



UNIVERSITY OF
PLYMOUTH

PEARL

PHD

**CELLULAR AND MOLECULAR MECHANISMS OF BIOMINERALISATION IN A
SILICIFYING HAPTOPHYTE PRYMNESIUM NEOLEPIS**

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Award date:
2014

Awarding institution:
University of Plymouth

[Link to publication in PEARL](#)

1. *rbcL* alignment of three strains of *P. neolepis*: TMR5, PZ241, VF28.

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      10      20      30      40      50      60      70      80      90
TMR5 RbcL  GATCCTGATTACGTTATCAAGGAAACTGACATCTTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTTGACCCCTGTAGAAGCTGCTGCA
PZ241 RbcL  GATCCTGATTACGTTATCAAGGAAACTGACATCTTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTTGACCCCTGTAGAAGCTGCTGCA
VF28 RbcL  GATCCTGATTACGTTATCAAGGAAACTGACATCTTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTTGACCCCTGTAGAAGCTGCTGCA

      100     110     120     130     140     150     160     170     180
TMR5 RbcL  GCTCTTGCTGGTGAGTCTTCAACAGCAACATGGACTGTTGTATGGACAGATCTACTAACTGCTTGTGATCTATACCGTGCAAAAGCTTAC
PZ241 RbcL  GCTCTTGCTGGTGAGTCTTCAACAGCAACATGGACTGTTGTATGGACAGATCTACTAACTGCTTGTGACCTATACCGTGCAAAAGCTTAC
VF28 RbcL  GCTCTTGCTGGTGAGTCTTCAACAGCAACATGGACTGTTGTATGGACAGATCTACTAACTGCTTGTGACCTATACCGTGCAAAAGCTTAC

      190     200     210     220     230     240     250     260     270
TMR5 RbcL  CGTGTAGATCCGGTACCTAGTACACCGGATACCTTACTTCTGTTATATCGCTTACGATCTAGACCTATTTGAAGAAGGTTCACTTGCTAAC
PZ241 RbcL  CGTGTAGATCCGGTACCTAGTACACCGGATACCTTACTTCTGTTATATCGCTTACGATCTAGACCTATTTGAAGAAGGTTCACTTGCTAAC
VF28 RbcL  CGTGTAGATCCGGTACCTAGTACACCGGATACCTTACTTCTGTTATATCGCTTACGATCTAGACCTATTTGAAGAAGGTTCACTTGCTAAC

      280     290     300     310     320     330     340     350     360
TMR5 RbcL  CTAACGTCATCTATTATCGGTAAACATCTTCGGTTTCAAAGCGGTAAAGGCTCTTAGACTAGAAGATATGCGTTTCCCTGTAGCACTGCTA
PZ241 RbcL  CTAACGTCATCTATTATCGGTAAACATCTTCGGTTTCAAAGCGGTAAAGGCTCTTAGACTAGAAGATATGCGTTTCCCTGTAGCACTGCTA
VF28 RbcL  CTAACGTCATCTATTATCGGTAAACATCTTCGGTTTCAAAGCGGTAAAGGCTCTTAGACTAGAAGATATGCGTTTCCCTGTAGCACTGCTA

      370     380     390     400     410     420     430     440     450
TMR5 RbcL  AAGACTTACCAAGGACCCGCTACTGGTTTAAATCGTAGAGCGTGAGCGTATGGATAAGTTCGGTCGTCCTCTATTAGGTGCAACTGTAAAG
PZ241 RbcL  AAGACTTACCAAGGACCCGCTACTGGTTTAAATCGTAGAGCGTGAGCGTATGGATAAGTTCGGTCGTCCTCTATTAGGTGCAACTGTAAAG
VF28 RbcL  AAGACTTACCAAGGACCCGCTACTGGTTTAAATCGTAGAGCGTGAGCGTATGGATAAGTTCGGTCGTCCTCTATTAGGTGCAACTGTAAAG

      460     470     480     490     500     510     520     530     540
TMR5 RbcL  CCTAAGCTTGGTCTTTCTGGTAAAGACTACGGTCGTTAGTATTCGAAGGCTTAAAGGTGGTCTTGACTTCTTAAAGATGATGAGAAC
PZ241 RbcL  CCTAAGCTTGGTCTTTCTGGTAAAGACTACGGTCGTTAGTATTCGAAGGCTTAAAGGTGGTCTTGACTTCTTAAAGATGATGAGAAC
VF28 RbcL  CCTAAGCTTGGTCTTTCTGGTAAAGACTACGGTCGTTAGTATTCGAAGGCTTAAAGGTGGTCTTGACTTCTTAAAGATGATGAGAAC

      550     560     570     580     590     600     610     620     630
TMR5 RbcL  ATTAACTCACAGCCATTATGCGTTACAGAGAGCGTTTCCCTTACTCAATGGAAGGTGTTAAACCACGCAGCAGCTGTAACCTGGTGAAGTT
PZ241 RbcL  ATTAACTCACAGCCATTATGCGTTACAGAGAGCGTTTCCCTTACTCAATGGAAGGTGTTAAACCACGCAGCAGCTGTAACCTGGTGAAGTT
VF28 RbcL  ATTAACTCACAGCCATTATGCGTTACAGAGAGCGTTTCCCTTACTCAATGGAAGGTGTTAAACCACGCAGCAGCTGTAACCTGGTGAAGTT

      640     650     660     670
TMR5 RbcL  AAAGGTCACTACTTAAACACTACTGGTGCAACTATGGAAGAAA
PZ241 RbcL  AAAGGTCACTACTTAAACACTACTGGTGCAACTATGGAAGAAA
VF28 RbcL  AAAGGTCACTACTTAAACACTACTGGTGCAACTATGGAAGAAA

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2. SSU alignment

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      10      20      30      40      50      60      70
|AB183265.1| Prymnesium neolep -GTTTATTTGATGGTACCTT- ACTACTTGGATAACCGTAGTAATTCAGAGCTAATACATGCAGGAAACC
Prymnesium neolepis strain TMR -GTTTATTTGATGGTACCTT- ACTACTTGGATAACCGTAGTAATTCAGAGCTAATACATGCAGGAAACC
|FN551248.1| Chrysochromulina -----AGCTNATACATGCAGGAAGTC
|AM779755.1| Prymnesium palpeb  AGTTTATTTGATGGTACCTT- ACTACTTGGATAACCGTAGTAATTCAGAGCTAATACATGCAGGAAGTC
|AM491014.2| Imantonia rotunda -GTTTATTTGATGGTACCTT- ACTACTTGGATAACCGTAGTAATTCAGAGCTAATACATGCAGGATCGC

