

Supplementary material to:

Extensive gain and loss of photosystem I subunits in chromerid algae, photosynthetic relatives of apicomplexans

Roman Sobotka^{1,3†}, Heather J. Esson^{2†}, Peter Koník^{1,3}, Eliška Trsková^{1,3}, Lenka Moravcová^{1,3}, Aleš Horák^{2,3}, Petra Dufková² and Miroslav Oborník^{1,2,3}

1. Centre Algatech, Institute of Microbiology, Czech Academy of Sciences, Třeboň, Czech Republic

2. Institute of Parasitology, Biological Centre, Czech Academy of Sciences, České Budějovice, Czech Republic

3. Faculty of Science, University of South Bohemia, České Budějovice, Czech Republic

†Authors contributed equally to the manuscript

Address for correspondence: sobotka@alga.cz; obornik@paru.cas.cz

This file includes Supplementary Materials and Methods, Supplementary Tables S1-S5, Supplementary Figures S1-S3, and References.

Supplementary Materials and Methods

Phylogenetic analysis of superoxide dismutases

A combination of BLAST and annotation searches were used to retrieve protein sequences from NCBI, JGI and other databases (see Table S2). Redundant sequences were removed from results and remaining sequences were aligned using MUSCLE (Edgar 2004) in AliView (Larsson 2014). The alignment (189 amino acids) was analysed using the RAxML online interface (Stamatakis et al. 2008) under the LG model with estimated gamma distribution and fixed base frequencies. Bootstrap support values were calculated from 100 replicates.

Bipartite transit sequence detection of iron superoxide dismutases in *Chromera velia* and *Vitrella brassicaformis*

Amino acid SOD sequences from *C. velia* and *V. brassicaformis* (Table S3) were probed for the presence of bipartite plastid targeting sequences using programs on the Center for Biological Sequence Analysis (CBSA) server (<http://www.cbs.dtu.dk/services/>), namely SignalP and TargetP (Nielsen et al. 1997; Emanuelsson et al. 2000; Petersen et al. 2011). Each sequence was submitted to the SignalP server to predict the presence and length of a signal peptide; when a signal peptide was present, the corresponding amino acids were removed from the initial sequence. The shortened sequence was then submitted to the TargetP server to determine whether an additional targeting sequence was present.

Additionally, sequences were queried using both the “full” (heterokonts) and “HECTAR^SEC” (all eukaryote) settings of HECTAR v.1.3 (<http://webtools.sb-roscoff.fr/>; Gschloessl et al. 2008).

Supplementary Tables and Figures

Supplementary Table S1: Thylakoid membrane complex proteins, accession numbers, and sources. CMGP: *Cyanidioschyzon merolae* Genome Project, <http://merolae.biol.s.u-tokyo.ac.jp/> (Matsuzaki et al. 2004); CGP: *Cyanophora* Genome Project, <http://cyanophora.rutgers.edu/cyanophora/home.php>; KEGG: Kyoto Encyclopedia of Genes and Genomes, <http://www.genome.jp/kegg/> (Kanehisa et al. 2015); JGI: Joint Genome Institute, <http://genome.jgi.doe.gov/> (Curtis et al. 2012; Grigoriev et al. 2012; Nordberg et al. 2014); EuPathDB: Eukaryotic Pathogen Database Resources (Woo et al. 2015); TBestDB: Taxonomically Broad EST Database, <http://tbestdb.bcm.umontreal.ca/>.

Gene	Taxon	Accession number	Source	
psaA	<i>Prochlorococcus marinus</i>	WP_011826946.1	NCBI	
	<i>Synechococcus elongatus</i>	WP_011244354.1	NCBI	
	<i>Thermosynechococcus elongatus</i>	NP_681520.1	NCBI	
	<i>Microcystis aeruginosa</i>	WP_041804242.1	NCBI	
	<i>Anabaena variabilis</i>	WP_011319188.1	NCBI	
	<i>Volvox carteri</i>	ACY06050.1	GenBank	
	<i>Chlamydomonas reinhardtii</i>	NP_958375.1	NCBI	
	<i>Ostreococcus tauri</i>	YP_717254.1	NCBI	
	<i>Micromonas commoda</i>	YP_002808608.1	NCBI	
	<i>Arabidopsis thaliana</i>	NP_051059.1	NCBI	
	<i>Physcomitrella patens</i>	NP_904202.1	NCBI	
	<i>Cyanidioschyzon merolae</i>	CMV135C	CMGP	
	<i>Gracilaria tenuistipitata</i>	YP_063614.2	NCBI	
	<i>Chondrus crispus</i>	AAM62018.1	GenBank	
	<i>Cyanophora paradoxa</i>	AAA81181.1	NCBI	
	<i>Glaucocystis nostochinearum</i>	AAX82908.1	GenBank	
	<i>Guillardia theta</i>	NP_050765.1	NCBI	
	<i>Emiliana huxleyi</i>	YP_277311.1	NCBI	
	<i>Phaeodactylum tricornutum</i>	YP_874359.1	NCBI	
	<i>Thalassiosira pseudonana</i>	YP_874490.1	NCBI	
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI	
	<i>Ectocarpus siliculosus</i>	YP_003289256.1	NCBI	
	<i>Aureococcus anophagefferens</i>	YP_003002086.1	NCBI	
	<i>Nannochloropsis gaditana</i>	YP_007316990.1	NCBI	
	<i>Vitrella brassicaformis</i>	ADJ66612.1	GenBank	
	<i>Chromera velia</i>	YP_003795268.2	NCBI	
	<i>Bigeloviella natans</i>	YP_778576.1	NCBI	
	<i>Paulinella chromatophora</i>	YP_002049202.1	NCBI	
	<i>Euglena gracilis</i>	NP_041906.1	NCBI	
	psaB	<i>Prochlorococcus marinus</i>	WP_011826945.1	NCBI
		<i>Synechococcus elongatus</i>	WP_011244355.1	NCBI
<i>Thermosynechococcus elongatus</i>		NP_681521.1	NCBI	

	<i>Microcystis aeruginosa</i>	WP_002770787.1	NCBI
	<i>Anabaena variabilis</i>	WP_011319189.1	NCBI
	<i>Volvox carteri</i>	ACY06053.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958404.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717253.1	NCBI
	<i>Micromonas commoda</i>	YP_002808607.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051058.1	NCBI
	<i>Physcomitrella patens</i>	NP_904203.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV136C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063613.1	NCBI
	<i>Chondrus crispus</i>	AAR30303.1	GenBank
	<i>Cyanophora paradoxa</i>	NP_043151.1	NCBI
	<i>Glaucocystis nostochinearum</i>	AAX82912.1	GenBank
	<i>Guillardia theta</i>	NP_050764.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277312.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874358.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874491.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289257.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002087.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007316991.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66611.1	GenBank
	<i>Chromera velia</i>	YP_003795270.2	NCBI
	<i>Bigelowiella natans</i>	YP_778587.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049203.1	NCBI
	<i>Euglena gracilis</i>	NP_041907.1	NCBI
psaC	<i>Prochlorococcus marinus</i>	WP_011827179.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011243298.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681803.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002734319.1	NCBI
	<i>Anabaena variabilis</i>	WP_010997613.1	NCBI
	<i>Volvox carteri</i>	ACY06004.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958423.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717214.1	NCBI
	<i>Micromonas commoda</i>	YP_002808655.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051110.1	NCBI
	<i>Physcomitrella patens</i>	NP_904239.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV059C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063690.1	NCBI
	<i>Chondrus crispus</i>	CHC_1075	KEGG
	<i>Cyanophora paradoxa</i>	NP_043270.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050694.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277346.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874487.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874576.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289280.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002112.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317105.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66600.1	GenBank
	<i>Chromera velia</i>	YP_003795326.1	NCBI
	<i>Bigelowiella natans</i>	YP_778580.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049117.1	NCBI
	<i>Euglena gracilis</i>	NP_041934.1	NCBI
psaD	<i>Prochlorococcus marinus</i>	WP_011826874.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011377824.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682514.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002796771.1	NCBI
	<i>Anabaena variabilis</i>	WP_011321384.1	NCBI

	<i>Volvox carteri</i>	XP_002953316.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001697722.1	NCBI
	<i>Ostreococcus lucimarinus</i>	XP_001421350.1	NCBI
	<i>Micromonas commoda</i>	XP_002504652.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_171812.1	NCBI
	<i>Physcomitrella patens</i>	XP_001752431.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV144C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063618.1	NCBI
	<i>Chondrus crispus</i>	CHC_665	KEGG
	<i>Cyanophora paradoxa</i>	Q9T4W8.1	UniProtKB/Swiss-Prot
	<i>Glaucocystis nostochinearum</i>	EC125199.1	NCBI
	<i>Guillardia theta</i>	NP_050759.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277398.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874394.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874547.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289238.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002042.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317065.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66635.1	GenBank
	<i>Chromera velia</i>	CveI_25206	EuPathDB
	<i>Bigelowiella natans</i>	AAP79147.1	GenBank
	<i>Paulinella chromatophora</i>	YP_002049251.1	NCBI
	<i>Euglena gracilis</i>	ELL00002449	TBestDB
psaE	<i>Prochlorococcus marinus</i>	ABM78910.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011242545.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682357.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002797997.1	NCBI
	<i>Anabaena variabilis</i>	WP_011318110.1	NCBI
	<i>Volvox carteri</i>	XP_002948231.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001702611.1	NCBI
	<i>Ostreococcus tauri</i>	XP_003075228.1	NCBI
	<i>Micromonas commoda</i>	XP_002502060.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_567818.1	NCBI
	<i>Physcomitrella patens</i>	XP_001768221.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV128C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063572.1	NCBI
	<i>Chondrus crispus</i>	CHC_420	KEGG
	<i>Cyanophora paradoxa</i>	NP_043234.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050803.1	NCBI
	<i>Emiliana huxleyi</i>	EMIHUDDRAFT_449561	KEGG
	<i>Phaeodactylum tricornutum</i>	YP_874428.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874511.1	NCBI
	<i>Fragilariopsis cylindrus</i>	Frac1 165544	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289176.1	NCBI
	<i>Aureococcus anophagefferens</i>	XP_009036075.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317004.1	NCBI
	<i>Vitrella brassicaformis</i>	Vbra_21597	EuPathDB
	<i>Chromera velia</i>	CveI_5788	EuPathDB
	<i>Bigelowiella natans</i>	AAP79148.1	GenBank
	<i>Paulinella chromatophora</i>	ACQ78178.1	GenBank
	<i>Euglena gracilis</i>	EGL00000033	TBestDB
psaF	<i>Prochlorococcus marinus</i>	WP_011130684.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011242614.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_683201.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002748906.1	NCBI
	<i>Anabaena variabilis</i>	WP_011318300.1	NCBI
	<i>Volvox carteri</i>	XP_002952500.1	NCBI

	<i>Chlamydomonas reinhardtii</i>	XP_001696798.1	NCBI
	<i>Ostreococcus tauri</i>	XP_003078706.1	NCBI
	<i>Micromonas commoda</i>	XP_002501874.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_174418.1	NCBI
	<i>Physcomitrella patens</i>	PHYPADRAFT 151795	KEGG
		CDS	
	<i>Cyanidioschyzon merolae</i>	CMV201C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063512.1	NCBI
	<i>Chondrus crispus</i>	CHC_25	KEGG
	<i>Cyanophora paradoxa</i>	NP_043153.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050714.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277348.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874361.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874562.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289261.1	NCBI
	<i>Aureococcus anophagefferens</i>	XP_009039740.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317046.1	NCBI
	<i>Vitrella brassicaformis</i>	Vbra_1344	EuPathDB
	<i>Chromera velia</i>	Cvel_23764	EuPathDB
	<i>Bigelowiella natans</i>	AAP79177.1	GenBank
	<i>Paulinella chromatophora</i>	YP_002049385.1	NCBI
	<i>Euglena gracilis</i>	EGL00000854	TBestDB
psal	<i>Prochlorococcus marinus</i>	ABM79080.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011244070.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_683195.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_004162778.1	NCBI
	<i>Anabaena variabilis</i>	P23079.2	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	XP_002951752.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001703367.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717255.1	NCBI
	<i>Micromonas commoda</i>	YP_002808609.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051069.1	NCBI
	<i>Physcomitrella patens</i>	NP_904192.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV227C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063702.1	NCBI
	<i>Chondrus crispus</i>	CHC_1150	KEGG
	<i>Cyanophora paradoxa</i>	NP_043182.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050719.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277394.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874378.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874541.1	NCBI
	<i>Fragilariopsis cylindrus</i>	Frac1 267711	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289284.1	NCBI
	<i>Aureococcus anophagefferens</i>	-	
	<i>Nannochloropsis gaditana</i>	AGI98707.1	GenBank
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	-	
	<i>Paulinella chromatophora</i>	YP_002049205.1	NCBI
	<i>Euglena gracilis</i>	-	
psaJ	<i>Prochlorococcus marinus</i>	Q7V658.1	UniProtKB/Swiss-Prot
	<i>Synechococcus elongatus</i>	WP_011242615.1	NCBI
	<i>Thermosynechococcus elongatus</i>	WP_011058244.1	NCBI
	<i>Microcystis aeruginosa</i>	BAG04552.1	GenBank

