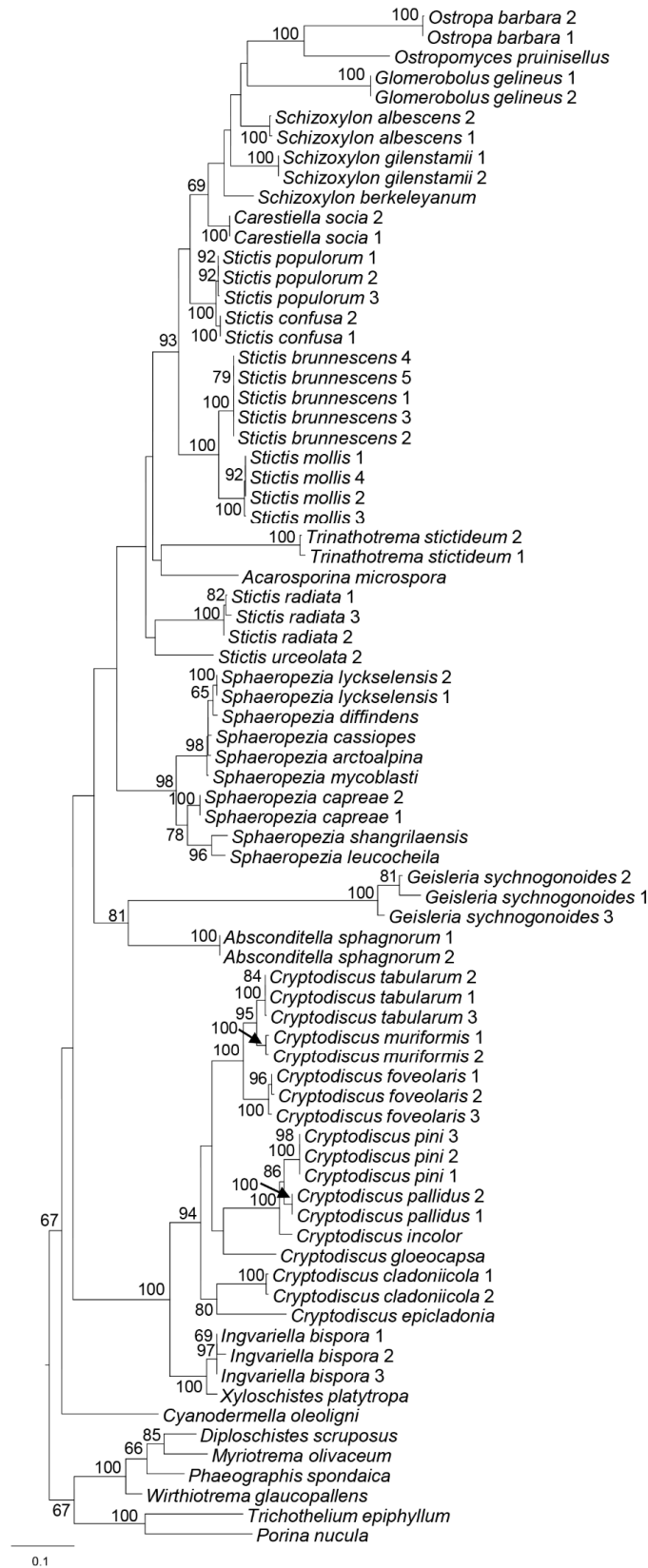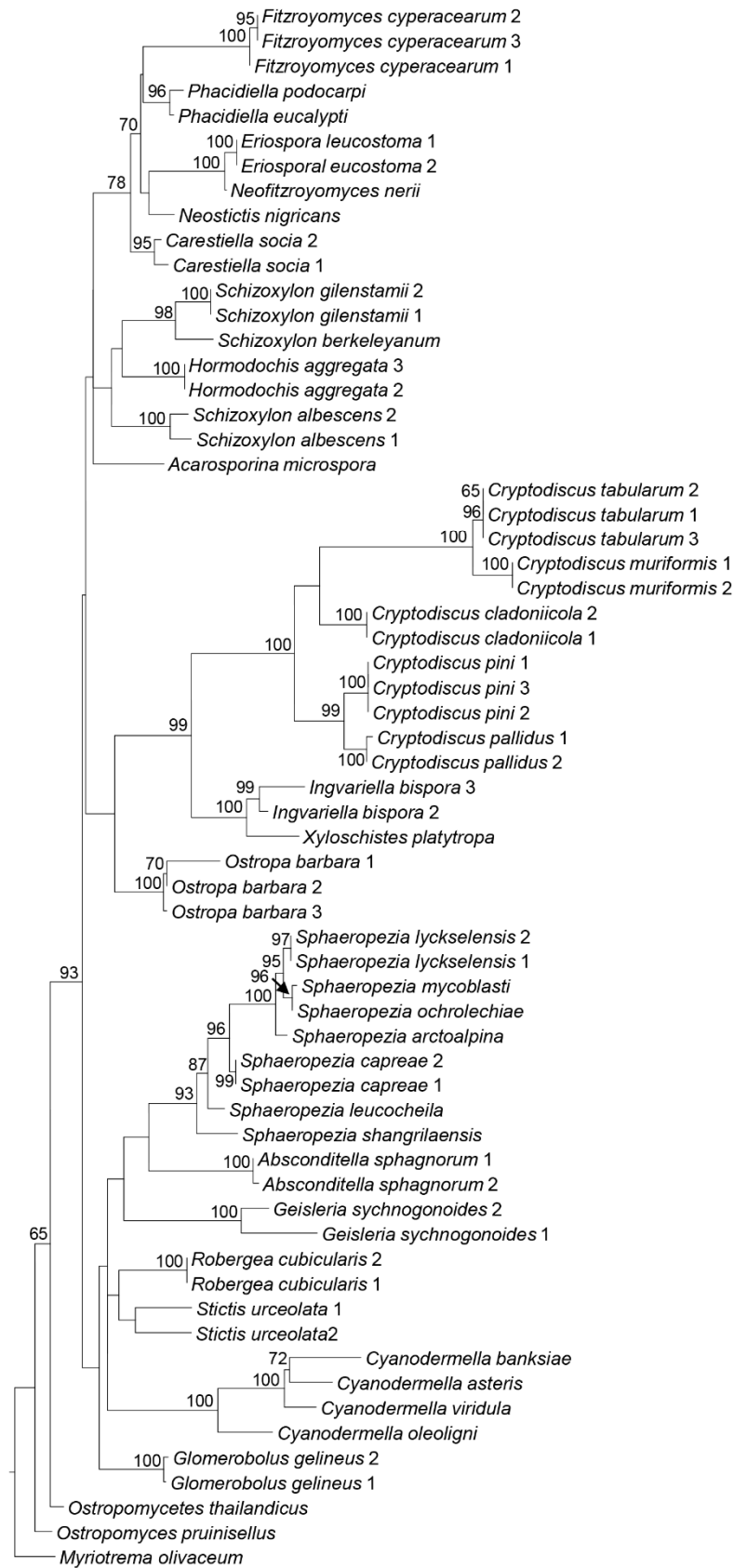**Supplementary Materials:**

Figure S1. Best-scoring RAxML tree reconstructed based on analysis of a single dataset of mtSSU sequence data. Bootstrap support values for ML equal to or greater than 65% is defined above the nodes.

Figure S2 Best-scoring RAxML tree reconstructed based on analysis of a single dataset of LSU sequence data. Bootstrap support values for ML equal to or greater than 65% is defined above the nodes.

Figure S3 Best-scoring RAxML tree reconstructed based on analysis of a single dataset of ITS sequence data. Bootstrap support values for ML equal to or greater than 65% is defined above the nodes.
