

protein	sequence name used in Fig. 3	contig number or accession number	predicted evolutionary type	N-terminal length (amino acid residues in blue in the next column)	N-terminal amino acid sequence blue, predicted N-terminal extension (dollar sign; cleaved site predicted by SignalP) red, region matched with the homologous sequence in a cyanobacterium (see the next column)	cyanobacterial sequence compared	SignalP prediction ^a	TargetP prediction ^b
MgCH (ChlD)	Karenia	0173861370 Karenia brevis CCMP2229	EA	NA	Lack the N-terminal extension or the extension is too short to analyze	Synechocystis sp. PCC 7509	NA	NA
MgCH (ChlD)	Karlodinium	0169258024 Karlodinium micrum CCMP2283	EA	118	XRAPSYCAFFAAVAHSLASSFRDDMSSKLGFSNSSEQLMHSGPLNPQEALSTMLLALHPGSSSRPLSLRQRP RP KTVAQAIDAEARLKAIMDAEEEEKTKQVASFGNMNIGDGP IQFPLAAIVGQEAVKT	Synechocystis sp. PCC 7509	N	S (5)
MgCH (ChlD)	Lepidodinium	comp120718_c0_seq1 Lepidodinium chlorophorum_NIES-1868	LA	185	MGSLALGFSPPRFSLMSLISPGFVLLTLRHAANHIDVRQDKLFSGVLGVLDKSDVIMDFKAFEKSFLLHHED LNETILGVPLGLHAIWPSRSLMPGTSELISHGVVRVPVGTANCLPQARGYHKSLQTMGGRTVHSMRTAAQDAT QEGMLERMTKAALSAKVNLDPPSNSDGDGDDGWGGKGGPKGRVLP L SMIVGND	Synechocystis sp. PCC 7509	N	S (5)
MgCH (ChlH)	Karenia-1	0173791114 Karenia brevis CCMP2229	EA	85	XALLMACVGGQARRLQPLSEPNSLDTLDALEAFAAALQTHDAESAFNLGCGPAGCHVKGPAIAGSRPTVLNRQS GLTAVRAQSPS MVAAPTGMFTQSNPE	Synechocystis sp. PCC 7509	N	- (5)
MgCH (ChlH)	Karenia-2	0173923170 Karenia brevis CCMP2229	LA		Lack the N-terminal extension or the extension is too short to analyze	Synechocystis sp. PCC 7509	NA	NA
MgCH (ChlH)	Karlodinium-1	0169181396 Karlodinium micrum CCMP2283	EA	50	XMILLNLNPALSSRIASAPAKHKSCLAVNDNDHRPAATIRAHSPAMQGAGLYTQSKPQDRLVKPENI	Synechocystis sp. PCC 7509	N	M (5)
MgCH (ChlH)	Karlodinium-2	0169359022 Karlodinium micrum CCMP2283	LA	165	XGIETLRRRQNVALHSSGDSHAEGSGSLCLDDQPSSSKPFATFLAVAVPSRLCASSGRSDAITYANRRIFERS PCFRNCSPRMSRMGESILEEARTLDRQAGHTVDGKRIVLTGFSEFNKLYKDAAAANIARRCPGVELHVFVSDRIA SRRLDVEXYRMYLTFLELLDFDQ	Synechocystis sp. PCC 7509	N	M (5)
MgCH (ChlH)	Lepidodinium	comp96340_c0_seq1 Lepidodinium chlorophorum NIES-1868	LA	124	MDCYSSLDHGVVPVRKRTRCSWGHILLAAAGACALMLFLGMSFSFPRVQMQDSFQTLNLAVRAAALQSAKGKMP SSGHQPAPYSARSVLHQTSPLGRRYTSIVKASQRAATATVEKVDINMPAGGMFTQT K PED	Synechocystis sp. PCC 7509	N	- (5)
