

**Table S3.** Accessions for nucleotide and protein-coding gene model sequences used for comparison in the four-gene phylogenetic analyses. All the sequences were retrieved from JGI MycoCosm database [76] with minor exception: <sup>a</sup> from NCBI <http://www.ncbi.nlm.nih.gov/>

Fungi	SSU	LSU	<i>gapdh</i>	<i>rpb2</i>
<i>Bjerkandera adusta</i> HHB-12826-SP SB-2	scaffold_11 6:11112- 11672	scaffold_116:6 879-11111	jgi Bjead1_1 183636 estExt_Genemark1.C_140109	jgi Bjead1_1 163844 gm1.283_g
<i>Phanerochaete chrysosporium</i> RP-78 / <i>Phanerochaete chrysosporium</i> isolate AFTOL-ID 776	AY854086 <sup>a</sup>	AF287883 <sup>a</sup>	jgi Phchr1 132198 e_gww2.9.328.1	jgi Phchr1 7545 fgenesh1_pg.C_scaffold_13000333
<i>Phanerochaete carnosa</i> HHB-10118-Sp	scaffold_28 :3285-3898	scaffold_28:19 34-3284	jgi Phaca1 261269 fgenesh2_kg.8_#_864_#_scaffold_160_3189_4734	jgi Phaca1 247866 fgenesh2_kg.1_#_1876_#_isotig11261
<i>Postia placenta</i> MAD-698-R-SB12	scaffold_59 :2784-3397	scaffold_59:33 98-4810	jgi Posp1RSB12_1 1185348 estExt_Genewise1Plus.C_16_t10169	jgi Posp1RSB12_1 175997 estExt_Genewise1Plus.C_1_t30126
<i>Trametes versicolor</i> FP-101664 SS1	scaffold_24 :1316-1883	scaffold_24:1- 15649	jgi Trave1 170525 estExt_Genewise1Plus.C_8_t20209	jgi Trave1 110266 e_gw1.1.3121.1
<i>Ganoderma</i> sp. 10597 SS1	scaffold_21 :13398- 13988	scaffold_21:12 699-13397	jgi Gansp1 154547 gm1.7246_g	jgi Gansp1 159732 estExt_Genemark1.C_1_t20266
<i>Dichomitus squalens</i> LYAD-421 SS1	scaffold_16 8:626-1170 + scaffold_16 2:4601- 5120	scaffold_162:3 989- 4600/scaffold_ 154:1265-1408	jgi Dicsq1 183206 estExt_Genemark1.C_540047	jgi Dicsq1 164685 gm1.454_g
<i>Phlebia brevispora</i> HHB-7030 SS6	scaffold_97 :14645- 15148 + scaffold_97 :17080- 17577	scaffold_97:15 729-17079	jgi Phlbr1 163617 estExt_Genemark1.C_170071	jgi Phlbr1 159852 estExt_Genemark1.C_4_t10175
<i>Heterobasidion irregulare</i> TC32-1	scaffold_09 :1649857- 1650425	scaffold_09:16 50426-1651779	jgi Hetan2 419475 fgenesh1_pm.07_#_336	jgi Hetan2 413386 fgenesh1_pm.01_#_528