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AJ544117.1	Coccolithus braar	-GTTTATTTGATGGTACCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAAGGC	
AJ544118.1	Umbilicosphaera s	-GTTTATTTGATGGTACCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAAGTC	
AJ544119.1	Umbilicosphaera f	-GTTTATTTGATGGTACCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAAGTC	
AM491024.2	Calyptrosphaera r	-GTTTATTTGATGGTACCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAAGTC	
HQ877901.1	Emiliana huxleyi	-GTTTATTTGATGGTACCTT	GCTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAGTTC	
AB183665.1	Gephyrocapsa ocea	-GTTTATTTGATGGTACCTT	GCTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAGTTC	
JF489945.1	Isochrysis galban	-GTTTATTTGATGGTACCTT	GCTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAGTTC	
AM490974.2	Pleurochrysis ros	-GTTTATTTGATGGTACCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAGTTC	
AM491017.2	Chrysochromulina	AGTTTATTTGATGGTACC	-T	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAAGAC
AM491019.2	Chrysochromulina	AGTTTATTTGATGGTACC	-T	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAAGAC
JF489961.1	Pavlova lutheri	GGTTTATTTGATGGTACCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCAGGAGTTC	
HQ912555.1	Thalassiosira pse	-GTTTCTTTGATAGTCCCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCATCAATAC	
JN091722.1	Pseudo-nitzschia	-----	-----	-----	-----	-----	
JF790983.1	Cymbella cistulif	-GTTTATTTGATAGTCCCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCCTCAATAC	
HQ912556.1	Phaeodactylum tri	-GTTTATTTGATAGTCCCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCCTCAATAC	
AB546639.1	Triparma sp.	-GTTTATTTGATAATCTCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCCTAAACAC	
HQ912557.1	Bolidomonas pacif	-GTTTATTTGATAATCTCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCCTAAACAC	
EF165138.1	Ochromonas marina	-GTTTATTTGATGGT	TCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCCTCAAAAC
EF165116.1	Synura petersenii	-GTTTATTTGATGAT	TCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCCTCAAAAC
JQ281519.1	Mallomonas papill	-GTTTATTTGATGGT	TCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCCTCAAAAC
EF432519.1	Paraphysomonas im	-GTTTATTTGATGGT	TCTT	GCTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCCTCAAAAC
EF165146.1	Lagynion cf. ampu	-GTTTATTTGATGGT	TCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCCTCAATCC
AB096710.1	Dictyocha fibula	-GTTTATTTGATAGTCCCTT	ACTACTTGGATAAACC	TAGTAATTC	TAGAGCTAAT	CATGCATCAATAC	
AB097408.1	Helicopedinella t	-GTTTATTTGATATCCCTT	ACTACTCGGATAAACC	TAGTAATTC	TAGAGCTAAT	ACGTGCGTCAAAACG	

		80	90	100	110	120	130	140
AB183265.1	Prymnesium neolep	CCG	ACT	CACGGAGGGG	TGTTTTATTAGATAAGAA	CCAATCCGGCTT	G	CCG
Prymnesium neolepis strain TMR		CCG	ACT	CACGGAGGGG	TGTTTTATTAGATAAGAA	CCAATCCGGCTT	G	CCG
FN551248.1	Chrysochromulina	CCG	ACT	TTGGAAGGGG	TGTTTTATTAGATAAGAA	CCAACCCGGCTT	G	CCG
AM779755.1	Prymnesium palpeb	CCG	ACT	TCGGAAGGGG	TGTTTTATTAGATAAGAA	CCAACCCGGCTT	G	CCG
AM491014.2	Imantonia rotunda	CCG	ACT	TCGGAAGGGG	TGTTTTATTAGATAAGAA	CCAACCCGGCTT	T	GCG
AJ544117.1	Coccolithus braar	CC		TCCGGGGCCG	TATTTATTAGATAAGAA	CCAATCCCTTTT	G	G
AJ544118.1	Umbilicosphaera s	CC		TTCTGGGGAT	TATTTATTAGATAAGAA	CCAATCCCATCC	G	G
AJ544119.1	Umbilicosphaera f	CC		TTCTGGGGAT	TATTTATTAGATAAGAA	CCAATCCCTCTT	G	G
AM491024.2	Calyptrosphaera r	CCG	ACT	TTTGAGGGAT	TATTTATTAGATAAGAA	CCAATCCGCCCTT	G	TGCG
HQ877901.1	Emiliana huxleyi	CCG	ACT	CACGGAGGGG	TGTTTTATTAGATAAGAA	CCAACCCGGTCT	C	CG
AB183665.1	Gephyrocapsa ocea	CCG	ACT	CACGGAGGGG	TGTTTTATTAGATAAGAA	CCAACCCGGTCT	C	CG
JF489945.1	Isochrysis galban	CCG	ACT	TCGGAAGGGG	TGTTTTATTAGATAAGAA	CCAACCCGGTCT	C	CG
AM490974.2	Pleurochrysis ros	GTGCGCGGTT	CTC	CGCGCCCG	TATTTATTAGATAAGAA	CCAACCCGGCTT	G	TGCG
AM491017.2	Chrysochromulina	CCG	ACT	TCGGAAGGGG	TGTTTTATTAGATAAGAA	CCAATCAGCTTG	C	TG
AM491019.2	Chrysochromulina	CCG	ACT	CACGAAGGGG	TGTTTTATTAGATAAGAA	CCCTCCCTTTG		G
JF489961.1	Pavlova lutheri	CCG	ACG	TTTGAGGGG	TGTTTTATTAGATAAGAA	CCAACCCGGCGCAGCCCG		
HQ912555.1	Thalassiosira pse	CCG	ACTGTTT	CGCGAAGGGG	TATTTATTAGTATAGACC	AACCGTCTTCG	G	AC
JN091722.1	Pseudo-nitzschia	-----	-----	-----	-----	-----	-----	-----
JF790983.1	Cymbella cistulif	CCT	TCTG	GGGTAGTATTT	TATTAGACTGAA	CCAACCCCTTC	G	GG
HQ912556.1	Phaeodactylum tri	CCT	TCTG	GGGTAGTATTT	TATTAGATTGAA	CCAACCCCTTC	G	GG
AB546639.1	Triparma sp.	CCA	ACTGTTT	GCGGACGGG	TGTTTTATTAGATTGAA	CCAATTCCTTCG	G	AG
HQ912557.1	Bolidomonas pacif	CCA	ACTGTTT	GCGGACGGG	TGTTTTATTAGATTGAA	CCAATTAAGCTTCG	G	CT
EF165138.1	Ochromonas marina	CTA	AC	TT	CTGGAAGGGG	TGTTTTATTAGATTGAA	CCAATGCGGGGCA	ACCC
EF165116.1	Synura petersenii	CCG	AC	TT	CTGGAAGGGG	TGTTTTATTAGATTGAA	CCAATGCGGGGCA	ACCC
JQ281519.1	Mallomonas papill	CCG	AC	TT	CTGGAAGGGG	TGTTTTATTAGATTGAA	CCAATGCGGGGCA	ACCC
EF432519.1	Paraphysomonas im	TCG	ACTT	TT	TTGGAAGGGG	TGTTTTATTAGATTGAA	CCAATGCGGGGCA	ACCC
EF165146.1	Lagynion cf. ampu	CCA	AC	T	TGAGAAGGGG	TGTTTTATTAGATTGAA	CCAATGCGGGGAA	GCCC
AB096710.1	Dictyocha fibula	CCA	ACTGCTT	NNCGGACGGG	ANGTCAATTTAGAA	AAGCCAATGCGACGCA	AGTCG	
AB097408.1	Helicopedinella t	ACA			TATGCTGCTCATT	TATTAGATAGAA	CCAATGCGGCTCTC	GGCCG

