

Table S1. GenBank accession numbers of analyzed strains. New sequences are indicated in bold.

Species	Strain	SSU	ITS2+LSU	<i>psbA</i>	Country, habitat (if present) and source
<i>Cryptomonas borealis</i>	M1083	AM051188	AJ566160	None	Germany (Hoef-Emden & Melkonian, 2003)
<i>C. cattiensis</i>	VN 876	MT000714	MT000713	MN990426	Vietnam, grassy wetland (Martynenko <i>et al.</i> , 2020)
<i>C. commutata</i>	M0739	AJ420697	AJ566165	None	Austria, bog (Hoef-Emden, 2007)
<i>C. commutata</i>	M1975	AM901364	AM396380	None	Germany, moat (Hoef-Emden, 2007)
<i>C. curvata</i>	CCAC 0080	AM051189	AJ566148	None	Germany (Hoef-Emden & Melkonian, 2003)
<i>C. curvata</i>	CNUCRY64	KF907376	KF907329	KF907463	Korea (Choi <i>et al.</i> , 2013)
<i>C. curvata</i>	NNSura3D	MZ268233	MZ305470	MZ353616	Russia (Gusev <i>et al.</i> , 2022)
<i>C. erosa</i>	M0741	AM051201	AJ566163	None	Austria, bog (Hoef-Emden, 2007)
<i>C. erosa</i>	SYKOA Cr-010-19	MW487989	MW432538	MW430149	Russia, sphagnum bog (Martynenko <i>et al.</i> , 2022)
<i>C. furtiva</i>	R 207	OK484510	OK491443	OK493498	Russia (Gusev <i>et al.</i> , 2022)
<i>C. furtiva</i>	R 208	OK484511	OK491444	OK493499	Russia (Gusev <i>et al.</i> , 2022)
<i>C. gyropyrenoidosa</i>	M1079	AJ421149	AJ566154	None	Germany (Hoef-Emden & Melkonian, 2003)
<i>C. gyropyrenoidosa</i>	CNUCRY146	KF907380	KF907333	KF907467	Korea (Choi <i>et al.</i> , 2013)
<i>C. gyropyrenoidosa</i>	R 247	MZ268225	MZ305462	MZ353609	Russia (Gusev <i>et al.</i> , 2022)
<i>C. indica</i>	India 11	MW430772	MW430992	MW430127	India, reservoir (Gusev <i>et al.</i> , 2021)
<i>C. kisselevii</i>	NN 3	OK484497	OK491429	OK493487	Russia (Gusev <i>et al.</i> , 2022)
<i>C. kisselevii</i>	NN 21	OK484496	OK491430	OK493486	Russia (Gusev <i>et al.</i> , 2022)
<i>C. loricata</i>	M2088	None	AJ715456	None	Germany, temporary puddle (Hoef-Emden, 2005)
<i>C. loricata</i>	R 242	MZ268224	MZ305461	MZ353608	Russia (Gusev <i>et al.</i> , 2022)
<i>C. lundii</i>	M0850	AM051190	AJ566161	None	Germany (Hoef-Emden & Melkonian, 2003)
<i>C. lundii</i>	R 179	MT216858	MT216865	MZ353626	Russia (Gusev <i>et al.</i> , 2022)
<i>C. macilenta</i>	SYKOA Cr-009-19	MW487990	MW432539	MW430150	Russia, sphagnum bog (Martynenko <i>et al.</i> , 2022)
<i>C. marssonii</i>	CCAC 0086	AM051191	AJ566155	None	Germany (Hoef-Emden & Melkonian, 2003)
<i>C. marssonii</i>	CCAC 0103	AM051192	AJ715444	None	Germany (Hoef-Emden & Melkonian, 2003)
<i>C. matvienkoae</i>	R 246	OK484506	OK491439	OK493494	Russia (Gusev <i>et al.</i> , 2022)
<i>C. meshchyorana</i>	R 171	OK484507	OK491442	OK493495	Russia (Gusev <i>et al.</i> , 2022)
<i>C. obovata</i>	Saenae080611D	None	KF907336	KF907470	Korea (Choi <i>et al.</i> , 2013)
<i>C. obovata</i>	NN 17	MZ268226	MZ305463	MZ353610	Russia (Gusev <i>et al.</i> , 2022)