	<i>Anabaena variabilis</i>	P23080.3	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	ACY05998.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958417.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717261.1	NCBI
	<i>Micromonas commoda</i>	YP_002808615.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051079.1	NCBI
	<i>Physcomitrella patens</i>	NP_904180.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV202C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063513.1	NCBI
	<i>Chondrus crispus</i>	CHC_30	KEGG
	<i>Cyanophora paradoxa</i>	NP_043152.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050713.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277349.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874360.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874563.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289262.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002046.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317104.1	NCBI
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	YP_778596.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049384.1	NCBI
	<i>Euglena gracilis</i>	YP_002720092.1	NCBI
psaK	<i>Prochlorococcus marinus</i>	WP_011130065.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011243420.1, WP_011242934.1	NCBI
	<i>Thermosynechococcus elongatus</i>	WP_011058106.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002734065.1	NCBI
	<i>Anabaena variabilis</i>	P23317.2	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	XP_002946059.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001697230.1	NCBI
	<i>Ostreococcus lucimarinus</i>	XP_001421973.1	NCBI
	<i>Micromonas commoda</i>	XP_002508869.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_174327.1	NCBI
	<i>Physcomitrella patens</i>	PHYPADRAFT_28496	KEGG
	<i>Cyanidioschyzon merolae</i>	CMV055C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063686.1	NCBI
	<i>Chondrus crispus</i>	CHC_1055	KEGG
	<i>Cyanophora paradoxa</i>	Contig53600	CGP
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050695.1	NCBI
	<i>Emiliana huxleyi</i>	-	
	<i>Phaeodactylum tricornutum</i>	-	
	<i>Thalassiosira pseudonana</i>	-	
	<i>Fragilariopsis cylindrus</i>	-	
	<i>Ectocarpus siliculosus</i>	-	
	<i>Aureococcus anophagefferens</i>	-	
	<i>Nannochloropsis gaditana</i>	-	
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	-	
	<i>Paulinella chromatophora</i>	CP000815.1	GenBank
	<i>Euglena gracilis</i>	-	
psaL	<i>Prochlorococcus marinus</i>	ABM79081.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011378415.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_683194.1	NCBI

	<i>Microcystis aeruginosa</i>	WP_002757141.1	NCBI
	<i>Anabaena variabilis</i>	WP_011318298.1	NCBI
	<i>Volvox carteri</i>	XP_002948330.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001691084.1	NCBI
	<i>Ostreococcus tauri</i>	XP_003074802.1	NCBI
	<i>Micromonas commoda</i>	XP_002504254.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_193016.1	NCBI
	<i>Physcomitrella patens</i>	XP_001760296.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV236C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063666.1	NCBI
	<i>Chondrus crispus</i>	CHC_925	KEGG
	<i>Cyanophora paradoxa</i>	Contig53411	CGP
	<i>Glaucozystis nostochinearum</i>	EC123572.1	NCBI
	<i>Guillardia theta</i>	NP_050726.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277352.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874366.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874557.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289277.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002022.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317052.1	NCBI
	<i>Vitrella brassicaformis</i>	Vbra_18375	EuPathDB
	<i>Chromera velia</i>	Cvel_23765	EuPathDB
	<i>Bigelowiella natans</i>	-	
	<i>Paulinella chromatophora</i>	YP_002049204.1	NCBI
	<i>Euglena gracilis</i>	-	
Ycf3	<i>Prochlorococcus marinus</i>	WP_011827224.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011244091.1	NCBI
	<i>Thermosynechococcus elongatus</i>	BAC09077.1	GenBank
	<i>Microcystis aeruginosa</i>	WP_002760118.1	NCBI
	<i>Anabaena variabilis</i>	ABA23496.1	GenBank
	<i>Volvox carteri</i>	XP_002959772.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	NP_958393.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717224.1	NCBI
	<i>Micromonas commoda</i>	YP_002808646.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051060.2	NCBI
	<i>Physcomitrella patens</i>	NP_904201.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV197C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063637.1	NCBI
	<i>Chondrus crispus</i>	CHC_770	KEGG
	<i>Cyanophora paradoxa</i>	NP_043154.1	NCBI
	<i>Glaucozystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050747.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277373.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874408.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874527.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289268.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002115.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317077.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66584.1	GenBank
	<i>Chromera velia</i>	YP_003795285.1	NCBI
	<i>Bigelowiella natans</i>	YP_778600.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002048955.1	NCBI
	<i>Euglena gracilis</i>	ELL00003787	TBestDB
Ycf4	<i>Prochlorococcus marinus</i>	WP_011825507.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011377665.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682178.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_012267086.1	NCBI
	<i>Anabaena variabilis</i>	WP_011318084.1	NCBI

	<i>Volvox carteri</i>	ACY06031.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958384.1	NCBI
	<i>Ostreococcus tauri</i>	XP_003079977.1	NCBI
	<i>Micromonas commoda</i>	XP_002507870.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051070.1	NCBI
	<i>Physcomitrella patens</i>	NP_904191.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV233C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063665.1	NCBI
	<i>Chondrus crispus</i>	CHC_915	KEGG
	<i>Cyanophora paradoxa</i>	NP_043147.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050696.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277358.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874368.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874555.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289279.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002020.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317054.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66577.1	GenBank
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	YP_778575.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002048702.1	NCBI
	<i>Euglena gracilis</i>	NP_041899.1	NCBI
psbA	<i>Prochlorococcus marinus</i>	A2C6Q1.1	UniProtKB/Swiss-Prot
	<i>Synechococcus elongatus</i>	WP_011242480.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682633.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_012264511.1	NCBI
	<i>Anabaena variabilis</i>	WP_011318925.1	NCBI
	<i>Volvox carteri</i>	ACY06027.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958377.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717233.1	NCBI
	<i>Micromonas commoda</i>	YP_002808606.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051039.1	NCBI
	<i>Physcomitrella patens</i>	NP_904209.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV047C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063531.1	NCBI
	<i>Chondrus crispus</i>	YP_007627313.1	NCBI
	<i>Cyanophora paradoxa</i>	NP_043238.1	NCBI
	<i>Glaucocystis nostochinearum</i>	AAX82914.1	GenBank
	<i>Guillardia theta</i>	NP_050699.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277315.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874444.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874574.1	NCBI
	<i>Fragilariopsis cylindrus</i>	Frcy1 164319	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289145.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002124.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317069.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66640.1	GenBank
	<i>Chromera velia</i>	YP_003795256.1	NCBI
	<i>Bigelowiella natans</i>	YP_778586.1	NCBI
	<i>Paulinella chromatophora</i>	ABH09268.1	GenBank
	<i>Euglena gracilis</i>	NP_041895.1	NCBI
psbB	<i>Prochlorococcus marinus</i>	CAE21840.1	GenBank
	<i>Synechococcus elongatus</i>	P31094.1	UniProtKB/Swiss-Prot
	<i>Thermosynechococcus elongatus</i>	NP_682320.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002757651.1	NCBI
	<i>Anabaena variabilis</i>	ABA21130.1	GenBank

	<i>Volvox carteri</i>	ACY06046.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958388.1	NCBI
	<i>Ostreococcus tauri</i>	Q0P3P8.2	UniProtKB/Swiss-Prot
	<i>Micromonas commoda</i>	YP_002808602.2	NCBI
	<i>Arabidopsis thaliana</i>	NP_051084.1	NCBI
	<i>Physcomitrella patens</i>	NP_904175.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV124C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063576.1	NCBI
	<i>Chondrus crispus</i>	CHC_440	KEGG
	<i>Cyanophora paradoxa</i>	NP_043167.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050799.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277342.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874387.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874507.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289171.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002073.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317008.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66608.1	GenBank
	<i>Chromera velia</i>	YP_003795264.2	NCBI
	<i>Bigelowiella natans</i>	Q06J24.1	UniProtKB/Swiss-Prot
	<i>Paulinella chromatophora</i>	YP_002049270.1	NCBI
	<i>Euglena gracilis</i>	NP_041946.1	NCBI
psbC	<i>Prochlorococcus marinus</i>	WP_011825504.1	NCBI
	<i>Synechococcus elongatus</i>	P11004.3	UniProtKB/Swiss-Prot
	<i>Thermosynechococcus elongatus</i>	NP_682421.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002739004.1	NCBI
	<i>Anabaena variabilis</i>	WP_011318086.1	NCBI
	<i>Volvox carteri</i>	ACY06003.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958422.1	NCBI
	<i>Ostreococcus tauri</i>	Q0P3Q1.1	UniProtKB/Swiss-Prot
	<i>Micromonas commoda</i>	YP_002808605.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051055.1	NCBI
	<i>Physcomitrella patens</i>	Q6YXN9.1	UniProtKB/Swiss-Prot
	<i>Cyanidioschyzon merolae</i>	CMV082C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063543.2	NCBI
	<i>Chondrus crispus</i>	YP_007627323.1	NCBI
	<i>Cyanophora paradoxa</i>	NP_043248.3	NCBI
	<i>Glaucocystis nostochinearum</i>	AAX82939.1	GenBank
	<i>Guillardia theta</i>	NP_050677.2	NCBI
	<i>Emiliana huxleyi</i>	YP_277371.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874376.2	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874543.2	NCBI
	<i>Fragilariopsis cylindrus</i>	ABT17158.1	GenBank
	<i>Ectocarpus siliculosus</i>	YP_003289148.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002044.1	NCBI
	<i>Nannochloropsis oculata</i>	YP_008519669.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66597.1	GenBank
	<i>Chromera velia</i>	YP_003795274.1	NCBI
	<i>Bigelowiella natans</i>	Q06J66.1	UniProtKB/Swiss-Prot
	<i>Paulinella chromatophora</i>	YP_002048704.1	NCBI
	<i>Euglena gracilis</i>	NP_041892.1	NCBI
psbD	<i>Prochlorococcus marinus</i>	WP_012195785.1	NCBI

	<i>Synechococcus elongatus</i>	WP_011243185.1	NCBI
	<i>Thermosynechococcus elongatus</i>	WP_011056308.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002737445.1	NCBI
	<i>Anabaena variabilis</i>	WP_011318085.1	NCBI
	<i>Volvox carteri</i>	ACI31257.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958420.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717205.1	NCBI
	<i>Micromonas commoda</i>	YP_002808604.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051054.1	NCBI
	<i>Physcomitrella patens</i>	NP_904207.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV081C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063542.1	NCBI
	<i>Chondrus crispus</i>	CHC_205	KEGG
	<i>Cyanophora paradoxa</i>	NP_043247.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050678.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277372.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874377.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874542.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289147.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002045.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317039.1	NCBI
	<i>Vitrella brassicaformis</i>	YP_003795459.1	NCBI
	<i>Chromera velia</i>	YP_003795275.1	NCBI
	<i>Bigelowiella natans</i>	YP_778560.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002048703.1	NCBI
	<i>Euglena gracilis</i>	P31557.1	UniProtKB/Swiss-Prot
psbE	<i>Prochlorococcus marinus</i>	WP_011131262.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011242685.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682331.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002749269.1	NCBI
	<i>Anabaena variabilis</i>	ABA21477.1	NCBI
	<i>Volvox carteri</i>	ACY06033.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958396.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717219.1	NCBI
	<i>Micromonas commoda</i>	YP_002808650.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051076.1	NCBI
	<i>Physcomitrella patens</i>	NP_904183.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV231C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063706.1	NCBI
	<i>Chondrus crispus</i>	CHC_1170	KEGG
	<i>Cyanophora paradoxa</i>	NP_043178.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050723.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277387.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874369.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874554.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289288.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002085.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317055.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66578.1	GenBank
	<i>Chromera velia</i>	YP_003795269.1	NCBI
	<i>Bigelowiella natans</i>	YP_778616.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049138.1	NCBI
	<i>Euglena gracilis</i>	NP_041908.1	NCBI
psbF	<i>Prochlorococcus marinus</i>	ABM79261.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011242686.1	NCBI