MgPMT	Karenia	0173758408 Karenia brevis CCMP2229	EA	194	MRKVALMLTCLACAGQSRVSRAADHLQSTPDAEGETGRKLTLATLFMAWSPVSAFNLHTSGVRPSMGNP AH AVSEPVVLDGEFAYHLPYLKTPTMRKVALMLTCLACAGQSRVSRAADHLQSTPDAEGETGRKLTLATLFMAW SPVSAFNLHTSGVRPSMGNP AHAVSEPVVLDGEFAYHLPSPRAGMT PAMQAVDDK	Synechocystis sp. PCC 7509	Y	M (4)
MgPMT	Karlodinium	0169310134 Karlodinium micrum CCMP2283	EA	NA	Lack the N-terminal extension or the extension is too short to analyze	Synechocystis sp. PCC 7509	NA	NA
MgPMT	Lepidodinium	comp85011_c0_seq1 Lepidodinium chlorophorum NIES-1868	EA	131	MRGATLTILLVAASADSKLVDELVAIVDRFDNPFPLDVLNSAALGSPGHSGASPHRINSGRAAYGPQSRSLAQRN LVLPATRIDVTTKALGGELGELIAAAGGAAALGSAALVLTDPKSRRESMTSAAGGDEMESVKNYFN TD	Synechocystis sp. PCC 7509	Y	S (2)
POR	Karenia-1	0174002120 Karenia brevis CCMP2229	uncertain	95	MRIITLLACLAGAGYCSRVKMETKDFGDDPIEYSDGLATLLHTLNPAAGYNGQPMPMAKAPWEKLVGRAEA VAAVSDAVSVRPAEQASKFGNKKLAVITGTS SG	Synechocystis sp. PCC 7509	Y	S (3)
POR	Karenia-2	0173999550 Karenia brevis CCMP2229	EA	120	MCPIALLAFACGSHAFSRMQRRSDQSSPSQSQIQLLLALDAVSAFNPSSPAL SARAGKRALPVMATLTKRPGV SKETKRQDGLNIRGAQEATSAGKNVYKYGREIPTAGGLRVGT RQVWITGASS	Synechocystis sp. PCC 7509	Y	S (3)
POR	Karlodinium-1	0169102736 Karlodinium micrum CCMP2283	uncertain	58	MRDVVSALFNAICTIRLTSDSDXAAAESQLLGASGSKALSSLLFNFGKVSFGDKLKVWVTGTS SG	Synechocystis sp. PCC 7509	Y	S (4)
POR	Karlodinium-2	0169198464 Karlodinium micrum CCMP2283	EA	113	MPLTSLRMGLFACVVLGLSDRAMAASLRQEKESLATVLAFRPRAPRLNNAKSASPRMNAAVALPKKPEVKNV IK GNTREESVGKELAKHLKESERSYQKGEIPKIAGGLKIGTRRIVITGASAGL	Synechocystis sp. PCC 7509	Y	S (2)
POR	Karlodinium-3	0169076352 Karlodinium micrum CCMP2283	EA	47	MNVILETPRRLDLLKRPSPSSEETSERLYTGSELPKVIGGVKIGTRRIVVITGASSGL	Synechocystis sp. PCC 7509	N	- (3)
POR	Lepidodinium-1	comp29332_c0_seq1 Lepidodinium chlorophorum NIES-1868	VI	72	MHADPMAHILCLSLFLRAAQGS KIQKSWGKVNAPVAAVTQIPKPKIKSESPLTNFFKFGKSSKFGDKKL VVI TGPSSGL	Synechocystis sp. PCC 7509	Y	S (2)
POR	Lepidodinium-2	comp104830_c0_seq1 Lepidodinium chlorophorum NIES-1868	LA	126	MAMCKTMANIILLFVVAHGAER\$IVNRLNLTVLGDLVNSQIRHDDIENATLGMLEHLANPLRASLTRAGPRTFT QQPLPHTTVRECA\$PWAQSSPQSRREATRMAARAGSAHVAARAATKTR\$OLK TIVITGASSGLG	Synechocystis sp. PCC 7509	Y	S (1)
N-DVR	Karenia	0174088982 Karenia brevis CCMP2229	LA	57	YLACVGGQRRVQTS\$DARVHGSRRPMSVLTLLLRADPVSFAFQ\$PASPATRQVLNRQGRFHRHSPVMEFESGVTC TKEKVIVGATGY	Synechococcus sp. MIT S9508	N	M (2)