<i>C. obovoidea</i>	CNUCRY76	KF907383	KF907337	KF907471	Korea (Choi <i>et al.</i> , 2013)
<i>C. obovoidea</i>	Songgock032611	KF907384	KF907338	KF907472	Korea (Choi <i>et al.</i> , 2013)
<i>C. obovoidea</i>	R 105	MZ268240	MZ305477	MZ353623	Russia (Gusev <i>et al.</i> , 2022)
<i>C. ovata</i>	CCAC 0064	AM051193	AJ566153	None	Germany (Hoef-Emden & Melkonian, 2003)
<i>C. ovata</i>	R 168	MZ268235	MZ305472	MZ353618	Russia (Gusev <i>et al.</i> , 2022)
<i>C. paludosa</i>	R 186	OK484495	OK491428	OK493485	Russia (Gusev <i>et al.</i> , 2022)
<i>C. paludosa</i>	Okgeum121809C	None	KF907358	KF907492	Korea (Choi <i>et al.</i> , 2013)
<i>C. paramaecium</i>	CCAC 0056	AJ007276	AJ566158	None	Canada, Warren Lake (Hoef-Emden & Melkonian, 2003)
<i>C. paramaecium</i>	CCAP 977/1	AM051194	AJ715445	None	United Kingdom, garden pond (Hoef-Emden <i>et al.</i> , 2005)
<i>C. parmana</i>	SYKOA Cr-001-19	MW430993	MW432537	MW430152	Russia, sphagnum bog (Martynenko <i>et al.</i> , 2022)
<i>C. parmana</i>	SYKOA Cr-008-19	MW487991	MW432536	MW430151	Russia, sphagnum bog (Martynenko <i>et al.</i> , 2022)
<i>C. phaseolus</i>	CNUCRY5	KF907389	KF907343	KF907477	Korea (Choi <i>et al.</i> , 2013)
<i>C. phaseolus</i>	Gakgae043010	KF907391	KF907345	KF907479	Korea (Choi <i>et al.</i> , 2013)
<i>C. phaseolus</i>	R 100	MZ268239	MZ305476	MZ353622	Russia (Gusev <i>et al.</i> , 2022)
<i>C. platyuris</i>	R 244	OK484499	OK491431	None	Russia (Gusev <i>et al.</i> , 2022)
<i>C. platyuris</i>	NN 8	OK484498	OK491432	None	Russia (Gusev <i>et al.</i> , 2022)
<i>C. pyrenoidifera</i>	CNUCRY134	KF907394	KF907348	KF907482	Korea (Choi <i>et al.</i> , 2013)
<i>C. pyrenoidifera</i>	M1077	AM051197	AJ566144	None	Germany (Hoef-Emden & Melkonian, 2003)
<i>C. pyrenoidifera</i>	NNSura5A	MZ268234	MZ305471	MZ353617	Russia (Gusev <i>et al.</i> , 2022)
<i>C. skujae</i>	NN 31	OK484502	OK491435	OK493490	Russia (Gusev <i>et al.</i> , 2022)
<i>C. skujae</i>	R 243	OK484501	OK491433	OK493489	Russia (Gusev <i>et al.</i> , 2022)
<i>C. tetrapyrenoidosa</i>	Deokam032610	KF907407	KF907363	KF907497	Korea (Choi <i>et al.</i> , 2013)
<i>C. tetrapyrenoidosa</i>	M1092	AM051198	AJ566146	None	Germany (Hoef-Emden & Melkonian, 2003; Hoef-Emden <i>et al.</i> , 2005)
<i>C. tetrapyrenoidosa</i>	R 178	MZ268236	MZ305473	MZ353619	Russia (Gusev <i>et al.</i> , 2022)
<i>C. uralensis</i>	UR 168	MN509779	MN509781	None	Russia (Martynenko <i>et al.</i> , 2020)
<i>C. uralensis</i>	R 241	MZ268242	MZ305479	MZ353625	Russia (Gusev <i>et al.</i> , 2022)
<i>C. ursina</i>	NN 11	OK484504	OK491438	OK493492	Russia (Gusev <i>et al.</i> , 2022)
<i>C. ursina</i>	R 172	OK484505	OK491437	OK493493	Russia (Gusev <i>et al.</i> , 2022)
<i>C. vietnamica</i>	VN873	MT216859	MT216866	None	Vietnam, old irrigation pond (Gusev <i>et al.</i> , 2020)

<i>C. vietnamica</i>	VN877	MT232229	MT232231	None	Vietnam, stream (Gusev <i>et al.</i> , 2020)
<i>Cryptomonas</i> sp.	CNUCRY75	KF907401	KF907355	KF907489	Korea (Choi <i>et al.</i> , 2013)
<i>Cryptomonas</i> sp.	Dumo2	KF907403	KF907357	KF907491	Korea (Choi <i>et al.</i> , 2013)
<i>Cryptomonas</i> sp.	M1634	AM901361	AJ715457	None	Denmark (Hoef-Emden, 2007)
<i>Cryptomonas</i> sp.	M2807	None	AM396397	None	Germany, pond in a bog (Hoef-Emden, 2007)
<i>Cryptomonas</i> sp.	M2504	None	AM396396	None	Germany (Hoef-Emden, 2007)
<i>Cryptomonas</i> sp.	SAG 977-2f	None	AJ715458	None	South Africa (Hoef-Emden, 2007)
<i>Cryptomonas</i> sp.	Yeonra43011B	KF907404	KF907360	KF907494	Korea (Choi <i>et al.</i> , 2013)
<i>Cryptomonas</i> sp.	R 107	OK484509	OK491441	OK493497	Russia (Gusev <i>et al.</i> , 2022)
<i>Cryptomonas</i> sp.	M2195	None	AM396393	None	Germany (Hoef-Emden, 2007)
<i>Cryptomonas</i> sp.	R 182	OK484508	OK491440	OK493496	Russia (Gusev <i>et al.</i> , 2022)
<i>C. tropica</i>	Vp 376	OP456093	OP456095	OP440446	Vietnam, soil (this research)
<i>C. tropica</i>	Vp 1145	OP456092	OP456094	OP440445	Vietnam, soil (this research)
<i>Rhodomonas</i> sp.	C5/6	MW812240	MW812242	MW822044	Vietnam (Martynenko <i>et al.</i> , 2022)
<i>Rhodomonas</i> sp.	E12/23	MW812241	MW812243	MW822045	Vietnam (Martynenko <i>et al.</i> , 2022)
<i>Guillardia theta</i>	Unknown	X57162	AF289037	NC_000926	Unknown (Douglas <i>et al.</i> , 1990; Ben Ali <i>et al.</i> , 2001; Douglas, Penny, 1999)
<i>Hemiselmis andersenii</i>	CCMP 441/ CCMP 644	AM901350	AM901319	MG646580	USA, North Atlantic, Gulf of Mexico (Hoef-Emden, 2008; Yang <i>et al.</i> , 2020)