	<i>Thermosynechococcus elongatus</i>	NP_682332.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002736175.1	NCBI
	<i>Anabaena variabilis</i>	Q3MC10.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	ACY06044.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958399.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717218.1	NCBI
	<i>Micromonas commoda</i>	YP_002808651.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051075.1	NCBI
	<i>Physcomitrella patens</i>	NP_904184.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV230C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063705.1	NCBI
	<i>Chondrus crispus</i>	CHC_1165	KEGG
	<i>Cyanophora paradoxa</i>	NP_043179.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050722.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277386.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874370.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874553.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289287.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002084.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317056.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66579.1	GenBank
	<i>Chromera velia</i>	Cvel_23342	EuPathDB
	<i>Bigelowiella natans</i>	YP_778615.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049137.1	NCBI
	<i>Euglena gracilis</i>	NP_041909.1	NCBI
psbH	<i>Prochlorococcus marinus</i>	ABM79193.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011243600.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682176.1	NCBI
	<i>Microcystis aeruginosa</i>	B0JGF6.1	UniProtKB/Swiss-Prot
	<i>Anabaena variabilis</i>	Q3M4N8.1	NCBI
	<i>Volvox carteri</i>	XP_002959711.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	NP_958385.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717221.1	NCBI
	<i>Micromonas commoda</i>	YP_002808649.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051087.1	NCBI
	<i>Physcomitrella patens</i>	Q6YXN1.3	UniProtKB/Swiss-Prot
	<i>Cyanidioschyzon merolae</i>	CMV127C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063573.1	NCBI
	<i>Chondrus crispus</i>	CHC_425	KEGG
	<i>Cyanophora paradoxa</i>	NP_043169.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050802.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277345.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874384.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874510.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289174.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002076.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317005.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66582.1	GenBank
	<i>Chromera velia</i>	YP_003795330.1	NCBI
	<i>Bigelowiella natans</i>	YP_778606.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049166.1	NCBI
	<i>Euglena gracilis</i>	NP_041944.1	NCBI
psbl	<i>Prochlorococcus marinus</i>	ABM79196.1	GenBank

	<i>Synechococcus elongatus</i>	P17747.1	UniProtKB/Swiss-Prot
	<i>Thermosynechococcus elongatus</i>	NP_681865.1	NCBI
	<i>Microcystis aeruginosa</i>	B0JX58.1	UniProtKB/Swiss-Prot
	<i>Anabaena variabilis</i>	ABA22611.1	GenBank
	<i>Volvox carteri</i>	ACY06059.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	P59763.1	UniProtKB/Swiss-Prot
	<i>Ostreococcus tauri</i>	YP_717260.1	NCBI
	<i>Micromonas commoda</i>	YP_002808614.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051043.1	NCBI
	<i>Physcomitrella patens</i>	NP_904213.2	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV240C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063658.1	NCBI
	<i>Chondrus crispus</i>	CHC_880	KEGG
	<i>Cyanophora paradoxa</i>	NP_043236.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050728.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277320.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874362.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874561.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289228.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002094.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317066.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66610.1	GenBank
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	Q06J30.1	UniProtKB/Swiss-Prot
	<i>Paulinella chromatophora</i>	YP_002049165.1	NCBI
	<i>Euglena gracilis</i>	NP_041904.1	NCBI
psbJ	<i>Prochlorococcus marinus</i>	ABM79263.1	GenBank
	<i>Synechococcus elongatus</i>	AAM82677.1	GenBank
	<i>Thermosynechococcus elongatus</i>	NP_682334.1	NCBI
	<i>Microcystis aeruginosa</i>	B0JLU8.1	UniProtKB/Swiss-Prot
	<i>Anabaena variabilis</i>	Q3MC12.2	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	ACY06000.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958419.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717216.1	NCBI
	<i>Micromonas commoda</i>	YP_002808653.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051073.1	NCBI
	<i>Physcomitrella patens</i>	Q6YXL6.1	UniProtKB/Swiss-Prot
	<i>Cyanidioschyzon merolae</i>	CMV228C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063703.1	NCBI
	<i>Chondrus crispus</i>	CHC_1155	KEGG
	<i>Cyanophora paradoxa</i>	NP_043181.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050720.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277384.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874372.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874551.1	NCBI
	<i>Fragilariopsis cylindrus</i>	-	
	<i>Ectocarpus siliculosus</i>	YP_003289285.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002082.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317057.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66643.1	GenBank

	<i>Chromera velia</i>	YP_003795286.1	NCBI
	<i>Bigelowiella natans</i>	YP_778613.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049135.1	NCBI
	<i>Euglena gracilis</i>	NP_041911.1	NCBI
psbK	<i>Prochlorococcus marinus</i>	ABM79222.1	GenBank
	<i>Synechococcus elongatus</i>	P14089.1	UniProtKB/Swiss-Prot
	<i>Thermosynechococcus elongatus</i>	NP_680967.1	NCBI
	<i>Microcystis aeruginosa</i>	B0JSW8.1	UniProtKB/Swiss-Prot
	<i>Anabaena variabilis</i>	WP_010995059.1	NCBI
	<i>Volvox carteri</i>	ACY06006.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958361.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717259.1	NCBI
	<i>Micromonas commoda</i>	YP_002808613.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051042.1	NCBI
	<i>Physcomitrella patens</i>	Q6YXN4.1	UniProtKB/Swiss-Prot
	<i>Cyanidioschyzon merolae</i>	CMV140C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063610.1	NCBI
	<i>Chondrus crispus</i>	CHC_615	KEGG
	<i>Cyanophora paradoxa</i>	NP_043249.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050761.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277340.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874379.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874540.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289211.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002023.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007316994.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66603.1	GenBank
	<i>Chromera velia</i>	YP_003795283.1	NCBI
	<i>Bigelowiella natans</i>	YP_778611.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049151.1	NCBI
	<i>Euglena gracilis</i>	NP_041898.1	NCBI
psbL	<i>Prochlorococcus marinus</i>	WP_011827106.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011377901.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682333.1	NCBI
	<i>Microcystis aeruginosa</i>	BAG03123.1	GenBank
	<i>Anabaena variabilis</i>	Q3MC11.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	ACY06043.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958400.2	NCBI
	<i>Ostreococcus tauri</i>	YP_717217.1	NCBI
	<i>Micromonas commoda</i>	YP_002808652.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051074.1	NCBI
	<i>Physcomitrella patens</i>	NP_904185.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV229C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063704.1	NCBI
	<i>Chondrus crispus</i>	CHC_1160	KEGG
	<i>Cyanophora paradoxa</i>	NP_043180.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050721.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277385.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874371.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874552.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289286.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002083.1	NCBI

	<i>Nannochloropsis salina</i>	YP_008519855.1	NCBI
	<i>Vitrella brassicaformis</i>	Vbra_11908	EuPathDB
	<i>Chromera velia</i>	Cvel_21989	EuPathDB
	<i>Bigelowiella natans</i>	YP_778614.1	NCBI
	<i>Paulinella chromatophora</i>	B1X4Q7.1	UniProtKB/Swiss-Prot
	<i>Euglena gracilis</i>	NP_041910.1	NCBI
psbM	<i>Prochlorococcus marinus</i>	WP_011131030.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011243143.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682842.1	NCBI
	<i>Microcystis aeruginosa</i>	B0JYB0.1	UniProtKB/Swiss-Prot
	<i>Anabaena cylindrica</i>	AFZ59679.1	NCBI
	<i>Volvox carteri</i>	ACY06038.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958382.1	NCBI
	<i>Ostreococcus tauri</i>	XP_003082196.1	NCBI
	<i>Micromonas commoda</i>	XP_002506594.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051053.1	NCBI
	<i>Physcomitrella patens</i>	NP_904167.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMT182C	CMGP
	<i>Gracilaria tenuistipitata</i>	HS979039.1	GenBank
	<i>Chondrus crispus</i>	-	
	<i>Cyanophora paradoxa</i>	NP_043250.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	XP_005821709.1	NCBI
	<i>Emiliana huxleyi</i>	XP_005793513.1	NCBI
	<i>Phaeodactylum tricornutum</i>	AAO43193.1	GenBank
	<i>Thalassiosira pseudonana</i>	XP_002288939.1	NCBI
	<i>Fragilariopsis cylindrus</i>	Frcy1_172395	JGI
	<i>Ectocarpus siliculosus</i>	CBJ33411.1	GenBank
	<i>Aureococcus anophagefferens</i>	-	
	<i>Nannochloropsis gaditana</i>	-	
	<i>Vitrella brassicaformis</i>	Vbra_3546	EuPathDB
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	YP_778579.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049272.1	NCBI
	<i>Euglena gracilis</i>	ADJ93799.1	GenBank
psbN	<i>Prochlorococcus marinus</i>	WP_011827045.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011243601.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682177.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002799553.1	NCBI
	<i>Anabaena variabilis</i>	Q3M4N7.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	ACY06048.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958386.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717222.1	NCBI
	<i>Micromonas commoda</i>	YP_002808648.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051086.1	NCBI
	<i>Physcomitrella patens</i>	NP_904173.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV126C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063574.1	NCBI
	<i>Chondrus crispus</i>	CHC_430	KEGG
	<i>Cyanophora paradoxa</i>	NP_043165.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050801.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277344.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874385.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874509.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289173.1	NCBI

	<i>Aureococcus anophagefferens</i>	YP_003002075.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317006.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66581.1	GenBank
	<i>Chromera velia</i>	YP_003795296.1	NCBI
	<i>Bigelowiella natans</i>	YP_778605.1	NCBI
	<i>Paulinella chromatophora</i>	C02166	Nowack <i>et al.</i> 2011
	<i>Euglena gracilis</i>	NP_041943.1	NCBI
psbO	<i>Prochlorococcus marinus</i>	ABM79118.1	GenBank
	<i>Synechococcus elongatus</i>	P11472.1	UniProtKB/Swiss-Prot
	<i>Thermosynechococcus elongatus</i>	NP_681234.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_004162736.1	NCBI
	<i>Anabaena variabilis</i>	WP_011318645.1	NCBI
	<i>Volvox carteri</i>	AAD55562.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	XP_001694699.1	NCBI
	<i>Ostreococcus tauri</i>	ADC54905.1	GenBank
	<i>Micromonas commoda</i>	XP_002505809.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_201458.1	NCBI
	<i>Physcomitrella patens</i>	XP_001763258.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMI290C	CMGP
	<i>Gracilaria tenuistipitata</i>	HS978096.1	NCBI EST
	<i>Chondrus crispus</i>	XP_005713751.1	NCBI
	<i>Cyanophora paradoxa</i>	CAH04962.1	GenBank
	<i>Glaucocystis nostochinearum</i>	EC124716.1	NCBI
	<i>Guillardia theta</i>	XP_005824851.1	NCBI
	<i>Emiliana huxleyi</i>	XP_005761454.1	NCBI
	<i>Phaeodactylum tricornutum</i>	XP_002180309.1	NCBI
	<i>Thalassiosira pseudonana</i>	XP_002291225.1	NCBI
	<i>Fragilariopsis cylindrus</i>	167955	JGI
	<i>Ectocarpus siliculosus</i>	CBN78902.1	GenBank
	<i>Aureococcus anophagefferens</i>	XP_009033884.1	NCBI
	<i>Nannochloropsis gaditana</i>	EWM24379.1	GenBank
	<i>Vitrella brassicaformis</i>	Vbra_7099	EuPathDB
	<i>Chromera velia</i>	Cvel_27124	EuPathDB
	<i>Bigelowiella natans</i>	AAP79149.1	GenBank
	<i>Paulinella chromatophora</i>	YP_002049183.1	NCBI
	<i>Euglena gracilis</i>	BAA03529.2	GenBank
psbP/cyanoP	<i>Prochlorococcus marinus</i>	WP_063420050.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011242821.1	NCBI
	<i>Thermosynechococcus elongatus</i>	WP_011057910.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_046662781.1	NCBI
	<i>Anabaena variabilis</i>	ABA20458.1	GenBank
	<i>Volvox carteri</i>	XP_002950336.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001693241.1	NCBI
	<i>Ostreococcus tauri</i>	XP_003075035.1	NCBI
	<i>Micromonas pusilla</i>	XP_003056466.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_565149.2	NCBI
	<i>Physcomitrella patens</i>	XP_001754475.1	NCBI
	<i>Cyanidioschyzon merolae</i>	XP_005537400.1	NCBI
	<i>Gracilaria tenuistipitata</i>	-	
	<i>Chondrus crispus</i>	XP_005711844.1	NCBI
	<i>Cyanophora paradoxa</i>	Contig6796/CGP	
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	EKX33663.1	GenBank
	<i>Emiliana huxleyi</i>	-	
	<i>Phaeodactylum tricornutum</i>	XP_002177783.1	NCBI
	<i>Thalassiosira pseudonana</i>	EJK63943.1	GenBank
	<i>Fragilariopsis cylindrus</i>	Frcy1 142679	
	<i>Ectocarpus siliculosus</i>	CBN79490.1	GenBank

