Supplementary Table S3 Comparison of the closely related species

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| species | Cell size (µm) | ecology | geography | Pairwise distance (S.E.)  ITS rDNA | Pairwise distance (S.E.)  SSU rDNA |
| *Coccomyxs antarctica* | (4-7)\*(8-12) | Lichen epiphyte  (*Usnea aurantiacoatra*) | Antarctica | 0.062 ± 0.013 | 0.002 ± 0.001 |
| *C. arvernensis* | (3-4)\*(6-8) | Photobions of bark lichens | No record in Antarctica | 0.022 ± 0.007 | 0.001 ± 0.001 |
| *C. greatwallensis* sp. *nov.* | (3-5)\*(6-12) | Lichen epiphyte  (*Psoroma hypnorum*) | Antarctica | / | / |
| *C. viridis* | (1.8-3.6)\*(4.7-8.4) | Photobions of bark lichens | No record in Antarctica | 0.040 ± 0.011 | 0.001 ± 0.001 |