | 0.033 |
| Gentisic acid | -2.4 | 0.001 |
| Pyrrole-2-carboxylic acid | -2.5 | 0.012 |
| Indoleacetic acid | -2.9 | 0.000 |
| Carnosic acid | -3.2 | 0.003 |
| Quinolinic acid | -3.8 | 0.005 |
| Allantoic acid | -5.1 | 0.013 |
| 2,3-Dihydroxybenzoic acid | -6.8 | 0.007 |
| Itaconic acid | 2.5 | 0.041 |
| Fatty acids | 2-Hydroxystearic acid | 3.3 | 0.000 |
| 16-Hydroxy hexadecanoic acid | 2.6 | 0.000 |
| γ-Linolenic acid | 2.2 | 0.004 |
| Linoleic acid | 1.2 | 0.047 |
| Azelaic acid | -1.8 | 0.002 |
| Nucleotides and derivatives | Ribothymidine | 4.0 | 0.000 |
| Thymidine | 4.0 | 0.017 |
| Uridine | 3.3 | 0.029 |
| Cytidine monophosphate | 3.1 | 0.044 |
| 6-Methyladenine | 1.9 | 0.001 |
| Pseudouridine | 1.9 | 0.002 |
| 5'-Methylthioadenosine | 1.5 | 0.039 |
| NAD | -3.4 | 0.003 |
| 7-Methylguanine | -10.3 | 0.002 |
| Adenine | -11.3 | 0.009 |
| Δ*LeuRS*\_1h/WT\_1h |  | Log2 fold change | *p-*value |
| Amino acid and derivatives | D-Alanyl-D-alanine | 13.8 | 0.001 |
| N-Acetylglutamine | 5.4 | 0.013 |
| H-Leu-Val-OH | 4.7 | 0.002 |
| Alanylglycine | 4.6 | 0.002 |
| Epsilon-(γ-Glutamyl)-lysine | 3.9 | 0.003 |
| γ-Glutamylalanine | 3.7 | 0.013 |
| L-Phenylalanine | 3.4 | 0.009 |
| L-Methionine | 3.3 | 0.009 |
| L-Threonine | 3.3 | 0.018 |
| D-Alanine | 3.3 | 0.010 |
| L-Tyrosine | 3.1 | 0.017 |
| N-Acetyl-L-methionine | 3.0 | 0.004 |
| γ-Glutamylleucine | 3.0 | 0.037 |
| L-Lysine | 2.7 | 0.021 |
| L-Histidine | 2.5 | 0.006 |
| Glycyl-glycine | 2.5 | 0.032 |
| L-Serine | 2.3 | 0.001 |
| L-Glutamine | 2.3 | 0.017 |
| Glycine | 1.8 | 0.026 |
| L-Asparagine | 1.8 | 0.002 |
| cis-4-Hydroxy-D-proline | 1.7 | 0.031 |
| N-Formyl-L-methionine | 1.6 | 0.006 |
| O-Acetyl-L-serine | 1.6 | 0.010 |
| Glutamyl glutamic acid | 1.1 | 0.003 |
| L-Glutamic acid | 1.1 | 0.014 |
| Phenylalanyl phenylalanine | -1.3 | 0.038 |
| N-(2-Furoyl) glycine | -5.2 | 0.007 |
| Norvaline | -10.6 | 0.035 |
| H-Thr-Phe-OH | 3.3 | 0.006 |
| Threonic acid | 1.3 | 0.023 |
| L-Isoleucine | -1.1 | 0.040 |
| Carbohydrates and derivatives | D-Mannose | 4.2 | 0.017 |
| D-Galactose | 3.3 | 0.032 |
| N-Acetyl-glucosamine 1-phosphate | 3.1 | 0.018 |
| D-Arabinose | 2.4 | 0.003 |
| D-Ribose | 1.4 | 0.013 |
| L-Ribulose | 1.3 | 0.033 |
| N-Acetylmannosamine | -1.0 | 0.001 |
| D-Gluconic acid | -1.3 | 0.005 |
| p-Cresol glucuronide | -1.4 | 0.012 |
| Sucrose | -1.4 | 0.004 |
| N,N'-Diacetylchitobiose | -1.4 | 0.022 |
| Forsythiaside | -1.5 | 0.010 |
| N-Acetyl-D-glucosamine | -1.7 | 0.000 |
| Trehalose 6-phosphate | -1.9 | 0.001 |
| Ribitol | 1.5 | 0.014 |
| Organic acids | 4-Hydroxyphenylpyruvate | 16.5 | 0.005 |
| Pyruvic acid | 4.9 | 0.005 |
| Taurine | 4.1 | 0.008 |
| Dehydroascorbic acid | 2.2 | 0.034 |
| Phenyllactic acid | 2.1 | 0.005 |
| Methylmalonic acid | 1.9 | 0.018 |
| Stearic acid | 1.8 | 0.007 |
| 2-Hydroxy-3-(4-hydroxyphenyl) propanoic acid | 1.8 | 0.014 |
| L-Lactic acid | 1.6 | 0.007 |
| Uric acid | 1.4 | 0.018 |
| Quinic acid | 1.4 | 0.001 |