	<i>Aureococcus anophagefferens</i>	-	
	<i>Nannochloropsis gaditana</i>	EWM25422.1	GenBank
	<i>Vitrella brassicaformis</i>	Vbra_12477 OR	EuPathDB
		Vbra_15129	
	<i>Chromera velia</i>	Cvel_20184 OR	EuPathDB
		Cvel_22018	
	<i>Bigelowiella natans</i>	AAP79210.1	GenBank
	<i>Paulinella chromatophora</i>	YP_002049423.1	NCBI
	<i>Euglena gracilis</i>	P83687.1	UniProtKB/Swiss-Prot
psbQ	<i>Prochlorococcus marinus</i>	-	
	<i>Synechococcus elongatus</i>	WP_011244722.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682847.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002795844.1	NCBI
	<i>Anabaena variabilis</i>	ABA24633.1	NCBI
	<i>Volvox carteri</i>	XP_002947155.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001701331.1	NCBI
	<i>Ostreococcus tauri</i>	XP_003083616.1	NCBI
	<i>Micromonas commoda</i>	XP_002506526.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_193860.1	NCBI
	<i>Physcomitrella patens</i>	XP_001760196.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMC133C	CMGP
	<i>Gracilaria tenuistipitata</i>	HS979963.1	GenBank
	<i>Chondrus crispus</i>	CHC_T00001103001	KEGG
	<i>Cyanophora paradoxa</i>	-	
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	XP_005821040.1	NCBI
	<i>Emiliana huxleyi</i>	XP_005763993.1	NCBI
	<i>Phaeodactylum tricornutum</i>	XP_002180307.1	NCBI
	<i>Thalassiosira pseudonana</i>	XP_002286571.1	NCBI
	<i>Fragilariopsis cylindrus</i>	Frcy1 206783	JGI
	<i>Ectocarpus siliculosus</i>	CBN75463.1	GenBank
	<i>Aureococcus anophagefferens</i>	XP_009040815.1	NCBI
	<i>Nannochloropsis gaditana</i>	XP_005854604.1	NCBI
	<i>Vitrella brassicaformis</i>	Vbra_1771	EuPathDB
	<i>Chromera velia</i>	Cvel_18330	EuPathDB
	<i>Bigelowiella natans</i>	AAP79208.1	GenBank
	<i>Paulinella chromatophora</i>	YP_002049043.1	NCBI
	<i>Euglena gracilis</i>	ELL00000039	TBestDB
psbT	<i>Prochlorococcus marinus</i>	WP_011131033.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011243146.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682321.1	NCBI
	<i>Microcystis aeruginosa</i>	B0JTA8.1	UniProtKB/Swiss-Prot
	<i>Anabaena variabilis</i>	Q3MD07.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	ACY06047.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958387.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717206.1	NCBI
	<i>Micromonas commoda</i>	YP_002808603.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051085.1	NCBI
	<i>Physcomitrella patens</i>	NP_904174.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV125C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063575.1	NCBI
	<i>Chondrus crispus</i>	YP_007627356.1	KEGG
	<i>Cyanophora paradoxa</i>	NP_043166.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050800.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277343.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874386.1	NCBI

	<i>Thalassiosira pseudonana</i>	YP_874508.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289172.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002074.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317007.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66642.1	GenBank
	<i>Chromera velia</i>	YP_003795325.1	NCBI
	<i>Bigelowiella natans</i>	YP_778604.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049269.1	NCBI
	<i>Euglena gracilis</i>	NP_041945.1	NCBI
psbU	<i>Prochlorococcus marinus</i>	A2C664.1	UniProtKB/Swiss-Prot
	<i>Synechococcus elongatus</i>	WP_011244523.1	NCBI
	<i>Thermosynechococcus elongatus</i>	WP_011058241.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_012266475.1	NCBI
	<i>Anabaena variabilis</i>	ABA20259.1	GenBank
	<i>Volvox carteri</i>	-	
	<i>Chlamydomonas reinhardtii</i>	-	
	<i>Ostreococcus</i>	-	
	<i>Micromonas commoda</i>	-	
	<i>Arabidopsis thaliana</i>	-	
	<i>Physcomitrella patens</i>	-	
	<i>Cyanidioschyzon merolae</i>	CMI248C	CMGP
	<i>Gracilaria tenuistipitata</i>	HS981649.1	GenBank
	<i>Chondrus crispus</i>	XP_005713750.1	KEGG
	<i>Cyanophora paradoxa</i>	Q5CC96.1	UniProtKB/Swiss-Prot
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	XP_005833081.1	NCBI
	<i>Emiliana huxleyi</i>	XP_005757039.1	NCBI
	<i>Phaeodactylum tricornutum</i>	Q84XB6.1	UniProtKB/Swiss-Prot
	<i>Thalassiosira pseudonana</i>	XP_002288025.1	NCBI
	<i>Fragilariopsis cylindrus</i>	GW070000	NCBI EST
	<i>Ectocarpus siliculosus</i>	CBJ28280.1	GenBank
	<i>Aureococcus anophagefferens</i>	XP_009040947.1	NCBI
	<i>Nannochloropsis gaditana</i>	EWM24702.1	GenBank
	<i>Vitrella brassicaformis</i>	Vbra_15278, Vbra_6554	EuPathDB
	<i>Chromera velia</i>	Cvel_3244	EuPathDB
	<i>Bigelowiella natans</i>	-	
	<i>Paulinella chromatophora</i>	YP_002048936.1	NCBI
	<i>Euglena gracilis</i>	-	
psbV	<i>Prochlorococcus marinus</i>		UniProtKB/Swiss-Prot
	<i>Synechococcus elongatus</i>	ABB58040.1	GenBank
	<i>Thermosynechococcus elongatus</i>	WP_011057125.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_012264644.1	NCBI
	<i>Anabaena variabilis</i>	Q3M9H7.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	-	
	<i>Chlamydomonas reinhardtii</i>	-	
	<i>Ostreococcus</i>	-	
	<i>Micromonas commoda</i>	-	
	<i>Arabidopsis thaliana</i>	-	
	<i>Physcomitrella patens</i>	-	
	<i>Cyanidioschyzon merolae</i>	CMV208C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063518.1	NCBI
	<i>Chondrus crispus</i>	CHC_60	KEGG
	<i>Cyanophora paradoxa</i>	NP_043260.1	NCBI

	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050711.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277399.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874401.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874494.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289224.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002079.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007316988.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66606.1	GenBank
	<i>Chromera velia</i>	YP_003795282.1	NCBI
	<i>Bigelowiella natans</i>	-	
	<i>Paulinella chromatophora</i>	YP_002049328.1	NCBI
	<i>Euglena gracilis</i>	-	
psbX	<i>Prochlorococcus marinus</i>	WP_011130957.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011244389.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682803.1	NCBI
	<i>Microcystis aeruginosa</i>	BAG04955.1	GenBank
	<i>Anabaena variabilis</i>	Q3MFU4.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	XP_002953587.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001701704.1	NCBI
	<i>Ostreococcus lucimarinus</i>	XP_001416212.1	NCBI
	<i>Micromonas commoda</i>	XP_002507848.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_565335.1	NCBI
	<i>Physcomitrella patens</i>	XP_001779033.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV206C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063516.1	NCBI
	<i>Chondrus crispus</i>	CHC_50	KEGG
	<i>Cyanophora paradoxa</i>	NP_043252.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050712.1	NCBI
	<i>Emiliana huxleyi</i>	Q4G3D8.1	UniProtKB/Swiss-Prot
	<i>Phaeodactylum tricornutum</i>	YP_874399.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874496.1	NCBI
	<i>Fragilariopsis cylindrus</i>	-	
	<i>Ectocarpus siliculosus</i>	YP_003289222.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002078.1	NCBI
	<i>Nannochloropsis gaditana</i>	-	
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	Bigna1 86445	JGI
	<i>Paulinella chromatophora</i>	YP_002049300.1	NCBI
	<i>Euglena gracilis</i>	-	
psbY	<i>Prochlorococcus marinus</i>	ABM77752.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011244443.1	NCBI
	<i>Thermosynechococcus elongatus</i>	WP_011056680.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_012265998.1	NCBI
	<i>Anabaena variabilis</i>	Q3M6U8.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	XP_002960025.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001698338.1	NCBI
	<i>Ostreococcus tauri</i>	XP_003082206.1	NCBI
	<i>Micromonas commoda</i>	XP_002502801.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_176940.1	NCBI
	<i>Physcomitrella patens</i>	XP_001768242.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV045C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063525.1	NCBI
	<i>Chondrus crispus</i>	YP_007627307.1	KEGG

	<i>Cyanophora paradoxa</i>	P48272.1	UniProtKB/Swiss-Prot
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050684.1	NCBI
	<i>Emiliana huxleyi</i>	Q4G385.1	UniProtKB/Swiss-Prot
	<i>Phaeodactylum tricornutum</i>	YP_874435.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874565.1	NCBI
	<i>Fragilariopsis cylindrus</i>	-	
	<i>Ectocarpus siliculosus</i>	YP_003289275.1	NCBI
	<i>Aureococcus anophagefferens</i>	-	
	<i>Nannochloropsis gaditana</i>	YP_007317089.1	NCBI
	<i>Vitrella brassicaformis</i>	Vbra_4340	EuPathDB
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	Bigna1 90258	JGI
	<i>Paulinella chromatophora</i>	YP_002049444.1	NCBI
	<i>Euglena gracilis</i>	-	
psbZ	<i>Prochlorococcus marinus</i>	WP_011129459.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011244163.1	NCBI
	<i>Thermosynechococcus elongatus</i>	WP_011057802.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002732865.1	NCBI
	<i>Anabaena variabilis</i>	Q3MCF9.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	ACY06039.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958383.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717234.1	NCBI
	<i>Micromonas commoda</i>	YP_002808636.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051056.1	NCBI
	<i>Physcomitrella patens</i>	NP_904205.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV141C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063609.1	NCBI
	<i>Chondrus crispus</i>	YP_007627390.1	KEGG
	<i>Cyanophora paradoxa</i>	NP_043204.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050760.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277341.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874374.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874545.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	-	
	<i>Aureococcus anophagefferens</i>	-	
	<i>Nannochloropsis gaditana</i>	-	
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	-	
	<i>Paulinella chromatophora</i>	YP_002049134.1	NCBI
	<i>Euglena gracilis</i>	NP_041931.1	NCBI
Psb27	<i>Prochlorococcus marinus</i>	ABM77494.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011377542.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_683253.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_012265509.1	NCBI
	<i>Anabaena variabilis</i>	ABA20202.1	GenBank
	<i>Volvox carteri</i>	XP_002956213.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001700736.1	NCBI
	<i>Ostreococcus lucimarinus</i>	XP_001419197.1	NCBI
	<i>Micromonas commoda</i>	XP_002508067.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_563687.1	NCBI
	<i>Physcomitrella patens</i>	XP_001770919.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMK176C	CMGP
	<i>Gracilaria tenuistipitata</i>	HS981381.1	GenBank

