**Table S1.** List of mitochondrial genomes used in the phylogenetic analysis. Species list arranged alphabetically.

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| --- | --- |
| **Accession** | **Organism** |
| NC\_029851.1 | *Acremonium fuci* |
| NC\_004514.1 | *Akanthomyces muscarius* |
| NC\_023117.1 | *Annulohypoxylon stygium* |
| NC\_010652.2 | *Beauveria bassiana* |
| NC\_030636.1 | *Beauveria caledonica* |
| NC\_022708.1 | *Beauveria pseudobassiana* |
| NC\_020430.1 | *Ceratocystis cacaofunesta* |
| NC\_036667.1 | *Clonostachys rosea* |
| NC\_027280.1 | *Colletotrichum acutatum* |
| KX885105.1 | *Colletotrichum aenigma* |
| NC\_030052.1 | *Colletotrichum fioriniae* |
| KX034082.1 | *Colletotrichum fructicola* |
| KX885104.1 | *Colletotrichum gloeosporioides* |
| NW\_007361658.1 | *Colletotrichum graminicola* |
| NC\_023540.1 | *Colletotrichum lindemuthianum* |
| NC\_029213.1 | *Colletotrichum lupini* |
| NC\_035496.1 | *Colletotrichum salicis* |
| KX885102.1 | *Colletotrichum siamense* |
| NC\_029706.1 | *Colletotrichum tamarilloi* |
| NC\_022834.1 | *Cordyceps militaris* |
| NC\_022681.1 | *Fusarium circinatum* |
| NC\_036106.1 | *Fusarium commune* |
| NC\_026993.1 | *Fusarium culmorum* |
| NC\_025928.1 | *Fusarium gerlachii* |
| NC\_009493.1 | *Fusarium graminearum* |
| NC\_017930.1 | *Fusarium oxysporum* |
| NC\_016680.1 | *Fusarium solani* |
| NC\_016687.1 | *Fusarium verticillioides* |
| NC\_027660.1 | *Hirsutella minnesotensis* |
| NC\_030164.1 | *Hirsutella rhossiliensis* |
| NC\_036610.1 | *Hirsutella vermicola* |
| NC\_030340.1 | *Ilyonectria destructans* |
| NC\_028330.1 | *Lecanicillium saksenae* |
| NC\_008068.1 | *Metarhizium anisopliae* |
| NC\_030252.1 | *Nectria cinnabarina* |
| NC\_034659.1 | *Ophiocordyceps sinensis* |
| NC\_032302.1 | *Parengyodontium album* |
| NC\_030172.1 | *Penicillium polonicum* |
| NC\_027416.1 | *Penicillium roqueforti* |
| NC\_031828.1 | *Pestalotiopsis fici* |
| NC\_022835.1 | *Pochonia chlamydosporia* |
| NC\_036382.1 | *Tolypocladium inflatum* |
| NC\_031384.1 | *Tolypocladium ophioglossoides* |
| NC\_036144.1 | *Trichoderma hamatum* |
| NC\_008248.1 | *Verticillium dahliae* |
| NC\_029238.1 | *Verticillium nonalfalfae* |