| Cholic acid | 1.3 | 0.036 |
| Cryptochlorogenic acid | 1.1 | 0.002 |
| Indolelactic acid | -1.2 | 0.007 |
| Orotic acid | -1.2 | 0.007 |
| Pyridoxal | -1.3 | 0.000 |
| m-Coumaric acid | -1.4 | 0.001 |
| Mandelic acid | -1.4 | 0.014 |
| Gallic acid | -1.7 | 0.003 |
| 3-(2-Hydroxyphenyl) propanoic acid | -1.7 | 0.006 |
| 6-Hydroxynicotinic acid | -1.7 | 0.006 |
| 3-Hydroxyphenylacetic acid | -1.8 | 0.002 |
| Carnosic acid | -2.5 | 0.005 |
| Indoleacetic acid | -3.1 | 0.005 |
| Argininosuccinic acid | -3.3 | 0.003 |
| Isonicotinic acid | -3.9 | 0.002 |
| 4-Hydroxycinnamic acid | -4.1 | 0.012 |
| 4-Methoxyphenylacetic acid | -4.3 | 0.023 |
| Pyrrole-2-carboxylic acid | -4.3 | 0.014 |
| Quinolinic acid | -5.3 | 0.004 |
| Gentisic acid | -6.2 | 0.037 |
| 2,3-Dihydroxybenzoic acid | -7.4 | 0.000 |
| Tropic acid | -9.8 | 0.022 |
| Allantoic acid | -10.1 | 0.001 |
| Itaconic acid | -11.9 | 0.004 |
| Fatty acids | 4-Acetamidobutanoic acid | -2.2 | 0.000 |
| Glutaric acid | 1.7 | 0.005 |
| L-2-Hydroxyglutaric acid | 1.2 | 0.010 |
| Bovinic acid | 1.1 | 0.009 |
| 4-Acetylbutyrate | 3.4 | 0.003 |
| 10E,12Z-Octadecadienoic acid | 2.9 | 0.006 |
| Ketoleucine | 2.8 | 0.000 |
| α-Ketocaproic acid | 2.3 | 0.002 |
| 2-Hydroxycinnamic acid | 2.3 | 0.010 |
| Aminoadipic acid | 2.2 | 0.009 |
| 3-Methylxanthine | 5.9 | 0.004 |
| α-Ketoisovaleric acid | 4.8 | 0.002 |
| Diaminopimelic acid | 4.7 | 0.000 |
| Pelargonic acid | -1.4 | 0.003 |
| 16-Hydroxy hexadecanoic acid | 4.2 | 0.012 |
| γ-Linolenic acid | 3.6 | 0.002 |
| 13S-Hydroxyoctadecadienoic acid | 3.5 | 0.021 |
| Nucleotides and derivatives | 3'-AMP | 6.3 | 0.001 |
| Ribothymidine | 6.3 | 0.008 |
| Uridine | 4.4 | 0.003 |
| Deoxyuridine | 4.1 | 0.017 |
| Cytidine monophosphate | 4.1 | 0.018 |
| N2,N2-Dimethylguanosine | 3.9 | 0.018 |
| 8-Hydroxy-2'-deoxyguanosine | 3.1 | 0.030 |
| Pseudouridine | 2.8 | 0.008 |
| 6-Methyladenine | 2.2 | 0.018 |
| Thymidine | 2.1 | 0.013 |
| Cytarabine | 2.0 | 0.010 |
| Hypoxanthine | 1.9 | 0.016 |
| 6-Dimethylaminopurine | -1.5 | 0.003 |
| Bilobalide A | -1.5 | 0.017 |
| 5-Hydroxymethyluracil | -3.1 | 0.001 |
| 3-Methyluridine | -4.8 | 0.001 |
| 7-Methylguanine | -11.0 | 0.007 |
| Δ*LeuRS*\_14d/WT\_14d |  | Log2 fold change | *p-*value |
| Amino acid and derivatives | Norvaline | 5.9 | 0.042 |
| Alanylglycine | 4.7 | 0.017 |
| DL-Phenylalanine | 4.3 | 0.032 |
| Anserine | 3.5 | 0.013 |
| N-(2-Furoyl) glycine | 1.8 | 0.044 |
| O-Acetyl-L-serine | 1.7 | 0.000 |
| H-Thr-Phe-OH | -1.0 | 0.005 |
| Glycyl-glycine | -1.1 | 0.004 |
| cis-4-Hydroxy-D-proline | -1.7 | 0.000 |
| N-Acetylhistidine | -2.4 | 0.002 |
| ε-(γ-Glutamyl)-lysine | -2.9 | 0.004 |
| H-Leu-Val-OH | -3.0 | 0.000 |
| 4-Hydroxyproline | -3.6 | 0.001 |
| Carbohydrates and derivatives | Gluconic acid | 13.5 | 0.042 |
| N-Acetyl-D-glucosamine | 4.6 | 0.045 |
| L-Fucose | 4.4 | 0.012 |
| UDP-D-galactose | 3.9 | 0.000 |
| D-Mannose | 3.9 | 0.033 |