	<i>Chondrus crispus</i>	-	
	<i>Cyanophora paradoxa</i>	Contig7118	CGP
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	Guith1 102421	JGI
	<i>Emiliana huxleyi</i>	XP_005768107.1	NCBI
	<i>Phaeodactylum tricornutum</i>	XP_002177209.1	NCBI
	<i>Thalassiosira pseudonana</i>	XP_002288234.1	NCBI
	<i>Fragilariopsis cylindrus</i>	Frac1 212328	JGI
	<i>Ectocarpus siliculosus</i>	CBN76956.1	GenBank
	<i>Aureococcus anophagefferens</i>	EGB06728.1	GenBank
	<i>Nannochloropsis gaditana</i>	EWM25384.1	GenBank
	<i>Vitrella brassicaformis</i>	Vbra_10350	EuPathDB
	<i>Chromera velia</i>	Cvel_16029	EuPathDB
	<i>Bigelowiella natans</i>	Bigna1 90613	JGI
	<i>Paulinella chromatophora</i>	YP_002049501.1	NCBI
	<i>Euglena gracilis</i>	ELL00006299	TBestDB
Ycf12/psb30	<i>Prochlorococcus marinus</i>	KGG13826.1	GenBank
	<i>Synechococcus elongatus</i>	Q0IAK1.2	UniProtKB/Swiss-Prot
	<i>Thermosynechococcus elongatus</i>	BAC08794.1	GenBank
	<i>Microcystis aeruginosa</i>	B0JM63.2	UniProtKB/Swiss-Prot
	<i>Anabaena</i> sp.	QBQ02713.1	GenBank
	<i>Volvox carteri</i>	ACY06034.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958378.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717256.1	NCBI
	<i>Micromonas commoda</i>	YP_002808610.1	NCBI
	<i>Arabidopsis thaliana</i>	-	
	<i>Physcomitrella patens</i>	NP_904215.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV003C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063700.1	NCBI
	<i>Chondrus crispus</i>	YP_007627484.1	KEGG
	<i>Cyanophora paradoxa</i>	AAA81244.1	GenBank
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050717.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277335.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874375.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874544.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289282.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002026.1	NCBI
	<i>Nannochloropsis oculata</i>	YP_008519697.1	NCBI
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	-	
	<i>Paulinella chromatophora</i>	YP_002049472.1	NCBI
	<i>Euglena gracilis</i>	CAA50084.1	GenBank
Ycf39	<i>Prochlorococcus marinus</i>	WP_011825512.1	NCBI
	<i>Synechococcus elongatus</i>	ABB58455.1	GenBank
	<i>Thermosynechococcus elongatus</i>	NP_681649.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002762970.1	NCBI
	<i>Anabaena variabilis</i>	ABA21542.1	NCBI
	<i>Volvox carteri</i>	XP_002958804.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001700491.1	NCBI
	<i>Ostreococcus lucimarinus</i>	XP_001422150.1	NCBI
	<i>Micromonas commoda</i>	XP_002501159.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_195251.1	NCBI
	<i>Physcomitrella patens</i>	XP_001773602.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV242C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063656.1	NCBI

	<i>Chondrus crispus</i>	YP_007627439.1	KEGG
	<i>Cyanophora paradoxa</i>	AAA81188.1	GenBank
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050729.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277427.1	NCBI
	<i>Phaeodactylum tricorutum</i>	YP_874364.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874559.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289150.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002093.1	NCBI
	<i>Nannochloropsis gaditana</i>	-	
	<i>Vitrella brassicaformis</i>	Vbra_5979	EuPathDB
	<i>Chromera velia</i>	Cvel_7081	EuPathDB
	<i>Bigelowiella natans</i>	Bigna1 92431	JGI
	<i>Paulinella chromatophora</i>	YP_002048699.1	NCBI
	<i>Euglena gracilis</i>	-	
Ycf48	<i>Prochlorococcus marinus</i>	WP_011827105.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011377902.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_682485.1	NCBI
	<i>Microcystis aeruginosa</i>	BAG48283.1	GenBank
	<i>Anabaena variabilis</i>	ABA21478.1	NCBI
	<i>Volvox carteri</i>	XP_002946220.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001696194.1	NCBI
	<i>Ostreococcus lucimarinus</i>	XP_001420924.1	NCBI
	<i>Micromonas commoda</i>	XP_002502066.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_197703.1	NCBI
	<i>Physcomitrella patens</i>	XP_001756806.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMO314C	CMGP
	<i>Gracilaria tenuistipitata</i>	HS979242.1	GenBank
	<i>Chondrus crispus</i>	XP_005713411.1	KEGG
	<i>Cyanophora paradoxa</i>	P48325.1	UniProtKB/Swiss-Prot
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	XP_001713238.1	NCBI
	<i>Emiliana huxleyi</i>	XP_005794599.1	NCBI
	<i>Phaeodactylum tricorutum</i>	XP_002181754.1	NCBI
	<i>Thalassiosira pseudonana</i>	XP_002295048.1	NCBI
	<i>Fragilariopsis cylindrus</i>	Frac1 259589	JGI
	<i>Ectocarpus siliculosus</i>	CBJ25908.1	GenBank
	<i>Aureococcus anophagefferens</i>	EGB06598.1	GenBank
	<i>Nannochloropsis gaditana</i>	EWM29690.1	GenBank
	<i>Vitrella brassicaformis</i>	Vbra_15146	EuPathDB
	<i>Chromera velia</i>	Cvel_32489	EuPathDB
	<i>Bigelowiella natans</i>	Bigna1 91760	JGI
	<i>Paulinella chromatophora</i>	YP_002049139.1	NCBI
	<i>Euglena gracilis</i>	ELL00007923	TBestDB
petA	<i>Prochlorococcus marinus</i>	WP_011825334.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011242633.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681750.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_012265194.1	NCBI
	<i>Anabaena variabilis</i>	CAB72245.1	GenBank
	<i>Volvox carteri</i>	ACY06009.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958358.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717252.1	NCBI
	<i>Micromonas commoda</i>	YP_002808618.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051072.1	NCBI
	<i>Physcomitrella patens</i>	NP_904189.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV155C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063630.1	NCBI
	<i>Chondrus crispus</i>	YP_007627413.1	KEGG

	<i>Cyanophora paradoxa</i>	NP_043244.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050751.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277330.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874404.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874531.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289264.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002119.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317073.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66596.1	GenBank
	<i>Chromera velia</i>	YP_003795261.2	NCBI
	<i>Bigelowiella natans</i>	YP_778563.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049380.1	NCBI
	<i>Euglena gracilis</i>	Q8GZR2.2	UniProtKB/Swiss-Prot
petB	<i>Prochlorococcus marinus</i>	ABM78920.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011244081.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681585.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002798126.1	NCBI
	<i>Anabaena variabilis</i>	CAB72242.1	GenBank
	<i>Volvox carteri</i>	ACY06015.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958365.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717215.1	NCBI
	<i>Micromonas commoda</i>	YP_002808654.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051088.1	NCBI
	<i>Physcomitrella patens</i>	NP_904171.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV096C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063557.1	NCBI
	<i>Chondrus crispus</i>	YP_007627338.1	KEGG
	<i>Cyanophora paradoxa</i>	NP_043175.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050667.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277309.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874393.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874548.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289251.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002103.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317001.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66651.1	GenBank
	<i>Chromera velia</i>	YP_003795329.1	NCBI
	<i>Bigelowiella natans</i>	YP_778577.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049280.1	NCBI
	<i>Euglena gracilis</i>	NP_041942.1	NCBI
petC	<i>Prochlorococcus marinus</i>	WP_011825335.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011242632.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681749.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002781457.1	NCBI
	<i>Anabaena variabilis</i>	ABA20011.1	NCBI
	<i>Volvox carteri</i>	XP_002947706.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001698786.1	NCBI
	<i>Ostreococcus lucimarinus</i>	XP_001416036.1	NCBI
	<i>Micromonas commoda</i>	XP_002506920.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_192237.1	NCBI
	<i>Physcomitrella patens</i>	XP_001758988.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMI281C	CMGP
	<i>Gracilaria tenuistipitata</i>	HS981632.1	GenBank
	<i>Chondrus crispus</i>	XP_005712328.1	GenBank

	<i>Cyanophora paradoxa</i>	Q5CC93.1	UniProtKB/Swiss-Prot
	<i>Glaucozystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	XP_005821071.1	NCBI
	<i>Emiliana huxleyi</i>	XP_005770222.1	NCBI
	<i>Phaeodactylum tricornutum</i>	XP_002185824.1	NCBI
	<i>Thalassiosira pseudonana</i>	XP_002287488.1	NCBI
	<i>Fragilariopsis cylindrus</i>	GW080207.1	NCBI EST
	<i>Ectocarpus siliculosus</i>	CBJ29582.1	GenBank
	<i>Aureococcus anophagefferens</i>	XP_009038973.1	NCBI
	<i>Nannochloropsis gaditana</i>	EWM28243.1	GenBank
	<i>Vitrella brassicaformis</i>	Vbra_13677	EuPathDB
	<i>Chromera velia</i>	Cvel_20353	EuPathDB
	<i>Bigelowiella natans</i>	Q7XYM4.1	UniProtKB/Swiss-Prot
	<i>Paulinella chromatophora</i>	YP_002049381.1	NCBI
	<i>Euglena gracilis</i>	ELL00002516	TBestDB
petD	<i>Prochlorococcus marinus</i>	WP_011826790.1	NCBI
	<i>Synechococcus elongatus</i>	AAA98849.1	GenBank
	<i>Thermosynechococcus elongatus</i>	NP_681586.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002738373.1	NCBI
	<i>Anabaena variabilis</i>	ABA23049.1	NCBI
	<i>Volvox carteri</i>	ACY06008.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958359.1	NCBI
	<i>Ostreococcus tauri</i>	XP_003080162.1	NCBI
	<i>Micromonas commoda</i>	XP_002499519.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051089.1	NCBI
	<i>Physcomitrella patens</i>	NP_904170.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV097C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063556.1	NCBI
	<i>Chondrus crispus</i>	YP_007627339.1	KEGG
	<i>Cyanophora paradoxa</i>	NP_043174.1	NCBI
	<i>Glaucozystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050666.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277310.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874392.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874549.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289252.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002102.1	NCBI
	<i>Nannochloropsis salina</i>	YP_008519754.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66594.1	NCBI
	<i>Chromera velia</i>	YP_003795262.1	NCBI
	<i>Bigelowiella natans</i>	YP_778578.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049281.1	NCBI
	<i>Euglena gracilis</i>	Q84TU6.1	UniProtKB/Swiss-Prot
petG	<i>Prochlorococcus marinus</i>	NP_875534.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011378050.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681667.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002738052.1	NCBI
	<i>Anabaena variabilis</i>	Q3M5W2.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	ACY06042.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	ACJ50132.1	GenBank
	<i>Ostreococcus tauri</i>	YP_717263.1	NCBI
	<i>Micromonas commoda</i>	YP_002808617.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051078.1	NCBI
	<i>Physcomitrella patens</i>	NP_904181.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV139C	CMGP

	<i>Gracilaria tenuistipitata</i>	YP_063611.1	NCBI
	<i>Chondrus crispus</i>	YP_007627392.1	KEGG
	<i>Cyanophora paradoxa</i>	NP_043220.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050762.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277389.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874380.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874539.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289212.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002089.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007316993.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66580.1	GenBank
	<i>Chromera velia</i>	YP_003795328.1	NCBI
	<i>Bigelowiella natans</i>	YP_778564.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002049395.1	NCBI
	<i>Euglena gracilis</i>	NP_041905.1	NCBI
petL	<i>Prochlorococcus marinus</i>	WP_011129552.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011243703.1	NCBI
	<i>Thermosynechococcus elongatus</i>	YP_654185.1	NCBI
	<i>Microcystis aeruginosa</i>	CCI38222.1	GenBank
	<i>Anabaena variabilis</i>	Q3M4V0.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	ACY06005.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958424.2	NCBI
	<i>Ostreococcus tauri</i>	CEG00971.1	GenBank
	<i>Micromonas commoda</i>	-	
	<i>Arabidopsis thaliana</i>	P56776.2	UniProtKB/Swiss-Prot
	<i>Physcomitrella patens</i>	NP_904182.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV235C	CMGP
	<i>Gracilaria tenuistipitata</i>	-	
	<i>Chondrus crispus</i>	CHC_920	KEGG
	<i>Cyanophora paradoxa</i>	P48102.1	UniProtKB/Swiss-Prot
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050725.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277357.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874367.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874556.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289278.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002021.1	NCBI
	<i>Nannochloropsis salina</i>	AHX25514.1	GenBank
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	-	
	<i>Paulinella chromatophora</i>	-	
	<i>Euglena gracilis</i>	-	
petM	<i>Prochlorococcus marinus</i>	ABM77601.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011243990.1	NCBI
	<i>Thermosynechococcus elongatus</i>	Q8DJ15.1	UniProtKB/Swiss-Prot
	<i>Microcystis aeruginosa</i>	WP_012265655.1	NCBI
	<i>Anabaena variabilis</i>	CAC12858.1	GenBank
	<i>Volvox carteri</i>	XP_002953725.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001694096.1	NCBI
	<i>Ostreococcus lucimarinus</i>	XP_001417333.1	NCBI
	<i>Micromonas commoda</i>	XP_002505123.1	NCBI
	<i>Arabidopsis thaliana</i>	CAA06667.1	GenBank