		150	160	170	180	190	200	210
AB183265.1	Prymnesium neolep	GTTCGCTGCTGAGT	CACAATAACTGCGCA	ATCGCACGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
Prymnesium neolepis strain TMR		GTTCGCTGCTGAGT	CACAATAACTGCGCA	ATCGCACGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
FN551248.1	Chrysochromulina	GTTCGCTGCTGAGT	CACAATAACTGCTCGAA	TGCGCATGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
AM779755.1	Prymnesium palpeb	GTTCGCTGCTGAGT	CACAATAACTGCTCGAA	TGCGCATGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
AM491014.2	Imantonia rotunda	GTTCGCTGCTGAGT	CACAATAACTGCTCGAA	TGCGCATGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
AJ544117.1	Coccolithus braar	GTTCGCTGCGGAGT	CATAATAACTGCTCGAA	TGCGCATGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
AJ544118.1	Umbilicosphaera s	GTTCGCTGCGGAGT	CATAATAACTGCTCGAA	TGCGCATGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
AJ544119.1	Umbilicosphaera f	GTTCGCTGCGGAGT	CATAATAACTGCTCGAA	TGCGCATGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
AM491024.2	Calyptrosphaera r	GTTCGCTGCTGAGT	CACAATAACTGCTCGAA	TGCGCATGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
HQ877901.1	Emiliana huxleyi	GTTCGCTGCTGAGT	CACAATAACTGCTCGAA	TGCGCATGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
AB183665.1	Gephyrocapsa ocea	GTTCGCTGCTGAGT	CACAATAACTGCTCGAA	TGCGCATGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	
JF489945.1	Isochrysis galban	GTTCGCTGCTGAGT	CACAATAACTGCTCGAA	TGCGCATGGCC	TTG	TGCCGGCGATGGT	TCATTCAAATTT	

AM490974.2	Pleurochrysis ros	GTTCGCTGCCGAGTCATAATAACTGTTCGAATCGCATGGCTCTGACGCCGGCGATGGTTCATTCAAGTTT
AM491017.2	Chrysochromulina	GTTCGCTGCCGAGTCACAATAACTGTCGAAATCGCACGGCTTCA-CGCCGGCGATGGTTCATTCAAATTT
AM491019.2	Chrysochromulina	GTTCGCTGCCGAGTCACAATAACTGTCGAAATCGCAT-GCTTCA-CGCCGGCGATGGTTCATTCAAATTT
JF489961.1	Pavlova lutheri	GTTCGCTGCTGAGTCATACTAACTGTTCGAATCGCATGGCATCT-CGCCGGCGATGGTTCATTCAAATTT
HQ912555.1	Thalassiosira pse	GTGCTTTGGTGAATTCATAATAACTTTATCGGATCGCATGGCTCCA-TGCCGGCGATGGATCATTCAGTTT
JN091722.1	Pseudo-nitzschia	-----
JF790983.1	Cymbella cistulif	GTGATGTGGTGAATTCATAATAAACGTCGGATCGCAT-GCCTC-TGGCGGGCGATGGATCATTCAGTTT
HQ912556.1	Phaeodactylum tri	GTGATGTGGTGAATTCATAATAAGCTTTCGGATCGCATGGCTTT-TGCCGGCGATGGATCATTCAGTTT
AB546639.1	Triparma sp.	ATTTTGTGGTGAATTCATAATAACTTTTCGGATCGCATGGCTTCG-TGCCGGCGACAGATCATTCAGTTT
HQ912557.1	Bolidomonas pacif	TTTTTGTGGTGAATTCATAATAACTTTTCGGATCGCATGGCTTCG-AGCCGGCGACAGATCATTCAGTTT
EF165138.1	Ochromonas marina	GGTATATGGTGAATTCATAATAACTTT-CGGATCG-----ATCT-TCGGATCGATGCATCATTCAGTTT
EF165116.1	Synura petersenii	GGTATCTGGTGAATTCATAATAACTCT-CGGATCG-----ATCG-CAAGATCGATACCTCATATAAGTTT
JQ281519.1	Mallomonas papill	GGTATCTGGTGAATTCATAATAACTTT-CGGATCG-----ATCT-TCGGATCGATGCATCATTCAGTTT
EF432519.1	Paraphysomonas im	GGATTCAGGTGAATTCATAATAACTTT-CGGATCG-----ATCT-TCGGATCGATGCATTCAGTTT
EF165146.1	Lagynion cf. ampu	GGATCCGTGGTGAATTCATAATAATTTA-CGGATCG-----ATTT-T-----TCGGATGCATTCAGTTT
AB096710.1	Dictyocha fibula	GTACTGTGGTGAATTCATAATAATTTGACGGATCGTATGGCTTG-CGCCGACGATGGATCATTCAGTTT
AB097408.1	Helicopedinella t	GAATTTGTGGTGAATTCATAATAATTTAGCGGATCGCATGGCTTG-CGCCGGCGATGGATCATTCAGTTT

220 230 240 250 260 270 280

AB183265.1	Prymnesium neolep	CTGCCCTATCAGCTTTTCATGGTAGGATCGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
Prymnesium neolepis strain TMR		CTGCCCTATCAGCTTTTCATGGTAGGATCGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
FN551248.1	Chrysochromulina	CTGCCCTATCAGCTTTTCATGGTAGGATCGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
AM779755.1	Prymnesium palpeb	CTGCCCTATCAGCTTTTCATGGTAGGATCGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
AM491014.2	Imantonia rotunda	CTGCCCTATCAGCTTTTCATGGTAGGATCGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
AJ544117.1	Coccolithus braar	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
AJ544118.1	Umbilicosphaera s	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
AJ544119.1	Umbilicosphaera f	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
AM491024.2	Calyptrosphaera r	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
HQ877901.1	Emiliana huxleyi	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
AB183665.1	Gephyrocapsa ocea	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
JF489945.1	Isochrysis galban	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
AM490974.2	Pleurochrysis ros	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
AM491017.2	Chrysochromulina	CTGCCCTATCAGCTTTTCATGGTAGGATCGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
AM491019.2	Chrysochromulina	CTGCCCTATCAGCTTTTCATGGTAGGATCGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
JF489961.1	Pavlova lutheri	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
HQ912555.1	Thalassiosira pse	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGAGAAATTAGGGT
JN091722.1	Pseudo-nitzschia	-----
JF790983.1	Cymbella cistulif	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
HQ912556.1	Phaeodactylum tri	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
AB546639.1	Triparma sp.	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
HQ912557.1	Bolidomonas pacif	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
EF165138.1	Ochromonas marina	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
EF165116.1	Synura petersenii	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
JQ281519.1	Mallomonas papill	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
EF432519.1	Paraphysomonas im	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
EF165146.1	Lagynion cf. ampu	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
AB096710.1	Dictyocha fibula	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT
AB097408.1	Helicopedinella t	CTGCCCTATCAGCTTTTCATGGTAGGATAGAGGCCCTACCATGGCGTTTACGGGTAAACGGGAAATTAGGGT

