

Table S1: GenBank entries (accession numbers) found by BLAST N search (100% coverage; 100% identity) using the V4 region of the SSU rDNA of each species. To each entry the geographical origin and after the habitat are given.

species	strain	accession	Habitat	continent	coordinates
<i>Desmochloris halophila</i>	CCAP 6006/1	FM882216	marine	North America (USA, MA)	41.392045 N, -70.620814 E
	CCAP 6006/4	MW714125	soil	South America	-27.066667 N, -70.816667 E
	RCC 2945	KT860927	marine	Europe, North Sea	54.000000 N, 0.000000 E
	SAG 2565	MH703754	soil	West Europe	54.416667 N, 13.366667 E
	SAG 2397	MW714126	freshwater	West Europe	49.385833 N, 11.471944 E
<i>Desmochloris edaphica</i>	CCAP 6006/5	MW714127	soil	East Europe	45.254722 N, 30.203333 E
	CCAP 6006/6	MW714128	soil	South America	-27.066667 N, -70.816667 E
	TT-4-1	MT968399	soil, saline	West Europe	51.467324 N, 11.770714 E
	ACSSI 181	MH102328	soil	East Europe	47.889167 N, 44.013889 E
	ACSSI 180	KY086483	soil	East Europe	47.889167 N, 44.013889 E
<i>Desmochloris mollenhaueri</i>	CCAP 6006/2	FM882217	soil	Africa	-31.616667 N, 18.716667 E
	CCAP 6006/3	FM882218	soil	Africa	-28.612340 N, 16.654331 E
	CCAP 6006/7	MW714129	soil	Africa	-28.226646 N, 17.025668 E
	CCAP 6006/8	MW714130	soil	South America	-27.066667 N, -70.816667 E
	CCAP 6006/9	MW714131	soil	South America	-27.066667 N, -70.816667 E
	JB13	KF791549	soil saline	Asia China	46.585352 N, 125.161214 E
<i>Chlorocystis cohnii</i>	SAG 9.90	MW714132	marine	West Europe	54.182061 N, 7.887631 E
	SCCAP K-0421	MW714133	marine, endophyte	North America, Greenland	64.434722 N, -50.269444 E
<i>Chlorocystis dangeardii</i>	SAG 8.86	MW714140	marine	West Europe	53.277121 N, -3.807850 E
	CCAP 211/25	MW714141	brackish	West Europe	50.358333 N, -4.166667 E
	CCAP 233/1	MW714142	marine	West Europe	45.513149 N, -1.122879 E
<i>Chlorocystis john-westii</i>	CCAP 6005/4	MW714146	marine, endophyte	South America	-23.693247 N, -45.461417 E
	CCAP 6005/5	MW714147	marine, endophyte	Australia	-23.853814 N, 151.278133 E
	CCAP 6005/10	MW714143	marine, endophyte	South America	-3.558611 N, -80.519142 E
	CCAP 6005/11	MW714144	marine, endophyte	Australia	-19.418678 N, 147.233276 E
	CCAP 6005/12	MW714145	marine, endophyte	Australia	-19.418678 N, 147.233276 E
	UTEX 2846	MW714148	marine, endophyte	South America	-5.208550 N, -45.393026 E
	NIES-1838	PP477768	marine	Asia	35.649862 N, 139.825201 E
	NIES-1839	PP477769	marine	Asia	35.649862 N, 139.825201 E
	CCAP 6005/13	MK541803	marine	Africa	-20.736302 N, 44.002005 E
	MBIC 10446	AB058345	marine	Asia	26.570775 N, 128.02559 E
<i>Chlorocystis operculatum</i>	SAG 19.92	MW714134	marine	West Europe	45.513149 N, -1.122879 E
	CCMP 435	MW714135	marine	West Europe	45.513149 N, -1.122879 E
	SAG 11.90	MW714136	marine	West Europe	54.182061 N, 7.887631 E
<i>Chlorocystis dilatatum</i>	SAG 12.90	MW714139	marine	West Europe	54.182061 N, 7.887631 E
<i>Chlorocystis moorei</i>	CCAP 6005/6	MW714137	marine	West Europe	54.182061 N, 7.887631 E
	CCMP 2288	MW714138	marine	North America (USA, Washington)	48.535278 N, -123.031111 E
	TT-4-1-D	MT968404	soil, saline	West Europe	51.467324 N, 11.770714 E
	TT-4-1-O	MT968406	soil, saline	West Europe	51.467324 N, 11.770714 E
	TT-4-1-M	MT968405	soil, saline	West Europe	51.467324 N, 11.770714 E
	NN-4-1-T	MT968403	soil, saline	West Europe	51.467324 N, 11.770714 E
	NN-4-1-S	MT968402	soil, saline	West Europe	51.467324 N, 11.770714 E
	NN-4-1-Q	MT968401	soil, saline	West Europe	51.467324 N, 11.770714 E
	voucher	DQ821520	marine	North America (USA, California)	38.755113 N, -121.353309 E
<i>Sykidion marinum</i>	UTEX 1445	MW714149	unknown	unknown	unknown
<i>Sykidion dyeri</i>	CCMP 257	MW714150	marine	North America (USA, CT)	41.216667 N, -73.066667 E
	BE-001	MK457458	marine	South America (Brasil)	-22.892939 N, -43.124084 E
<i>Sykidion droebakense</i>	CCMP 258	MW714151	marine	North America (British Columbia)	48.407326 N, -123.980713 E
	CCMP 438	MW714152	marine	Antarctica	-64.774167 N, -64.052222 E
	NKY372003	LC505539	marine	Asia	30.347925 N, 130.524483 E
<i>Solotvynia ucrainica</i>	SAG 2662	PP477766	saline	West Europe	47.955556 N, 23.871111 E
	MBIC 10461	AB058346	marine	Asia	26.546766 N, 128.055267 E
<i>Symbiochlorum hainanensis</i>	CCMP 1293	PP477767	marine	Asia	7.540278 N, 134.589167 E
	CCTCC M2018096	MH061387	marine	Asia	18.208480 N, 109.401855 E
<i>Ignatius tetrasporus</i>	UTEX 2012	FN562432	soil	North America (USA, Pennsylvania)	41.396201 N, -75.196287 E