| UDP-N-Acetyl-α-D-galactosamine | 3.3 | 0.009 |
| L-Iditol | 2.8 | 0.007 |
| Trehalose 6-phosphate | 2.5 | 0.009 |
| D-Arabinose | 2.0 | 0.003 |
| 1-Kestose | 1.5 | 0.018 |
| N-Acetylmannosamine | -1.2 | 0.004 |
| Naringenin 4'-O-glucuronide | -1.3 | 0.010 |
| 1-Deoxy-D-xylulose 5-phosphate | -2.1 | 0.000 |
| p-Cresol glucuronide | -3.1 | 0.001 |
| D-Ribose | -8.2 | 0.009 |
| Astilbin | -1.5 | 0.000 |
| Mannitol | -3.9 | 0.000 |
| Sweroside | 2.6 | 0.014 |
| Cosmosiin | -3.5 | 0.001 |
| Organic acids | 4-Hydroxyphenylpyruvate | 19.0 | 0.025 |
| Kynurenic acid | 14.4 | 0.002 |
| Indoleacetic acid | 13.4 | 0.031 |
| m-Coumaric acid | 10.6 | 0.015 |
| Citraconic acid | 9.0 | 0.028 |
| Formylanthranilic acid | 3.8 | 0.001 |
| Isocitric acid | 3.2 | 0.000 |
| 3-(2-Hydroxyphenyl) propanoic acid | 2.9 | 0.014 |
| 3-Furoic acid | 2.5 | 0.042 |
| Benzoic acid | 2.4 | 0.018 |
| Quinolinic acid | 1.9 | 0.022 |
| Phenylpyruvic acid | 1.9 | 0.015 |
| 1,7-Dimethyluric acid | 1.9 | 0.023 |
| Linoleic acid | 1.8 | 0.041 |
| 4-Methoxyphenylacetic acid | 1.7 | 0.008 |
| But-2-enoic acid | 1.2 | 0.015 |
| 5-Methoxysalicylic acid | -1.5 | 0.001 |
| Nicotinic acid | -1.6 | 0.017 |
| Maleic acid | -1.7 | 0.009 |
| 4-Pyridoxic acid | -1.7 | 0.000 |
| Pyruvic acid | -1.8 | 0.000 |
| Byssochlamic acid | -1.8 | 0.001 |
| Gallic acid | -1.9 | 0.001 |
| Xanthurenic acid | -1.9 | 0.003 |
| Tropic acid | -2.1 | 0.000 |
| 2,3-Dihydroxybenzoic acid | -2.1 | 0.001 |
| Allantoic acid | -2.2 | 0.001 |
| 2-Hydroxycinnamic acid | -2.4 | 0.000 |
| Fumaric acid | -2.4 | 0.013 |
| Phloretic acid | -2.7 | 0.001 |
| trans-Aconitic acid | -2.7 | 0.000 |
| Argininosuccinic acid | -2.8 | 0.004 |
| Uric acid | -2.9 | 0.000 |
| 4-O-α-D-Galactopyranuronosyl-D-galacturonic acid | -3.3 | 0.002 |
| Dehydroascorbic acid | -5.5 | 0.001 |
| Picolinic acid | -7.7 | 0.007 |
| 3-Methoxybenzenepropanoic acid | 2.8 | 0.032 |
| Fatty acids | PE (16:0/18:2(9Z,12Z)) | -3.9 | 0.002 |
| 10E,12Z-Octadecadienoic acid | -4.0 | 0.010 |
| Ketoleucine | -6.0 | 0.001 |
| 2-Hydroxyadipic acid | -2.1 | 0.000 |
| 13S-hydroxyoctadecadienoic acid | -1.8 | 0.000 |
| γ-Linolenic acid | -1.7 | 0.016 |
| Glutaric acid | 1.6 | 0.033 |
| 2-Hydroxy-3-methylbutyric acid | 1.4 | 0.030 |
| 3-Hydroxyvaleric acid | 1.3 | 0.019 |
| α-Ketoisovaleric acid | -1.1 | 0.002 |
| 9,10-Epoxyoctadecanoic acid | -1.2 | 0.001 |
| 16-Hydroxy hexadecanoic acid | -1.3 | 0.008 |
| 4-Acetamidobutanoic acid | 1.9 | 0.012 |
| Pelargonic acid | 1.9 | 0.019 |
| Nucleotides and derivatives | Uridine | 3.3 | 0.000 |
| 6-Methyladenine | 2.7 | 0.001 |
| Deoxyuridine | 1.5 | 0.025 |
| Ribothymidine | 1.1 | 0.031 |
| Pseudouridine | 1.0 | 0.012 |
| 2-Methylguanosine | -1.0 | 0.014 |
| 5-Hydroxymethyluracil | -1.8 | 0.010 |
| Adenine | -2.8 | 0.008 |
| NAD | -2.8 | 0.000 |
| Oxypurinol | -3.0 | 0.001 |
| N,N-Dimethylguanosine | -3.0 | 0.001 |
| N6-Methyladenosine | -3.9 | 0.025 |
| Adenosine monophosphate | -3.9 | 0.006 |