290 300 310 320 330 340 350

AB183265.1	Prymnesium neolep	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
Prymnesium neolepis strain TMR		TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
FN551248.1	Chrysochromulina	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
AM779755.1	Prymnesium palpeb	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
AM491014.2	Imantonia rotunda	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
AJ544117.1	Coccolithus braar	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
AJ544118.1	Umbilicosphaera s	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
AJ544119.1	Umbilicosphaera f	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
AM491024.2	Calyptrosphaera r	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
HQ877901.1	Emiliana huxleyi	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
AB183665.1	Gephyrocapsa ocea	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
JF489945.1	Isochrysis galban	TCGATTCGGAGAGGGAGCCCTGAGAAATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
AM490974.2	Pleurochrysis ros	TCGATTCGGAGAGGGAGCCCTGAGAGATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
AM491017.2	Chrysochromulina	TCGATTCGGAGAGGGAGCCCTGAGAGATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
AM491019.2	Chrysochromulina	TCGATTCGGAGAGGGAGCCCTGAGAGATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
JF489961.1	Pavlova lutheri	TCGATTCGGAGAGGGAGCCCTGAGAGATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
HQ912555.1	Thalassiosira pse	AAGATTTCCGGAGAGGGAGCCCTGAGAGATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC
JN091722.1	Pseudo-nitzschia	-----
JF790983.1	Cymbella cistulif	TTGATTCGGAGAGGGAGCCCTGAGAGATGGCTACCACATCCAAAGGAAGGCAGCAGGCCGCTAAATTGCC

HQ912556.1	Phaeodactylum tri	TTGATTCCGGAGAGGGAGCCTGAGAGACGGCTACCACATCCAAGGAAGGCAGCAGGCGCGTAAATTACCC
AB546639.1	Triparma sp.	TCGATTCCGGAGAGGGAGCCTGAGAGACGGCTACCACATCCAAGGAAGGCAGCAGGCGCGTAAATTACCC
HQ912557.1	Bolidomonas pacif	TCGATTCCGGAGAGGGAGCCTGAGAGACGGCTACCACATCCAAGGAAGGCAGCAGGCGCGTAAATTACCC
EF165138.1	Ochromonas marina	TCGATTCCGGAGAGGGAGCCTGAGAAAACGGCTACCACATCCAAGGAAGGCAGCAGGCGCGTAAATTACCC
EF165116.1	Synura petersenii	TCGATTCCGGAGAGGGAGCCTGAGAAAATGGCTACCACATCCAAGGAAGGCAGCAGGCGCGTAAATTACCC
JQ281519.1	Mallomonas papill	TCGATTCCGGAGAGGGAGCCTGAGAAAATGGCTACCACATCCAAGGAAGGCAGCAGGCGCGTAAATTACCC
EF432519.1	Paraphysomonas im	TCGATTCCGGAGAGGGAGCCTGAGAAAATGGCTACCACATCCAAGGAAGGCAGCAGGCGCGTAAATTACCC
EF165146.1	Lagynion cf. ampu	TCGATTCCGGAGAGGGAGCCTGAGAAAATGGCTACCACATCCAAGGAAGGCAGCAGGCGCGTAAATTACCC
AB096710.1	Dictyocha fibula	TCGATTCCGGAGAGGGAGCCTGAGAGAC - GCTACCACATCCAAGGAAGGCAGCAGGCGCGTAAATTACCC
AB097408.1	Helicopedinella t	TCGATTCCGGAGAGGGAGCCTGAGAGACGGCTACCACATCCAAGGAAGGCAGCAGGCGCGTAAATTACCC

		360	370	380	390	400	410	420
AB183265.1	Prymnesium neolep	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	TAT - CTTAGTCTTGTAATTGGAAT				
Prymnesium neolepis strain TMR		GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	TAT - CTTAGTCTTGTAATTGGAAT				
FN551248.1	Chrysochromulina	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	TAT - TTTAGTCTTGTAATTGGAAT				
AM779755.1	Prymnesium palpeb	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	TAT - CTTAGTCTTGTAATTGGAAT				
AM491014.2	Imantonia rotunda	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	CAC - TTTGGTCTTGTAATTGGAAT				
AJ544117.1	Coccolithus braar	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	CAT - CTTAGTCTTGTAATTGGAAT				
AJ544118.1	Umbilicosphaera s	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	CAT - CTTGGTCTTGTAATTGGAAT				
AJ544119.1	Umbilicosphaera f	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	CAT - CTTGGTCTTGTAATTGGAAT				
AM491024.2	Calyptrosphaera r	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	CAT - TTTGGTCTTGTAATTGGAAT				
HQ877901.1	Emiliania huxleyi	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	TAT - TTTAGTCTTGTAATTGGAAT				
AB183665.1	Gephyrocapsa ocea	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	TAT - TTTAGTCTTGTAATTGGAAT				
JF489945.1	Isochrysis galban	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	TCT - TCGAGTCTTGTAATTGGAAT				
AM490974.2	Pleurochrysis ros	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	CAT - CTTGGTCTTGTAATTGGAAT				
AM491017.2	Chrysochromulina	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	TACATCTAGCTTTGTAATTGGAAT				
AM491019.2	Chrysochromulina	GAATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	TACATCTAGCTTTGTAATTGGAAT				
JF489961.1	Pavlova lutheri	-AATCCTGACACAGGGAGG	TAGTGACAAGAAATAACAATACAGGGC	TCT - TCGAGTCTTGTAATTGGAAT				
HQ912555.1	Thalassiosira pse	-AATACTGAAACAGT	GAGGTAGTGACAATAAATAACAATGCCGGCC	TTTACAGGCTCTGGCAATTGGAAT				
JN091722.1	Pseudo-nitzschia							
JF790983.1	Cymbella cistulif	-AATCCTGACACAGGGAGG	TAGTGACAATAAATAACAATGACGGGCC	TTTGTAGGCTCTGCAATTGGAAT				
HQ912556.1	Phaeodactylum tri	-AATCCTGACACAGGGAGG	TAGTGACAATAAATAACAATGCCGGGCC	TTTCTAGGCTCTGGCTTTTGGAAAT				
AB546639.1	Triparma sp.	-AATCCTGACACAGGGAGG	TAGTGACAATAAATAACAATGCCGGGCC	TTTTAAGGCTCTGGCAATTGGAAT				
HQ912557.1	Bolidomonas pacif	-AATCCTGACACAGGGAGG	TAGTGACAATAAATAACAATGCCGGGCC	TTTTTAGTCTGGCAATTGGAAT				
EF165138.1	Ochromonas marina	-AATCCTGACACAGGGAGG	TAGTGACAATAAATAACAATGCCGGGCC	TTTTCTAGGCTCTGGCAATTGGAAT				
EF165116.1	Synura petersenii	-AATCCTGACACAGGGAGG	TAGTGACAATAAATAACAATGCTGGGC	TTATTTAAGTCTGGCAATTGGAAT				
JQ281519.1	Mallomonas papill	-AATCCTGACACAGGGAGG	TAGTGACAATAAATAACAATGCCGGGCC	TTTTTTAAGTCTGGCAATTGGAAT				
EF432519.1	Paraphysomonas im	-AATCCTGACACAGGGAGG	TAGTGACAATAAATAACAATGCCGGGCC	TTTTTTAAGTCTGGCAATTGGAAT				
EF165146.1	Lagynion cf. ampu	-AATCCTGACACAGGGAGG	TAGTGACAATAAATAACAATGCCGAGCC	-GTAAAGTCTGGCAATTGGAAT				
AB096710.1	Dictyocha fibula	-AATCCTGATACAGGGAGG	TAGTGACAAAAATAACAATGCCGGGCC	TTTTTTAAGTCTGGTAATTGGAAT				
AB097408.1	Helicopedinella t	-AATCCTGACTCAGGGAGG	TAGTGACAAAAATAACTTAGACGGGCC	TTTTTCGGTCTGTCTTAGGAAT				