	<i>Physcomitrella patens</i>	XP_001754688.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV147C	CMGP
	<i>Gracilaria tenuistipitata</i>	-	
	<i>Chondrus crispus</i>	CHC_680	KEGG
	<i>Cyanophora paradoxa</i>	P48366.1	UniProtKB/Swiss-Prot
	<i>Glaucozystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050756.1	NCBI
	<i>Emiliana huxleyi</i>	Q4G3B3.1	UniProtKB/Swiss-Prot
	<i>Phaeodactylum tricornutum</i>	YP_874382.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874538.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289217.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002121.1	NCBI
	<i>Nannochloropsis gaditana</i>	AHX25099.1	GenBank
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	-	
	<i>Paulinella chromatophora</i>	-	
	<i>Euglena gracilis</i>	-	
petN	<i>Prochlorococcus marinus</i>	A2C9Y5.1	UniProtKB/Swiss-Prot
	<i>Synechococcus elongatus</i>	ABB56507.1	GenBank
	<i>Thermosynechococcus elongatus</i>	NP_681617.1	NCBI
	<i>Microcystis aeruginosa</i>	B0JID4.1	UniProtKB/Swiss-Prot
	<i>Anabaena variabilis</i>	P61049.1	UniProtKB/Swiss-Prot
	<i>Volvox carteri</i>	XP_002952299.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001698251.1	NCBI
	<i>Ostreococcus lucimarinus</i>	XP_001420753.1	NCBI
	<i>Micromonas commoda</i>	XP_002503160.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051052.1	NCBI
	<i>Physcomitrella patens</i>	NP_904169.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV148C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063620.1	NCBI
	<i>Chondrus crispus</i>	CHC_675	KEGG
	<i>Cyanophora paradoxa</i>	NP_043216.1	NCBI
	<i>Glaucozystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050755.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277355.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874383.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874537.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	
	<i>Ectocarpus siliculosus</i>	YP_003289216.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002122.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317062.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66604.1	GenBank
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	Bigna1 87265	JGI
	<i>Paulinella chromatophora</i>	B1X3V8.1	UniProtKB/Swiss-Prot
	<i>Euglena gracilis</i>	EGL00000097	TBestDB
atpA	<i>Prochlorococcus marinus</i>	WP_011825158.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011377539.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681225.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_012267463.1	NCBI
	<i>Anabaena variabilis</i>	WP_011319378.1	NCBI
	<i>Volvox carteri</i>	ACY06056.1	GenBank

	<i>Chlamydomonas reinhardtii</i>	NP_958406.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717250.1	NCBI
	<i>Micromonas commoda</i>	YP_002808620.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051044.1	NCBI
	<i>Physcomitrella patens</i>	NP_904216.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV225C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063652.1	NCBI
	<i>Chondrus crispus</i>	YP_007627435.1	NCBI
	<i>Cyanophora paradoxa</i>	NP_043222.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050732.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277370.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874426.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874506.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289250.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002038.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317088.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66583.1	GenBank
	<i>Chromera velia</i>	YP_003795331.1	NCBI
	<i>Bigelowiella natans</i>	YP_778559.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002048865.1	NCBI
	<i>Euglena gracilis</i>	NP_041928.1	NCBI
atpB	<i>Prochlorococcus marinus</i>	ABM77254.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011244097.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681315.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_012263845.1	NCBI
	<i>Anabaena variabilis</i>	ABA21916.1	NCBI
	<i>Volvox carteri</i>	ACY05995.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958414.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717213.1	NCBI
	<i>Micromonas commoda</i> (mt)	XP_002507229.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051066.1	NCBI
	<i>Physcomitrella patens</i>	NP_904195.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV196C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063636.1	NCBI
	<i>Chondrus crispus</i>	YP_007627419.1	KEGG
	<i>Cyanophora paradoxa</i>	NP_043241.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050748.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277339.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874407.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874528.1	NCBI
	<i>Fragilariopsis cylindrus</i> (mt)	Frac1 267742	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289267.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002116.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317076.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66641.1	GenBank
	<i>Chromera velia</i>	YP_003795295.2/ YP_003795258.2	NCBI
	<i>Bigelowiella natans</i>	YP_778598.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002048874.1	NCBI
	<i>Euglena gracilis</i>	NP_041941.1	NCBI
atpC	<i>Prochlorococcus marinus</i>	WP_011825159.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011377540.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681175.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002800073.1	NCBI
	<i>Anabaena variabilis</i>	WP_011319377.1	NCBI
	<i>Volvox carteri</i>	XP_002945818.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001696335.1	NCBI

	<i>Ostreococcus tauri</i>	XP_003081102.1	NCBI
	<i>Micromonas commoda</i>	XP_002501219.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_567265.1	NCBI
	<i>Physcomitrella patens</i>	XP_001783653.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMQ087C	CMGP
	<i>Gracilaria tenuistipitata</i>	-	
	<i>Chondrus crispus</i>	CO652269.1	GenBank
	<i>Cyanophora paradoxa</i>	Contig7165	CGP
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	EKX51948.1	GenBank
	<i>Emiliana huxleyi</i>	XP_005761783.1	NCBI
	<i>Phaeodactylum tricornutum</i>	AAO43198.1	GenBank
	<i>Thalassiosira pseudonana</i>	XP_002289138.1	NCBI
	<i>Fragilariopsis cylindrus</i>	Frac1 208175	JGI
	<i>Ectocarpus siliculosus</i>	CBN76659.1	GenBank
	<i>Aureococcus anophagefferens</i>	EGB12392.1	GenBank
	<i>Nannochloropsis gaditana</i> (mt)	NGA_0035102	KEGG
	<i>Vitrella brassicaformis</i>	Vbra_19020	EuPathDB
	<i>Chromera velia</i>	Cvel_189	EuPathDB
	<i>Bigelowiella natans</i>	AAP79136.1	GenBank
	<i>Paulinella chromatophora</i>	YP_002048866.1	NCBI
	<i>Euglena gracilis</i>	-	
atpD	<i>Prochlorococcus marinus</i>	WP_011130836.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011243490.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681224.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002763366.1	NCBI
	<i>Anabaena variabilis</i>	WP_011319379.1	NCBI
	<i>Volvox carteri</i>	XP_002957070.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001701377.1	NCBI
	<i>Ostreococcus lucimarinus</i>	XP_001418641.1	NCBI
	<i>Micromonas commoda</i>	XP_002499540.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_192703.1	NCBI
	<i>Physcomitrella patens</i>	XP_001771366.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV224C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063651.1	NCBI
	<i>Chondrus crispus</i>	XP_005710034.1	NCBI
	<i>Cyanophora paradoxa</i>	-	
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050733.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277369.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874425.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874505.1	NCBI
	<i>Fragilariopsis cylindrus</i>	Frac1 260675	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289249.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002037.1	NCBI
	<i>Nannochloropsis gaditana</i>	NGA_0240301	KEGG
	<i>Vitrella brassicaformis</i> (mt)	Vbra_17642	EuPathDB
	<i>Chromera velia</i> (mt)	Cvel_20402	EuPathDB
	<i>Bigelowiella natans</i>	AAP79166.1	GenBank
	<i>Paulinella chromatophora</i>	YP_002048864.1	NCBI
	<i>Euglena gracilis</i>	ELL00002012	TBestDB
atpE	<i>Prochlorococcus marinus</i>	ABM77253.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011244096.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681316.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002735380.1	NCBI
	<i>Anabaena variabilis</i>	ABA21915.1	NCBI
	<i>Volvox carteri</i>	XP_002954956.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	NP_958379.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717212.1	NCBI
	<i>Micromonas commoda</i>	YP_002808656.1	NCBI

	<i>Arabidopsis thaliana</i>	NP_051065.1	NCBI
	<i>Physcomitrella patens</i>	NP_904196.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV195C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063635.1	NCBI
	<i>Chondrus crispus</i>	CHC_760	KEGG
	<i>Cyanophora paradoxa</i>	NP_043242.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050749.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277338.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874406.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874529.1	NCBI
	<i>Fragilariopsis cylindrus</i>	-	
	<i>Ectocarpus siliculosus</i>	YP_003289266.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002117.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317075.1	NCBI
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	YP_778599.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002048873.1	NCBI
	<i>Euglena gracilis</i>	NP_041940.1	NCBI
atpF	<i>Prochlorococcus marinus</i>	WP_011825157.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011377538.1	NCBI
	<i>Thermosynechococcus elongatus</i>	WP_011056288.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002795846.1	NCBI
	<i>Anabaena variabilis</i>	ABA22228.1	NCBI
	<i>Volvox carteri</i>	ACY06062.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958410.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717249.1	NCBI
	<i>Micromonas commoda</i>	YP_002808621.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051045.1	NCBI
	<i>Physcomitrella patens</i>	NP_904217.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV223C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063650.1	NCBI
	<i>Chondrus crispus</i>	CHC_835	KEGG
	<i>Cyanophora paradoxa</i>	NP_043224.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050734.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277368.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874424.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874504.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289248.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002036.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317087.1	NCBI
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	YP_778558.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002048863.1	NCBI
	<i>Euglena gracilis</i>	NP_041927.1	NCBI
atpG	<i>Prochlorococcus marinus</i>	WP_011825156.1	NCBI
	<i>Synechococcus elongatus</i>	WP_011243492.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681222.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002795845.1	NCBI
	<i>Anabaena variabilis</i>	WP_011319381.1	NCBI
	<i>Volvox carteri</i>	XP_002957122.1	NCBI
	<i>Chlamydomonas reinhardtii</i>	XP_001697332.1	NCBI
	<i>Ostreococcus tauri</i>	XP_003074143.1	NCBI
	<i>Micromonas commoda</i>	XP_002507222.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_194953.1	NCBI
	<i>Physcomitrella patens</i>	XP_001754735.1	NCBI

	<i>Cyanidioschyzon merolae</i>	CMV222C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063649.1	NCBI
	<i>Chondrus crispus</i>	CHC_830	KEGG
	<i>Cyanophora paradoxa</i>	NP_043225.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050735.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277367.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874423.1	NCBI
	<i>Thalassiosira pseudonana</i>	XP_002297549.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289247.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002035.1	NCBI
	<i>Nannochloropsis gaditana</i>	AGI98678.1	GenBank
	<i>Vitrella brassicaformis</i>	-	
	<i>Chromera velia</i>	-	
	<i>Bigelowiella natans</i>	Bigna1 47572	JGI
	<i>Paulinella chromatophora</i>	YP_002048862.1	NCBI
	<i>Euglena gracilis</i>	EGL00002701	TBestDB
atpH	<i>Prochlorococcus marinus</i>	ABM77231.1	GenBank
	<i>Synechococcus elongatus</i>	WP_011243493.1	NCBI
	<i>Thermosynechococcus elongatus</i>	NP_681221.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002740068.1	NCBI
	<i>Anabaena variabilis</i>	WP_010994186.1	NCBI
	<i>Volvox carteri</i>	ACY06061.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	NP_958409.1	NCBI
	<i>Ostreococcus tauri</i>	YP_717248.1	NCBI
	<i>Micromonas commoda</i>	YP_002808622.1	NCBI
	<i>Arabidopsis thaliana</i>	NP_051046.1	NCBI
	<i>Physcomitrella patens</i>	NP_904218.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV221C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063648.1	NCBI
	<i>Chondrus crispus</i>	CHC_825	KEGG
	<i>Cyanophora paradoxa</i>	NP_043226.1	NCBI
	<i>Glaucocystis nostochinearum</i>	-	
	<i>Guillardia theta</i>	NP_050736.1	NCBI
	<i>Emiliana huxleyi</i>	YP_277366.1	NCBI
	<i>Phaeodactylum tricornutum</i>	YP_874422.1	NCBI
	<i>Thalassiosira pseudonana</i>	YP_874502.1	NCBI
	<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
	<i>Ectocarpus siliculosus</i>	YP_003289246.1	NCBI
	<i>Aureococcus anophagefferens</i>	YP_003002034.1	NCBI
	<i>Nannochloropsis gaditana</i>	YP_007317086.1	NCBI
	<i>Vitrella brassicaformis</i>	ADJ66585.1	GenBank
	<i>Chromera velia</i>	YP_003795298.1	NCBI
	<i>Bigelowiella natans</i>	YP_778557.1	NCBI
	<i>Paulinella chromatophora</i>	YP_002048861.1	NCBI
	<i>Euglena gracilis</i>	NP_041926.1	NCBI
atpI	<i>Prochlorococcus marinus</i>	WP_011825154.1	NCBI
	<i>Synechococcus elongatus</i>	BAD79372.1	GenBank
	<i>Thermosynechococcus elongatus</i>	NP_681220.1	NCBI
	<i>Microcystis aeruginosa</i>	WP_002739857.1	NCBI
	<i>Anabaena variabilis</i>	WP_011319382.1	NCBI
	<i>Volvox carteri</i>	ACY05999.1	GenBank
	<i>Chlamydomonas reinhardtii</i>	ACJ50149.1	GenBank
	<i>Ostreococcus tauri</i>	YP_717247.1	NCBI
	<i>Micromonas commoda</i>	YP_002808623.1	NCBI
	<i>Arabidopsis thaliana</i>	BAA84373.1	GenBank
	<i>Physcomitrella patens</i>	NP_904219.1	NCBI
	<i>Cyanidioschyzon merolae</i>	CMV220C	CMGP
	<i>Gracilaria tenuistipitata</i>	YP_063647.1	NCBI