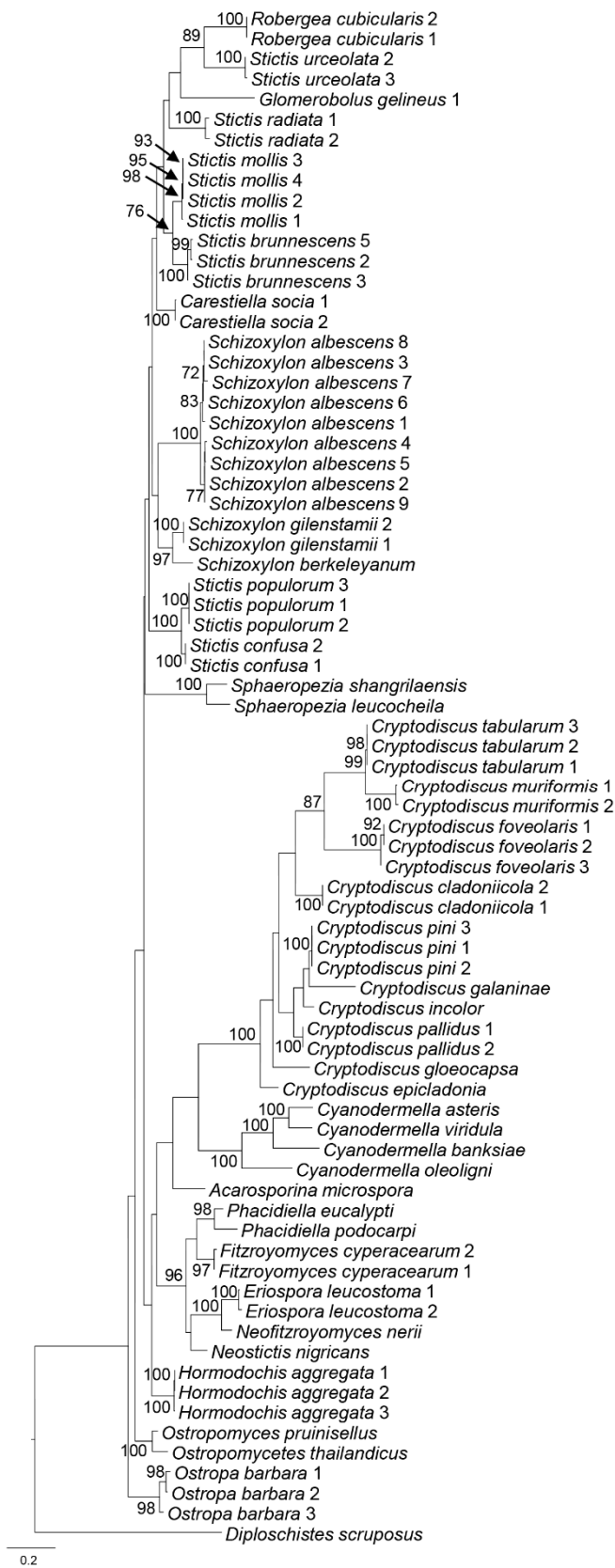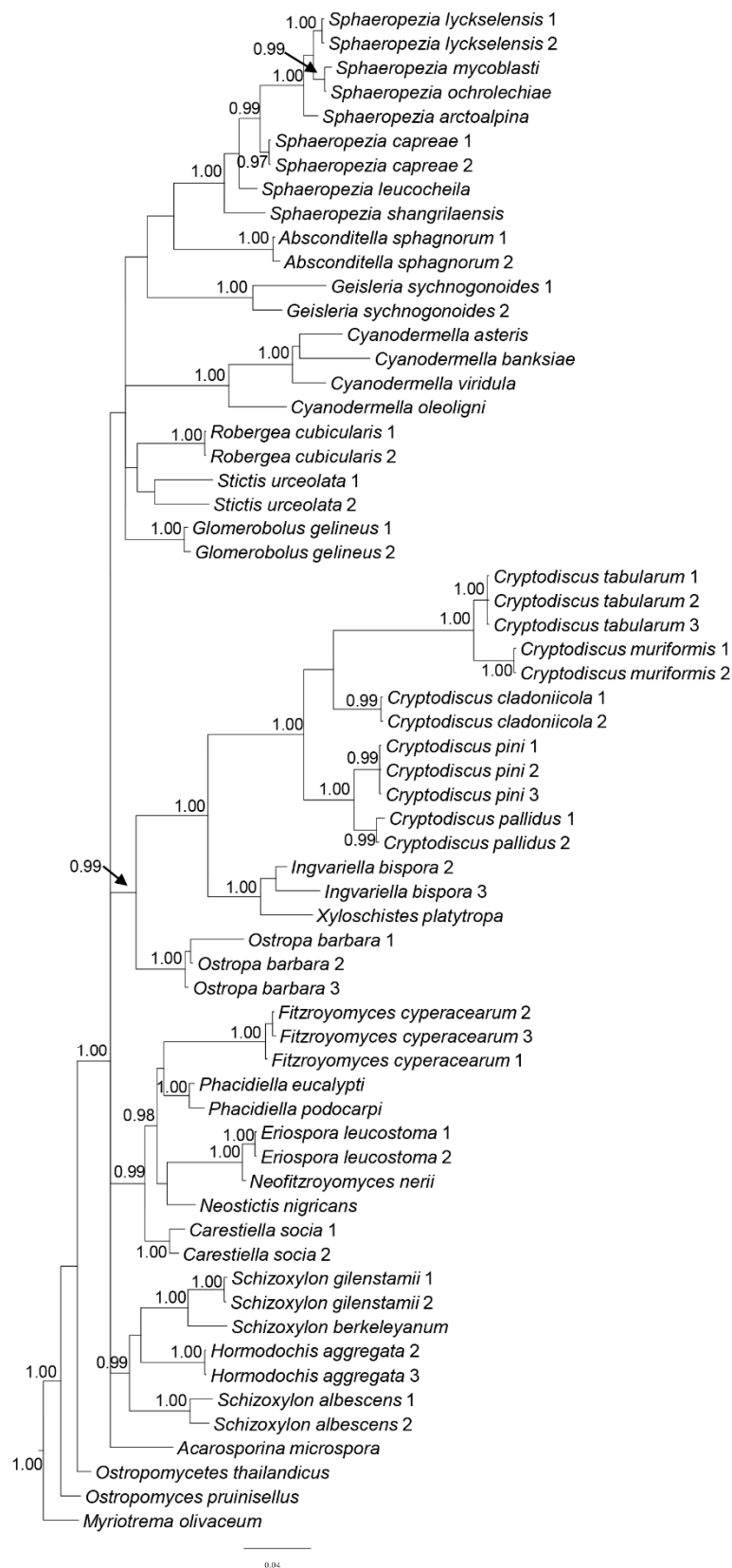
Figure S4 Best-scoring RAxML tree reconstructed based on analysis of a single dataset of mtSSU sequence data. Bootstrap support values for BP equal to or greater than 0.90 is defined above the nodes.

1.00 — *Ostropa barbara* 1
1.00 — *Ostropa barbara* 2
Ostropomyces pruinisellus
1.00 — *Glomerobolus gelineus* 1
Glomerobolus gelineus 2
1.00 — *Schizoxylon albescens* 1
Schizoxylon albescens 2
1.00 — *Schizoxylon gilenstamii* 1
Schizoxylon gilenstamii 2
0.99 — *Schizoxylon berkeleyanum*
1.00 — *Carestiella socia* 1
0.97 — *Carestiella socia* 2
0.95 — *Stictis populorum* 1
Stictis populorum 2
1.00 — *Stictis populorum* 3
Stictis confusa 1
0.98 — *Stictis confusa* 2
1.00 — *Stictis brunnescens* 1
1.00 — *Stictis brunnescens* 2
1.00 — *Stictis brunnescens* 3
1.00 — *Stictis brunnescens* 4
1.00 — *Stictis brunnescens* 5
1.00 — *Stictis mollis* 1
Stictis mollis 2
1.00 — *Stictis mollis* 4
Stictis mollis 3