		430	440	450	460	470	480	490
AB183265.1	Prymnesium neolep	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
Prymnesium neolepis strain TMR		GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
FN551248.1	Chrysochromulina	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AM779755.1	Prymnesium palpeb	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AM491014.2	Imantonia rotunda	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AJ544117.1	Coccolithus braar	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AJ544118.1	Umbilicosphaera s	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AJ544119.1	Umbilicosphaera f	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AM491024.2	Calyptrosphaera r	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
HQ877901.1	Emiliania huxleyi	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AB183665.1	Gephyrocapsa ocea	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
JF489945.1	Isochrysis galban	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AM490974.2	Pleurochrysis ros	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AM491017.2	Chrysochromulina	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AM491019.2	Chrysochromulina	GAGTACAATTTACATCTCTT	CACGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
JF489961.1	Pavlova lutheri	GAGTACAATTTAAATCCCTTA	TCGAGGATCCATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
HQ912555.1	Thalassiosira pse	GAGAACAATTTAAATCCCTTA	TCGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
JN091722.1	Pseudo-nitzschia							
JF790983.1	Cymbella cistulif	GAGAACAATTTAAACCCCTTA	TCGAGGATCCATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
HQ912556.1	Phaeodactylum tri	GAGAACAATTTAAACCCCTTA	TCGAGGATCCATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
AB546639.1	Triparma sp.	GAGAACAATTTAAATCCCTTA	TCGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
HQ912557.1	Bolidomonas pacif	GAGAACAATTTAAATCCCTTA	TCGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
EF165138.1	Ochromonas marina	GAGAACAATTTAAATCCCTTA	TCGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
EF165116.1	Synura petersenii	GAGAACAATTTAAATCCCTTA	TCGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
JQ281519.1	Mallomonas papill	GAGAACAATTTAAATCCCTTA	TCGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				
EF432519.1	Paraphysomonas im	GAGAACAATTTAAATCCCTTA	TCGAGGATCAATTTGGAGGGCAAGTCTGGTGC	CAGCAGCCGCGGTAATTC				