<i>Chondrus crispus</i>	CHC_820	KEGG
<i>Cyanophora paradoxa</i>	NP_043226.1	NCBI
<i>Glaucocystis nostochinearum</i>	-	
<i>Guillardia theta</i>	NP_050737.1	NCBI
<i>Emiliana huxleyi</i>	YP_277365.2	NCBI
<i>Phaeodactylum tricornutum</i>	YP_874421.1	NCBI
<i>Thalassiosira pseudonana</i>	YP_874501.1	NCBI
<i>Fragilariopsis cylindrus</i>	chloroplast scaffold_95	JGI
<i>Ectocarpus siliculosus</i>	YP_003289245.1	NCBI
<i>Aureococcus anophagefferens</i>	YP_003002033.1	NCBI
<i>Nannochloropsis gaditana</i>	YP_007317086.1	NCBI
<i>Vitrella brassicaformis</i>	ADJ66586.1	GenBank
<i>Chromera velia</i>	YP_003795310.1	NCBI
<i>Bigelowiella natans</i>	YP_778556.1	NCBI
<i>Paulinella chromatophora</i>	YP_002048860.1	NCBI
<i>Euglena gracilis</i>	NP_041925	NCBI

Supplementary Table S2: Manganese and iron superoxide dismutases and accession numbers.

Taxon	Accession Number	Database
<i>Anabaena cylindrica</i>	AFZ55773.1 AFZ58548.1	NCBI/GenBank
<i>Arabidopsis thaliana</i>	NP_187703.1 NP_191194.1 NP_197722.1 NP_199923.1 NP_849441.1 NP_001030670.1 NP_001031710.1	NCBI/GenBank
Archaeon I	AJF59898.1 AJF61931.1 KHO46305.1 KHO55439.1	NCBI/GenBank
<i>Aureococcus anophagefferens</i>	XP_009037702.1 XP_009038137.1	NCBI/GenBank
<i>Babesia bovis</i>	XP_001611068.1	NCBI/GenBank
<i>Bigelowiella natans</i>	Bigna1 24544 Bigna1 41283 Bigna1 141114	JGI
<i>Caenorhabditis elegans</i>	NP_492290.1 NP_510764.1	NCBI/GenBank
<i>Chlamydomonas reinhardtii</i>	XP_001690591.1 XP_001690936.1 XP_001691748.1 XP_001695947.1 XP_001699077.1 XP_001700058.1	NCBI/GenBank
<i>Chondrus crispus</i>	XP_005714949.1	

	XP_005716849.1	
<i>Chromera velia</i>	Cvel_3019 Cvel_4244 Cvel_7136 Cvel_26697	EuPathdb
<i>Coxiella burnetii</i>	3TQJJA AIT62637.1 WP_017252695.1 WP_040070417.1 WP_040953557.1 WP_042527212.1	NCBI/GenBank
<i>Cryptothecodinium cohnii</i>	CAMPEP_0193864674	iMicrobe ^a
<i>Cryptosporidium parvum</i>	AAQ09593.1 XP_001388283.1	NCBI/GenBank
<i>Cyanidioschyzon merolae</i>	CMN023C CMR158C CMT028C	CMGP
<i>Drosophila melanogaster</i>	NP_001286503.1	
<i>Ectocarpus siliculosus</i>	CBJ28064.1 CBJ30867.1 CBJ48355.1 CBN76241.1 CBN79353.1	NCBI/GenBank
<i>Eimeria tenella</i>	XP_013232031.1 XP_013232304.1 XP_013234977.1	NCBI/GenBank
<i>Emiliana huxleyi</i>	EOD31646.1	NCBI/GenBank
<i>Encephalitozoon cuniculi</i>	CAD26018.2	NCBI/GenBank
<i>Escherichia coli</i>	NP_416173.1 NP_418344.3	NCBI/GenBank
<i>Eutreptiella gymnastica</i> -like	CAMPEP_0174321430 CAMPEP_0174338960	iMicrobe
<i>Gregarina niphandrodes</i>	XP_011129742.1	NCBI/GenBank
<i>Guillardia theta</i>	XP_005819012.1 XP_005829864.1 XP_005832985.1 XP_005841089.1 XP_005841396.1	NCBI/GenBank
<i>Gymnodinium</i> sp.	CAMPEP_0117456956 CAMPEP_0117464096 CAMPEP_0117475122 CAMPEP_0117556838 CAMPEP_0117582460	iMicrobe
<i>Homo sapiens</i>	NP_001019636.1 NP_001019637.1	NCBI/GenBank
<i>Idiomarina</i> sp.	WP_053952566.1	NCBI/GenBank
<i>Karenia brevis</i>	CAMPEP_0188874120 CAMPEP_0188886508 CAMPEP_0188906418 CAMPEP_0188963926 CAMPEP_0188978854 CAMPEP_0188984554 CAMPEP_0188992448 CAMPEP_0189001786	iMicrobe

<i>Lingulodinium polyedrum</i>	CAMPEP_0190134060	iMicrobe
Marine Group I	WP_048069774.1 WP_048079200.1	NCBI/GenBank
<i>Marinobacter</i> sp.	WP_008171376.1 WP_011785497.1 WP_014870267.1 WP_036210113.1	NCBI/GenBank
Methanobacterium	WP_048081171.1	NCBI/GenBank
<i>Methanosarcina</i> sp.	WP_048128602.1 WP_048137433.1	NCBI/GenBank
<i>Microcystis aeruginosa</i>	BAG05221.1 WP_045358983.1 WP_046662956.1	NCBI/GenBank
<i>Micromonas</i> sp.	XP_003058055.1	NCBI/GenBank
<i>Nannochloropsis gaditana</i>	EWM21824.1 EWM22517.1	NCBI/GenBank
<i>Nitrosopumilus</i> sp.	WP_014962683.1 WP_014964564.1 WP_014964930.1	
<i>Oxyrrhis marina</i>	CAMPEP_0190312732 CAMPEP_0190354292 CAMPEP_0190383648 PEP_0190378606	iMicrobe
<i>Paramecium tetraurelia</i>	XP_001433955.1 XP_001461921.1	NCBI/GenBank
<i>Paulinella chromatophora</i>	ACB42592.1	NCBI/GenBank
<i>Penicillium digitatum</i>	EKV07912.1 EKV14618.1	NCBI/GenBank
<i>Perkinsus marinus</i>	XP_002765946.1 XP_002773398.1 XP_002775938.1 XP_002776371.1 XP_002776372.1 XP_002784134.1 XP_002788749.1 XP_002788750.1	NCBI/GenBank
<i>Persicobacter</i> sp.	WP_060685238.1 WP_060687327.1	
<i>Phaeodactylum tricornutum</i>	XP_002177253.1 XP_002180497.1	NCBI/GenBank
<i>Physcomitrella patens</i>	XP_001751975.1 XP_001756362.1 XP_001774291.1	NCBI/GenBank
<i>Phytophthora infestans</i>	XP_002905014.1 XP_002905257.1	
<i>Plasmodiophora brassicae</i>	CEO96504.1 CEP02381.1	NCBI/GenBank
<i>Plasmodium falciparum</i>	KOB59380.1 KOB60722.1	NCBI/GenBank
<i>Pyropia haitanensis</i>	AFS17267.1	NCBI/GenBank
<i>Rheinheimera</i>	GAB59341.1	NCBI/GenBank
<i>Saccharomyces cerevisiae</i>	NP_011872.1	NCBI/GenBank
<i>Solanum tuberosum</i>	AAO16563.1 XP_006350369.1	NCBI/GenBank

	XP_006358755.1 XP_015168847.1	
<i>Symbiodinium sp.</i>	AAX99422.1	NCBI/GenBank
<i>Synechococcus elongatus</i>	BAD78927.1	NCBI/GenBank
<i>Tetrahymena thermophila</i>	XP_001010506.1	NCBI/GenBank
<i>Thalassiosira pseudonana</i>	XP_002288307.1 XP_002290645.1 XP_002295691.1	NCBI/GenBank
<i>Theileria parva</i>	XP_763660.1 XP_766677.1	NCBI/GenBank
<i>Toxoplasma gondii</i>	XP_002364786.1 XP_002364798.1 XP_002364800.1	NCBI/GenBank
<i>Trichomonas vaginalis</i>	XP_001276944.1 XP_001305233.1 XP_001307775.1 XP_001317169.1 XP_001320475.1 XP_001320923.1 XP_001324547.1	NCBI/GenBank
<i>Trypanosoma brucei</i>	XP_829648.1 XP_829560.1 XP_829639.1 XP_845007.1 XP_845521.1	NCBI/GenBank
<i>Vitrella brassicaformis</i>	Vbra_1709 Vbra_9665 Vbra_9701 Vbra_10461 Vbra_13639 Vbra_19404 Vbra_23058	EuPathdb
<i>Volvox carteri</i>	XP_002946030.1 XP_002946031.1 XP_002946032.1 XP_002946659.1 XP_002951375.1 XP_002958078.1 XP_002958467.1	NCBI/GenBank
<i>Xanthomonas oryzae</i>	AAW75966.1 ACD58439.1 ACD60067.1 AKK64553.1 AKN93588.1 AKO08548.1 ALS94977.1 ALS95224.1 BAE69796.1 WP_019299923.1 WP_019302872.1 WP_019305192.1	NCBI/GenBank
<i>Xenorhabdus bovienii</i>	WP_012986675.1 WP_012988922.1 WP_038183765.1	NCBI/GenBank

WP_038190998.1
 WP_038197542.1
 WP_038197721.1
 WP_038221335.1
 WP_038224240.1
 WP_038242940.1
 WP_038248008.1
 WP_038254067.1
 WP_038255860.1

^a <http://imicrobe.us/>

Supplementary Table S3: SignalP and TransitP results for superoxide dismutases in *Chromera velia* and *Vitrella brassicaformis*. For sequences where a signal peptide is present the length of the signal peptide sequence is indicated. For each sequence with a positive result, the presence and length of an additional targeting peptide sequence is given. Bolded accession numbers indicate proteins that were identified as PSI subunits in 2D PAGE analyses.