1.00 — *Trinathotrema stictideum* 1
Trinathotrema stictideum 2
Acarosporina microspora
Stictis radiata 1
1.00 — *Stictis radiata* 3
Stictis radiata 2
Stictis urceolata 2
0.99 — Sphaeropezia lyckselensis 1
1.00 — *Sphaeropezia lyckselensis* 2
1.00 — *Sphaeropezia diffindens*
1.00 — *Sphaeropezia arctoalpina*
1.00 — *Sphaeropezia cassiopes*
1.00 — *Sphaeropezia mycoblasti*
1.00 — *Sphaeropezia capreae* 1
Sphaeropezia capreae 2
0.92 — *Sphaeropezia leucocheila*
1.00 — *Sphaeropezia shangrilaensis*
0.99 — Geisleria sychnogonoides 1
1.00 — *Geisleria sychnogonoides* 2
Geisleria sychnogonoides 3
0.99 — 1.00 — *Absconditella sphagnorum* 1
Absconditella sphagnorum 2
Cryptodiscus tabularum 1
0.99 — *Cryptodiscus tabularum* 2
1.00 — *Cryptodiscus tabularum* 3
Cryptodiscus muriformis 1
1.00 — 0.99 — *Cryptodiscus muriformis* 2
0.92 — *Cryptodiscus foveolaris* 1
Cryptodiscus foveolaris 2
1.00 — *Cryptodiscus foveolaris* 3
0.93 — *Cryptodiscus pini* 1
0.99 — *Cryptodiscus pini* 2
1.00 — *Cryptodiscus pini* 3