EF165146.1	Lagynion cf. ampu	GAGAACAATTTAAATCCCTTATCGAGGATCAATTGGAGGGCAAGTCTGGTGCCAGCAGCCGCGGTAATTC
AB096710.1	Dictyocha fibula	GAGAACAATTTAAATCCCTTATCGAGGATCAATTGGAGGGCAAGTCTGGTGCCAGCAGCCGCGGTAATTC
AB097408.1	Helicopedinella t	GAGAACAATTTAAATCCCTTATCGAGGATCAATTGGAGGGCAAGTCTGGTGCCAGCAGCCGCGGTAATTC
		500 510 520 530 540 550 560
AB183265.1	Prymnesium neolep
Prymnesium neolepis strain TMR		CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGG CCG
FN551248.1	Chrysochromulina	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGGCCCGC
AM779755.1	Prymnesium palpeb	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGGCCCGC
AM491014.2	Imantonia rotunda	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGGTCGT
AJ544117.1	Coccolithus braar	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGTGTGAC
AJ544118.1	Umbilicosphaera s	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGTGCAGC
AJ544119.1	Umbilicosphaera f	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGTGCAGC
AM491014.2	Calyptrosphaera r	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGGTCGT
HQ877901.1	Emiliana huxleyi	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGGCCGAC
AB183665.1	Gephyrocapsa ocea	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGGCCGAC
JF489945.1	Isochrysis galban	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGTCGCCG
AM490974.2	Pleurochrysis ros	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGGTCGC
AM491017.2	Chrysochromulina	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGGCCGAC
AM491019.2	Chrysochromulina	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGGCTAC
JF489961.1	Pavlova lutheri	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGTCGTGC
HQ912555.1	Thalassiosira pse	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTCGGATTTTCGGGGCGGGCCGAC
JN091722.1	Pseudo-nitzschia	-----GTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGTTCTAGT
JF790983.1	Cymbella cistulif	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGTTCCCGC
HQ912556.1	Phaeodactylum tri	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGGCCCGGT
AB546639.1	Triparma sp.	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGGGACGTT
HQ912557.1	Bolidomonas pacif	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGGGACGTT
EF165138.1	Ochromonas marina	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGGGACGTT
EF165116.1	Synura petersenii	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGGGACGTT
JQ281519.1	Mallomonas papill	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGGGACGTT
EF432519.1	Paraphysomonas im	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGGGACGTT
EF165146.1	Lagynion cf. ampu	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGGGACGTT
AB096710.1	Dictyocha fibula	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGGGACGTT
AB097408.1	Helicopedinella t	CAGCTCCAATAGCGTATATTTAAAGTTGTTGCAGTTAAAACGCGTGTAGTTGGATTTTCGGTGTGGGACGTT
		570 580 590 600 610 620 630
AB183265.1	Prymnesium neolep
Prymnesium neolepis strain TMR		CGGTCTG-----CCGATGGGTACGCACTGGCG--GGCGCTCCCTTCCTTCGGGGGGCTGGCCCTACT
FN551248.1	Chrysochromulina	CGGTCTG-----CCGATGGGTACGCACTGGCG--GGCGCTCCCTTCCTTCGGGGGGCTGGCCCTACT
AM779755.1	Prymnesium palpeb	CGGTCTG-----CCGATGGGTACGCACTGGCG--GTCCGCTCCCTTCCTTCGGGAGACTGGCCCTACT
AM491014.2	Imantonia rotunda	CGGTCTG-----CCGATGGGTATGCACCTGACG--CGGGCGTCCCTTCCTTCGGGAGACGCGTCCCTACT
AJ544117.1	Coccolithus braar	CGGTCTG-----CCGATGGGTATGCACCTGACG--GGCGCTCCCTTCCTTCGGGAGACTGGCCCTACT
AJ544118.1	Umbilicosphaera s	CGGTCTG-----CCGATGGGTATGCACCTGGCGT--CGGGCGTCCCTTCCTTCGGGAGCTCCTCCGCTGCT
AJ544119.1	Umbilicosphaera f	CGGTCTG-----CCGATGGGTATGCACCTGGCGT--CGGGCGTCCCTTCCTTCGGGAGCTCCTCCGCTGCT
AM491014.2	Calyptrosphaera r	CGGTCTG-----CCGATGGGTATGCACCTGGCGT--CGGGCGTCCCTTCCTTCGGGAGCTCCTCCGCTGCT
HQ877901.1	Emiliana huxleyi	CGGTCTG-----CCGATGGGTATGCACCTGGCC--GGCGCTCCCTTCCTTCGGGAGACCGCCCTACT
AB183665.1	Gephyrocapsa ocea	CGGTCTG-----CCGATGGGTATGCACCTGGCC--GGCGCTCCCTTCCTTCGGGAGACCGCCCTACT
JF489945.1	Isochrysis galban	CGGTCTG-----CCGATGGGTACGCACTGGCG--GGCGCTCCCTTCCTTCGGGAGACCGCCCTACT
AM490974.2	Pleurochrysis ros	CGGTCTG-----CCGATGGGTATGCACCTGGCG--GAGTCGTCCCTTCCTTCGGGAGACCGGGCCCTCT
AM491017.2	Chrysochromulina	CGGTCTG-----CCGATGGGTACGCACTGGTC--GGCGCTCCCTTCCTTCGGGAGACCGTCCCTACT
AM491019.2	Chrysochromulina	CGGTCTG-----CCGATGGGTACGCACTGGTG--GGCGCTCCCTTCCTTCGGGAGACCGTTCTGTT
JF489961.1	Pavlova lutheri	GGGTCTG-----CCGATGGGTATGTACTTGCCTCGTCCGGTCAGTATGGCGTAGGTCGTCCCTCG
HQ912555.1	Thalassiosira pse	CGGTCTCACACTCAGTGCAGAACTCGTGTGTTG--C--TCTGGCCATCCTTCGGGATATCCTGTTTGGC
JN091722.1	Pseudo-nitzschia	CGGCCCT--TGCTCTTGGGATGATTGTGCTGTACTG--GTCTGCCATGTTTGGGGGGAATCTGTGTGGC
JF790983.1	Cymbella cistulif	CGGC--T--GGGTCATTGA--CTTTTGTGTGCTG--GTCTGCCATCCTTCGGGTTGGAATCTGTGTGGC
HQ912556.1	Phaeodactylum tri	GGCTCCG--CCTTAGTTGGCGTTGCTGTTTGTG--G--GTCCGCCATCCTTCGGGTTGGAATCAGTGTGGC
AB546639.1	Triparma sp.	TGGCCGG--CCGTAACGGTTTGCCTGAAATGTTCTTCGCCATCCTTCGACGAACTAGTTGTTCCG
HQ912557.1	Bolidomonas pacif	TGGCCGG--CCGTAAGGTCGTGTCCGAAATGTTATTTCGCCATCCTTCGGGTTGAAATCTGTGTGGC
EF165138.1	Ochromonas marina	CGGTCTG--CCTCAAACGAGG--TACGTACCTGTTGT--CTGAATCCATCCTCGGGGAGAAGCTTTTGGTC
EF165116.1	Synura petersenii	CGGTCTG--CCTCAAACGAGG--TACGTACCTGTTGT--CTGAATCCATCCTCGGGGAGAAGCTTTTGGTC
JQ281519.1	Mallomonas papill	CGGTCTG--CCTCAAACGAGG--TACGTACCTGTTGT--CTGAATCCATCCTCGGGGAGAAGCTTTTGGTC
EF432519.1	Paraphysomonas im	CGGTCTG--CCTCAAACGAGG--TACGTACCTGTTGT--CTGAATCCATCCTCGGGGAGAAGCTTTTGGTC
EF165146.1	Lagynion cf. ampu	CGGTCTG--CCTCAAACGAGG--TACGTACCTGTTGT--CTGAATCCATCCTCGGGGAGAAGCTTTTGGTC
AB096710.1	Dictyocha fibula	CGGTCTG--CCTCAAACGAGG--TACGTACCTGTTGT--CTGAATCCATCCTCGGGGAGAAGCTTTTGGTC
AB097408.1	Helicopedinella t	TGGCCGG--CTCCGCAANGGTCTGTGCATGGGTG--CCTTCGTCCATCCTCAGGGGGCCAGGCCNNGT
		640 650 660 670 680 690 700
AB183265.1	Prymnesium neolep
		CTTAACTAAG CCGGGTCGGAGTCGGAAATTTACTTTGAAAAATCAGAGTGTTCACAGCAGGCATT-

AM491024.2	Calyptrosphaera r	TTTCGAACACCCGGAGTAATGATTAACAGGGACAGTCAGGGGGCACTCGTATTCCGCCGAGAGAGGTGAAAT
HQ877901.1	Emiliana huxleyi	TTTCGAACACCCGGAGTAATGATTAACAGGGACAGTCAGGGGGCACTCGTATTCCGCCGAGAGAGGTGAAAT
AB183665.1	Gephyrocapsa ocea	TTTCGAACACCCGGAGTAATGATTAACAGGGACAGTCAGGGGGCACTCGTATTCCGCCGAGAGAGGTGAAAT
JF489945.1	Isochrysis galban	TTTCGAGCACCCGGAGTAATGATTAACAGGGACAGTCAGGGGGCACTCGTATTCCGCCGAGAGAGGTGAAAT
AM490974.2	Pleurochrysis ros	TTTCGAACACCCGGAGTAATGGTCAACAGGGACAGTCAGGGGGCACTCGTATTCCGCCGAGAGAGGTGAAAT
AM491017.2	Chrysochromulina	TTTCGAACACCCGAAGTAATGATGAGAAGGGACAGTCAGGGGGCACTTGTATTCCGCCGAGAGAGGTGAAAT
AM491019.2	Chrysochromulina	TTTCGAACACCCGAAGTAATGATTAATAGGGACAGTCAGGGGGCACTCGTATTCCGCCGAGAGAGGTGAAAT
JF489961.1	Pavlova lutheri	TTTCGAACGCCGAGGTAATGATGAATAGGGACAGTCAGGGGGCACTCGTATTCCGTAGAGAGAGGTGAAAT
HQ912555.1	Thalassiosira pse	TTT-GCGCACCCGAGGTAATGATTAATAAGAGACAGGCGGGGCTATTTCGTATTCCATTGTAGAGGTGAAAT
JN091722.1	Pseudo-nitzschia	TTT-GCGCACTAAGGTAATGATTAAGAGGGACAGTTGGGGGTATTTGTATTCCATTGTAGAGGTGAAAT
JF790983.1	Cymbella cistulif	TTT-GCGCACCCGAGGTAATGATTAATAGGGACAGTTGGGGGTATTTCGTATTCCATTGTAGAGGTGAAAT
HQ912556.1	Phaeodactylum tri	TTT-GCGCACCCGAGGTAATGATTAATAGGGACAGTTGGGGGTATTTCGTATTCCATTGTAGAGGTGAAAT
AB546639.1	Triparma sp.	TTT-GCGTACCTAGGTAATGATTAATAGGGACAGTTGGGGGTATTTGTATTCCGTTGTAGAGGTGAAAT
HQ912557.1	Bolidomonas pacif	TTT-GCGTACCTAGGTAATGATTAATAGGGACAGTTGGGGGTATTTGTATTCCGTTGTAGAGGTGAAAT
EF165138.1	Ochromonas marina	TTT-GTACTCCAGAGTAATGATTAATAGGGATAGTTGGGGGTATTTCGTATTCCATTGTAGAGGTGAAAT
EF165116.1	Synura petersenii	TTT-ATATTCCAGGGTAATGATTAATAGGGATAGTTGGGGGTATTTCGTATTCAATTGTAGAGGTGAAAT
JQ281519.1	Mallomonas papill	TTT-GTATTCCAAGGTAATGATTAATAGGGATAGTTGGGGGTATTTCGTATTCAATTGTAGAGGTGAAAT
EF432519.1	Paraphysomonas im	TTT-GCATTCCAAGGTAATGATTAATAGGGATAGTTGGGGGTATTTCGTATTCAATTGTAGAGGTGAAAT
EF165146.1	Lagynion cf. ampu	TTT-GCTGCTCAGAGTAATGATTAATAGGGATAGTTGGGGGTATTTCGTATTCCATTGTAGAGGTGAAAT
AB096710.1	Dictyocha fibula	TTT--TGGACGACAGTAATGATTAATAGGAAACAGTCGGGGATNTTCGTATTCAATTGTAGAGGTGAAAT
AB097408.1	Helicopedinella t	TTTGACGCCCAAGTAATGATTAATAGGAGCAGTTGGGGGTATTTCGTATTCAATTGTAGAGGTGAAAT

