

**Additional file 6.** Taxon sampling for the 79-gene and 50-gene datasets used in the phylogenomic analyses.

Species	79-gene dataset	50-gene dataset	Genbank accession number(s)
<i>Acetabularia acetabulum</i>		✓	HG518426-HG518474
<i>Acutodesmus obliquus</i>	✓	✓	NC_008101
<i>Botryococcus braunii</i>	✓	✓	KM462884
<i>Bryopsis hypnoides</i>	✓	✓	NC_013359
<i>Bryopsis plumosa</i>	✓	✓	LN810504
<i>Cephaleuros parasiticus</i>		✓	KM464687, KM464693, KM464698, KM464707, KM464711, KM464715, KM491797, KM491799, KM491808, KM491813, KM491819, KM491823, KM491825, KM491828, KM491837, KM491848, KM504519
<i>Chlamydomonas reinhardtii</i>	✓	✓	NC_005353
<i>Chlorella vulgaris</i>	✓	✓	NC_001865
<i>Coccomyxa subellipsoidea</i> C-169	✓	✓	NC_015084
<i>Dunaliella salina</i>	✓	✓	NC_016732
<i>Elliptochloris bilobata</i>	✓	✓	KM462887
<i>Floydiella terrestris</i>	✓	✓	NC_014346
<i>Geminella minor</i>	✓	✓	KM462883
<i>Halimeda cylindracea</i>		✓	KM820107-KM820166
<i>Koliella longiseta</i>	✓	✓	KM462868
<i>Leptosira terrestris</i>	✓	✓	NC_009681
<i>Lobosphaera incisa</i>	✓	✓	KM462871
<i>Marsupiomonas</i> sp. NIES 1824	✓	✓	KM462870
<i>Marvania geminata</i>	✓	✓	KM462888
<i>Microthamnion kuetzingianum</i>	✓	✓	KM462876
<i>Monomastix</i> sp. OKE-1	✓	✓	NC_012101
<i>Myrmecia israelensis</i>	✓		KM462861
<i>Neocystis brevis</i>	✓	✓	KM462873
<i>Nephroselmis astigmatica</i>	✓	✓	KJ746600
<i>Nephroselmis olivacea</i>	✓	✓	NC_000927
<i>Oedogonium cardiacum</i>	✓	✓	NC_011031
<i>Oltmannsiellopsis viridis</i>	✓	✓	NC_008099
<i>Oocystis solitaria</i>	✓	✓	FJ968739
<i>Ostreococcus tauri</i>	✓	✓	NC_008289
<i>Parachlorella kessleri</i>	✓	✓	NC_012978
<i>Pedinomonas minor</i>	✓	✓	NC_016733
<i>Pedinomonas tuberculata</i>	✓	✓	KM462867
<i>Picocystis salinarum</i>	✓	✓	KJ746599
<i>Prasinococcus</i> sp. CCMP1194	✓	✓	KJ746597
<i>Prasinoderma coloniale</i>	✓	✓	NC_024817
<i>Prasinophyceae</i> sp. CCMP1205	✓	✓	KJ746601
<i>Prasinophyceae</i> sp. MBIC10622	✓	✓	KJ746602
<i>Prasiolopsis</i> sp. SAG 84.81	✓	✓	KM462862
<i>Pseudendoclonium akinetum</i>	✓	✓	NC_008114
<i>Pseudochloris wilhelmii</i>	✓	✓	KM462886
<i>Pycnococcus provasolii</i>	✓	✓	NC_012097
<i>Pyramimonas parkeae</i>	✓	✓	NC_012099
<i>Schizomeris leibleinii</i>		✓	NC_015645
<i>Stigeoclonium helveticum</i>	✓	✓	NC_008372
<i>Tetraselmis</i> spp		✓	AB561008-AB561081, DQ173248, DQ173249, DQ227304, HF931099
<i>Trebouxia aggregata</i>		✓	EU123963-EU124002
<i>Trentepohlia annulata</i>		✓	KM464689, KM464692, KM464697, KM464705, KM464706, KM464712, KM464717, KM491796, KM491802, KM491811, KM491820, KM491824, KM491826, KM491831, KM491834, KM491839, KM491841, KM491845
<i>Tydemanina expeditiones</i>	✓	✓	LN810505
<i>Ulva</i> sp. UNA00071828	✓	✓	KP720616
<i>Volvox carteri</i>		✓	GU084820
<i>Watanabea reniformis</i>	✓	✓	KM462863
<i>Xylochloris irregularis</i>	✓	✓	KM462872