1.00 — *Cryptodiscus pallidus* 1
1.00 — *Cryptodiscus pallidus* 2
Cryptodiscus incolor
0.96 — *Cryptodiscus gloeocapsa*
1.00 — *Cryptodiscus cladoniicola* 1
Cryptodiscus cladoniicola 2
0.99 — *Cryptodiscus epicladonia*
Ingvariella bispora 1
0.99 — *Ingvariella bispora* 2
1.00 — *Ingvariella bispora* 3
Xyloschistes platytropa
Cyanodermella oleoligni
0.95 — *Diploschistes scruposus*
0.99 — *Myriotrema olivaceum*
1.00 — *Phaeographis spondaica*
0.95 — *Wirthiotrema glaucopallens*
1.00 — *Porina nucula*
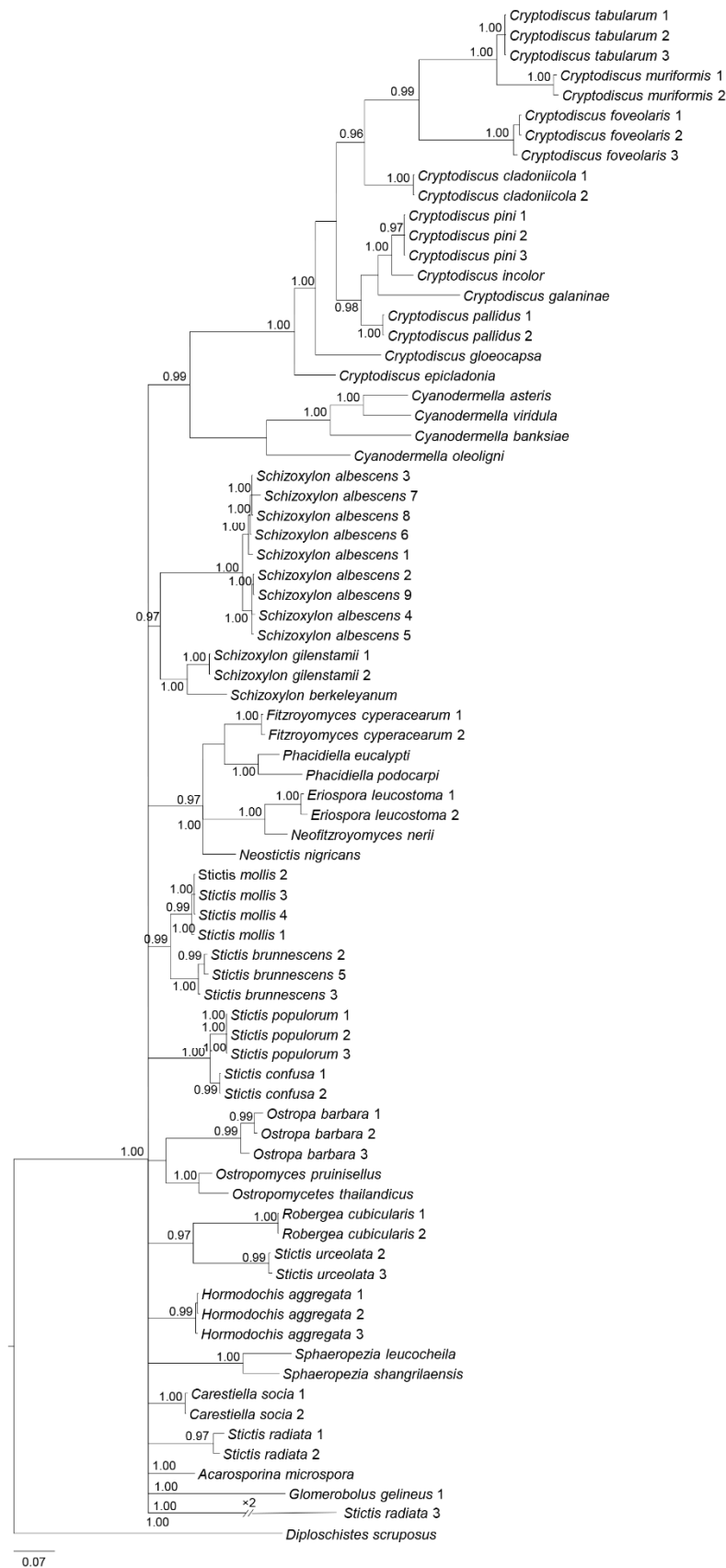*Trichothelium epiphyllum*

0.95

0.08

Figure S5 Best-scoring RAxML tree reconstructed based on analysis of a single dataset of LSU sequence data. Bootstrap support values for BP equal to or greater than 0.90 is defined above the nodes.

Figure S6 Best-scoring RAxML tree reconstructed based on analysis of a single dataset of ITS sequence data. Bootstrap support values for BP equal to or greater than 0.90 is defined above the nodes.