850 860 870 880 890 900 910
|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|

AB183265.1	Prymnesium neolep	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
Prymnesium neolepis strain TMR		TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
FN551248.1	Chrysochromulina	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
AM779755.1	Prymnesium palpeb	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
AM491014.2	Imantonia rotunda	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
AJ544117.1	Coccolithus braar	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
AJ544118.1	Umbilicosphaera s	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
AJ544119.1	Umbilicosphaera f	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
AM491024.2	Calyptrosphaera r	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
HQ877901.1	Emiliana huxleyi	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
AB183665.1	Gephyrocapsa ocea	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
JF489945.1	Isochrysis galban	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
AM490974.2	Pleurochrysis ros	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
AM491017.2	Chrysochromulina	TCTCAGACCAGTCGAAGACAACTACTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
AM491019.2	Chrysochromulina	TCTCAGACCAGCGGAAGACGAACCCTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
JF489961.1	Pavlova lutheri	TCTTAGACCCAGCGGAAGACGCACTACTGCCAAAGCAATTTGCCAGGGATGTTTTTCACATGATCAAGAACGAA
HQ912555.1	Thalassiosira pse	TCTTGGATTTTTCGAAGACGAACACTACTGCCAAAGCAATTTAGCAAGGATGTTTTTCATTAATCAAGAACGAA
JN091722.1	Pseudo-nitzschia	TCTTGGATTTTTCGAAGACAACTACTGCCAAAGCAATTTACCAAGGATGTTTTTCATTAATCAAGAACGAA
JF790983.1	Cymbella cistulif	TCTTGGATTTTTCGAAGACGAACACTACTGCCAAAGCAATTTA-----ATGTTTTTCATTAATCAAGAACGAA
HQ912556.1	Phaeodactylum tri	TCTTGGATTTTTCGAAGACGAACACTACTGCCAAAGCAATTTACCAAGGATGTTTTTCATTAATCAAGAACGAA
AB546639.1	Triparma sp.	TCTTGGATTTTTCGAAGACAACTACTGCCAAAGCAATTTACCAAGGATGTTTTTCATTAATCAAGAACGAA
HQ912557.1	Bolidomonas pacif	TCTTGGATTTTTCGAAGACAACTACTGCCAAAGCAATTTACCAAGGATGTTTTTCATTAATCAAGAACGAA
EF165138.1	Ochromonas marina	TCTTGGATTTTTCGAAGACGAACACTACTGCCAAAGCAATTTACCAAGGATGTTTTTCATTAATCAAGAACGAA
EF165116.1	Synura petersenii	TCTTGGATTTTTCGAAGACGAACACTACTGCCAAAGCAATTTACCAAAATATGTTTTTCATTAATCAAGAACGAA
JQ281519.1	Mallomonas papill	TCTTGGATTTTTCGAAGACGAACACTACTGCCAAAGCAATTTACCAAAATATGTTTTTCATTAATCAAGAACGAA
EF432519.1	Paraphysomonas im	TCTTGGATTTTTCGAAGACGAACACTACTGCCAAAGCAATTTACCAAGGATGTTTTTCATTAATCAAGAACGAA
EF165146.1	Lagynion cf. ampu	TCTTGGATTTTTCGAAGACGAACACTACTGCCAAAGCAATTTACCAAGGATGTTTTTCATTAATCAAGAACGAA
AB096710.1	Dictyocha fibula	TCTTGGATTTTTCGAAGACGAACACTACTGCCAAAGCAATTTACCAAGGATGTTTTTCATTAATCAAGAACGAA
AB097408.1	Helicopedinella t	TCTTGGATTTTTCGAAGACGAACACTACTGCCAAAGCAATTTACCAAGGATGTTTTTCATTAATCAAGAACGAA

920 930 940 950 960 970 980
|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|

AB183265.1	Prymnesium neolep	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
Prymnesium neolepis strain TMR		AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
FN551248.1	Chrysochromulina	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
AM779755.1	Prymnesium palpeb	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
AM491014.2	Imantonia rotunda	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
AJ544117.1	Coccolithus braar	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
AJ544118.1	Umbilicosphaera s	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
AJ544119.1	Umbilicosphaera f	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
AM491024.2	Calyptrosphaera r	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
HQ877901.1	Emiliana huxleyi	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
AB183665.1	Gephyrocapsa ocea	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
JF489945.1	Isochrysis galban	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
AM490974.2	Pleurochrysis ros	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
AM491017.2	Chrysochromulina	AGTTAGGGGATCGAAGACGATCAGATACCGTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG
AM491019.2	Chrysochromulina	AGTTAGGGGATCGAAGAGGATCAGATACCCCTCGTAGTCTTA-ACCATAAAACCATGCCGACTAGGGATTCGG