N-DVR	Karlodinium	0169202308 Karlodinium micrum CCMP2283	LA	117	XWLLNLQEIHADMLHMSRICFAIVALSCVLHARRVKTSSENTWYQSELARH\$RVEDRVNAGVLHDPEHPLASILL AH\$PAVSSSSGRRLLKPF\$PNRVWQRTSPVSMEFESGK\$CTG\$KVIVGATGYIG	Synechococcus sp. MIT S9508	N	- (2)
N-DVR	Lepidodinium	comp25143_c0_seq1 Lepidodinium chlorophorum NIES-1868	uncertain	91	MSARGALKVWLILFQRHTRAD\$ISDAGITGVQGTFLAIPRGRQPTSLKNYRWEQ\$HFASRTRAAREHHDARKHQ WLSNMPKARLAAGSQ\$QERIAIKAVSSDG	Synechococcus sp. MIT S9508	Y	S (1)
F-DVR	Karenia	0173927754 Karenia brevis CCMP2229	EA	58	XLTFVGQDLDP\$AVAYNPVN\$PRAH\$QAKVFLRRDRDLHG\$CSPILMGPLEIPTGPWPD\$FPAKDLCSNCGLC	Synechocystis sp. PCC 7509	N	- (2)
F-DVR	Lepidodinium	comp137209_c0_seq1 Lepidodinium chlorophorum NIES-1868	LA	105	MFDNRIGLAEPLIEARLPSSWCCAKICILLFLCSILQFLDL\$VLLPYSSHGLSHDLAAQ\$PAITASRIQ\$SLPATFKY WLHPRWGV\$ERGPPWSSSVK\$Y\$DWRENAKPIEG	Synechocystis sp. PCC 7509	N	- (5)
CS	Karenia	0114784834 Karenia brevis Wilson	EA	90	MHKIVLVLASLACAGHGR\$RVKLT\$TESQDPSKVAQPNRIANAK\$TGKQSSALAALLASNP\$TAGFKSLGSAGRLA VCSPTLSRLRPAV\$PLMQTEPKAETNK	Synechocystis sp. PCC 7509	Y	M (5)
CS	Karlodinium	0169097534 Karlodinium micrum CCMP2283	EA	NA	Lack the N-terminal extension or the extension is too short to analyze	Synechocystis sp. PCC 7509	NA	NA
CS	Lepidodinium-1	comp198554_c0_seq1 Lepidodinium chlorophorum NIES-1868	LA	NA	Lack the N-terminal extension or the extension is too short to analyze	Synechocystis sp. PCC 7509	NA	NA
CS	Lepidodinium-2	comp104395_c0_seq1 Lepidodinium chlorophorum NIES-1868	LA	223	MRGVTLTTVVC\$IVHTGAE\$GPTYESG\$NLFDP\$FKDRKIKASPAR\$GADLNTLTGK\$SPLAASSH\$VADVAALR PQVALVRPFRASPRPWAQ\$SPAIEARAGTSS\$SALATQASRTRSS\$SALAGVAPRRATG\$SGLLGAFYFRGIQ MESVMRGLRSPDVRAVRDPA\$RELIDP\$RSLKFAAW\$EELDQPMFGR\$SEQLK\$RCHQ\$MNMNQCPVSS\$MSDVE D\$ASKECASALGEARERASRAPLAH\$KAPPSRMMVLA\$EKGK\$GESDAGARQL	Synechocystis sp. PCC 7509	Y	S (3)

^aPutative signal peptide (SP) was predicted by SignalP 4.1 Server with the default settings ("Y", SP predicted; "N", no SP predicted).

^bPutative intracellular localization was predicted by TargetP 1.1 Server with the default settings ("S", secretory pathway; "M", mitochondrion; "-.", any other location; reliability class from 1 to 5 is provided in parentheses).