Taxon	Accession number	Predicted function	Signal P length	TargetP *
<i>Chromera velia</i>	Cvel_3019	FeSOD	17 aa	24
	Cvel_4244	MnSOD	-	-
	Cvel_7136	FeSOD	19 aa	83
	Cvel_26697	MnSOD	-	-
<i>Vitrella brassicaformis</i>	Vbra_1709	MnSOD	-	-
	Vbra_9665	FeSOD	-	-
	Vbra_9701	MnSOD	18 aa	-
	Vbra_10461	FeSOD	18 aa	14
	Vbra_13639	FeSOD	16 aa	25
	Vbra_19404	MnSOD	19 aa	-
	Vbra_23058	FeSOD	-	-

*for peptide sequence after signal peptide removal

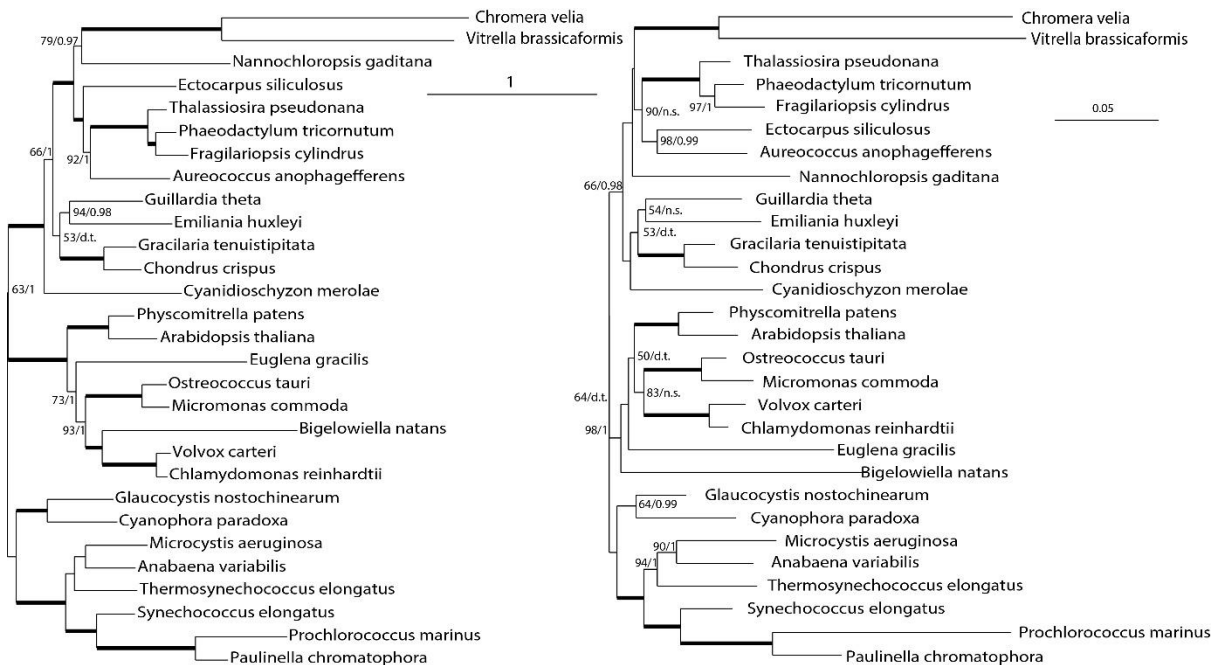
Supplementary Table S4: Full HECTAR (optimized for heterokont proteins) results for superoxide dismutase sequences from *Chromera velia* and *Vitrella brassicaformis*. Bolded accession numbers indicate proteins that were identified as PSI subunits in 2D PAGE analyses.

Taxon	sequence	Predicted targeting category	Signal peptide score	Type ii signal anchor score	Chloroplast score	Mitochondrion score	Other score
<i>Chromera velia</i>	Cvel_7136	Signal peptide	0.6791	0.0556	0.3803	-	-
	Cvel_3019	chloroplast	0.6375	0.0611	0.7929	-	-
	Cvel_4244	Signal peptide	0.6403	0.0624	0.0485	-	-
	Cvel_26697	Other localisation	0.0694	0.0248	-	0.1176	0.8824
<i>Vitrella brassicaformis</i>	Vbra_19404	Signal peptide	0.7242	0.0552	0.0188	-	-
	Vbra_9665	Other localisation	0.1008	0.0309	-	0.1033	0.8967
	Vbra_23058	mitochondrion	0.1221	0.0341	-	0.6766	0.3234
	Vbra_1709	Other localisation	0.0843	0.0475	-	0.1080	0.892
	Vbra_13639	chloroplast	0.7792	0.0549	0.7402	-	-
	Vbra_10461	chloroplast	0.7518	0.0578	0.9238	-	-
	Vbra_9701	Signal peptide	0.8132	0.0522	0.0400	-	-

Supplementary Table S5: HECTAR^SEC (all eukaryotes) results for superoxide dismutase sequences from from *Chromera velia* and *Vitrella brassicaformis*. Bolded accession numbers indicate proteins that were identified as PSI subunits in 2D PAGE analyses.

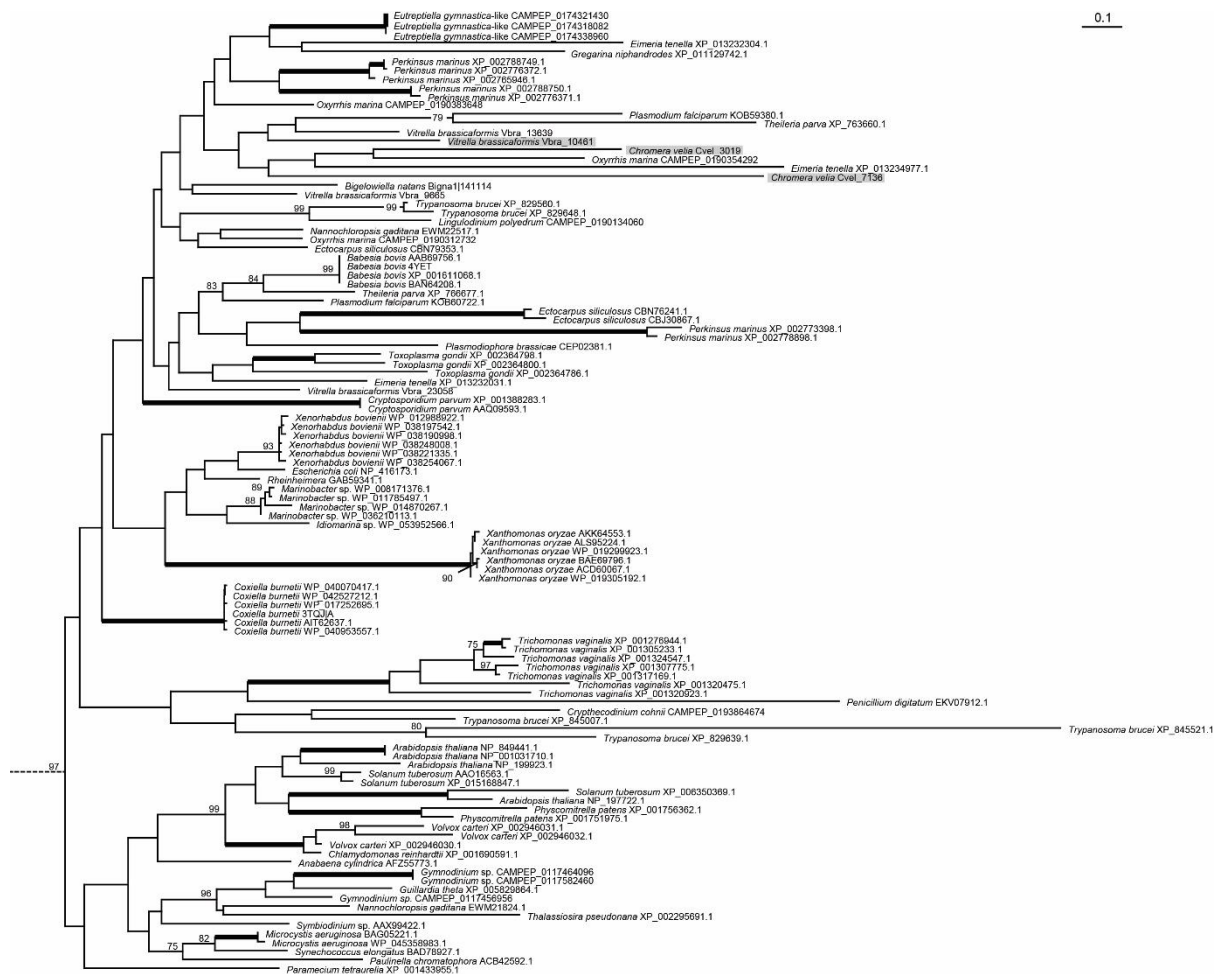
Taxon	sequence	Predicted targeting category	Signal peptide score	Type ii signal anchor score	Other score
<i>Chromera velia</i>	Cvel_7136	Signal peptide	0.6791	0.0556	0.2653
	Cvel_3019	Signal peptide	0.6376	0.0611	0.3013
	Cvel_4244	Signal peptide	0.6403	0.0624	0.2973
	Cvel_26697	No signal peptide or anchor	0.0694	0.0248	0.9058
<i>Vitrella brassicaformis</i>	Vbra_19404	Signal peptide	0.7242	0.0552	0.2206
	Vbra_9665	No signal peptide or anchor	0.1008	0.0309	0.8683
	Vbra_23058	No signal peptide or anchor	0.1221	0.0341	0.8438
	Vbra_1709	No sigal peptide or anchor	0.0843	0.0275	0.8882
	Vbra_13639	Signal peptide	0.7792	0.0549	0.1659
	Vbra_10461	Signal peptide	0.7518	0.0578	0.1904

Vbra_9701	Signal peptide	0.8132	0.0522	0.1346
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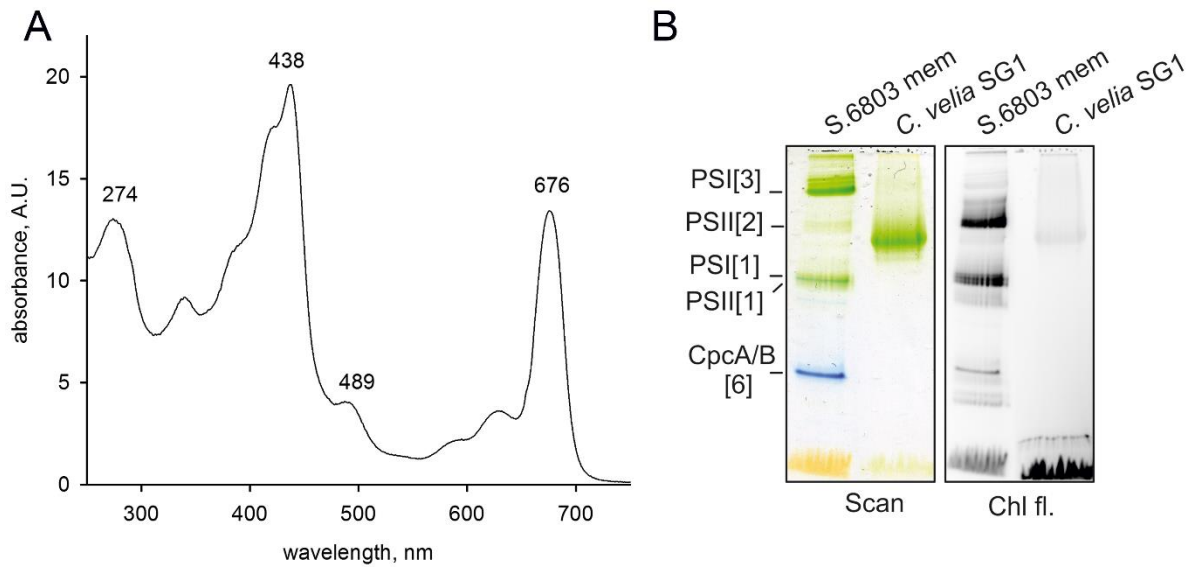


Supplementary Figure S1: Unrooted phylogenies derived from datasets of 55 thylakoid membrane complex proteins. A) Topology resulting from the analysis of a site-rich dataset of 10 465 sites. B) Topology resulting from the analysis of a site-poor dataset of 4872 sites. Support values are presented in the format ML bootstrap/Bayesian posterior probability. Branches with support values of 100/1.00 are shown in bold. The topologies shown here resulted from maximum likelihood analyses; branches where Bayesian analysis yielded different topology are indicated with “d.t.” in the place of a Bayesian posterior probability; “n.s.” indicates branches with low or non-existent support in the Bayesian analysis. Red plastid lineages and stramenopiles (inclusive of *Chromera velia* and *Vitrella brassicaformis*) were recovered in both analyses with moderate/high (ML bootstrap/Bayesian posterior probability) support. *Chromera* and *Vitrella* formed a sister group with the eustigmatophyte

Nannochloropsis gaditana with moderate support in the site-rich analysis, but this relationship was not recovered in the site-poor analysis.



Supplementary Figure S2: Subtree from maximum likelihood phylogenetic analysis of manganese and iron superoxide dismutases (MnSODs and FeSODs, respectively). MnSODs and FeSODs resolved as two well-supported clades (ML bootstrap = 97); for clarity, only the clade formed by FeSODs is shown. Branches with ML support values of 100 are shown in bold; support values below 70 are not shown. PSI-associated FeSODs from *Chromera velia* are indicated by a circle; their phylogenetic positions are unsupported.



Supplementary Figure S3: Characterization of the purified *Chromera* PSI. A) Absorbance of the isolated PSI peak as recorded by a diode-array detector. B) The isolated PSI eluted separated by CN-PAGE. Solubilized membranes (3 µg of chlorophyll) from the cyanobacterium *Synechocystis* 6803 (*Syn* mem) were used to demonstrate the mobility of photosynthetic complexes. After separation, the clear native gel was photographed (scan) and scanned for chlorophyll fluorescence by LAS 4000 (Chl fl). PSI[1] (~350 kDa) and PSI[3] (~1 MDa), monomer and trimer of PSI, respectively; PSII[2] (~700 kDa), dimer of PSII; CpcA/B[6], ~100-kDa heterohexamer of CpcA and CpcB phycobiliproteins.

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