JF489961.1	Pavlova lutheri	AGTTAGGGGATCGAAGATGATCAGATACCGTCGTAGTCTTA-ACCATAAACCATGCCGACCAGGGATTGG
HQ912555.1	Thalassiosira pse	AGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTCGGGATTGG
JN091722.1	Pseudo-nitzschia	AGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTCGGGATTGG
JF790983.1	Cymbella cistulif	AGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTAGGGATTGG
HQ912556.1	Phaeodactylum tri	AGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTAGGGATTGG
AB546639.1	Triparma sp.	AGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTAGGGATTGG
HQ912557.1	Bolidomonas pacif	AGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTAGGGATTGG
EF165138.1	Ochromonas marina	AGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTAGGGATTGG
EF165116.1	Synura petersenii	AGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTAGGGATTGG
JQ281519.1	Mallomonas papill	AGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTAGGGATTGG
EF432519.1	Paraphysomonas im	AATTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTAGGGATTGG
EF165146.1	Lagynion cf. ampu	AGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTTA-ACCATAAACCATGCCGACTAGGGATTGG
AB096710.1	Dictyocha fibula	AGTTAGGGGATCGAAGAAATGATTAGATACCTTCGTAGTCTTA-ACCATAAACCATGCCGACTAGGGATTGG
AB097408.1	Helicopedinella t	AGTTAGGGGATCGAAGAAATGATTAGATACCTTTGTANTCCTA-ACCATAAACCATGCCGACTCGGGATTGG

		990	1000	1010	1020	1030	1040	1050
AB183265.1	Prymnesium neolep	CGGAAGTCCT	TCTTTGACTCCGTCGGCACCTTATGGGAAAC	TA	TA	TTTTAGGGTTCCGGGGGGAA		
Prymnesium neolepis strain TMR		CGGAAGTCCT	TCTTTGACTCCGTCGGCACCTTATGGGAAAC	TA	TAGTCTTTGGGTTCCGGGGGGAG			
FN551248.1	Chrysochromulina	CGGAAGTCCT	TCTTTGACTCCGTCGGCACCTTATGGGAAAC	TA	TAGTCTTTGGGTTCCGGGGGGAG			
AM779755.1	Prymnesium palpeb	CGGATGTCCT	TCTTTGACTCCGTCAGCACCTTAAGGGAAAC	TA	TAGTCTTTGGGTTCCGGGGGGAG			
AM491014.2	Imantonia rotunda	AGGATGTCCA	CTTTTGACTTCTCAGCACCTTACGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
AJ544117.1	Coccolithus braar	GGGTTGTACCA	TTTGTGCTCCCTCAGCACCTTACGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
AJ544118.1	Umbilicosphaera s	GGGCTGTCCA	TTTGTGACTCCCTCAGCACCTTTCGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
AJ544119.1	Umbilicosphaera f	GGGCTGTCCA	TTTGTGACTCCCTCAGCACCTTTCGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
AM491024.2	Calyptrosphaera r	GGGTTGTCCA	TTTGTGACTCCCTCAGCACCTTTCGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
HQ877901.1	Emiliana huxleyi	AGGATGTCCA	TTTGTGACTCCCTCAGCACCTTTCGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
AB183665.1	Gephyrocapsa ocea	AGGATGTCCA	TTTGTGACTCCCTCAGCACCTTTCGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
JF489945.1	Isochrysis galban	AGGATGTCCA	TTTGTGACTCCCTCAGCACCTTTCGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
AM490974.2	Pleurochrysis ros	AGGCTGTCCA	TTTGTGACTCCCTCAGCACCTTTCGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
AM491017.2	Chrysochromulina	GGGATGTCCA	TATTTGACTCCCTCAGCACCTTACGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
AM491019.2	Chrysochromulina	GGGATGTCCA	TATTTGACTCCCTCAGCACCTTACGGGAAAC	TA	AAGTCTTTGGGTTCCGGGGGGAG			
JF489961.1	Pavlova lutheri	TGGTTGTCA	TCTTTGACATCATCAGCACCTTTCGAGAAAT	CA	GAGTCTTTGGGTTCCGGGGGGAG			
HQ912555.1	Thalassiosira pse	C	GGTTGT	TTTTGACTCCGCCAGCACCTTATGAGAAAT	CA	AAGTCTTTGGGTTCCGGGGGGAG		
JN091722.1	Pseudo-nitzschia	TGGAGTTTC	GTTTCGTCTCCATCAGCACCTTGTGAGAAAT	CA	TAGTCTTTGGGTTCCGGGGGGAG			
JF790983.1	Cymbella cistulif	TGGGGTTTC	GTTTCGTCTCCATCAGCACCTTGTGAGAAAT	CA	CAAGTCTTTGGGTTCCGGGGGGAG			
HQ912556.1	Phaeodactylum tri	CGGGGTTTC	GTTACGTCTCCGTCAGCACCTTATGAGAAAT	CA	CAAGTCTTTGGGTTCCGGGGGGAG			
AB546639.1	Triparma sp.	CGGTCGTTT	TTCCGACTCCGTCAGCACCTTATGAGAAAT	CA	AAGTCTTTGGGTTCCGGGGGGAG			
HQ912557.1	Bolidomonas pacif	CGGTCGTTT	TTCTGACTCCGCCAGCACCTTATGAGAAAT	CA	AAGTCTTTGGGTTCCGGGGGGAG			
EF165138.1	Ochromonas marina	TGGACGTTT	GTAATGACTCCATCAGCACCTTATGAGAAAT	CA	AAGTCTTTGGGTTCCGGGGGGAG			
EF165116.1	Synura petersenii	TGGACGTTT	GTAACGACTCCATCAGCACCTTATGAGAAAT	CA	AAGTCTTTGGGTTCCGGGGGGAG			
JQ281519.1	Mallomonas papill	TGGGCGTTT	GTAATGACTCCATCAGCACCTTATGAGAAAT	CA	AAGTCTTTGGGTTCCGGGGGGAG			
EF432519.1	Paraphysomonas im	TGGACGTTT	GTTACGACTCCATCAGCACCTTATGAGAAAT	CA	AAGTCTTTGGGTTCCGGGGGGAG			
EF165146.1	Lagynion cf. ampu	TGGATGTTT	GTAATGACTCTATCAGCACCTTATGAGAAAT	CA	AAGTCTTTGGGTTCCGGGGGGAG			
AB096710.1	Dictyocha fibula	CGGTCGCTT	GTTAGGCTCCGTCAGCACCTTATGAGAAAT	CA	AAGTCTTTGGGTTCCGGGGGGAG			
AB097408.1	Helicopedinella t	CGGTCGCTT	TAAACGGCTCCGTTCCAGCACCTTATGAGAAAT	CACA	AGTCTTTTGGGTTCCGGGGGGAG			

		1060	1070	1080	1090	1100	1110	1120
AB183265.1	Prymnesium neolep	TATTGTTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
Prymnesium neolepis strain TMR		TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
FN551248.1	Chrysochromulina	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AM779755.1	Prymnesium palpeb	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AM491014.2	Imantonia rotunda	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AJ544117.1	Coccolithus braar	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AJ544118.1	Umbilicosphaera s	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AJ544119.1	Umbilicosphaera f	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AM491024.2	Calyptrosphaera r	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
HQ877901.1	Emiliana huxleyi	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AB183665.1	Gephyrocapsa ocea	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
JF489945.1	Isochrysis galban	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AM490974.2	Pleurochrysis ros	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AM491017.2	Chrysochromulina	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AM491019.2	Chrysochromulina	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
JF489961.1	Pavlova lutheri	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
HQ912555.1	Thalassiosira pse	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
JN091722.1	Pseudo-nitzschia	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
JF790983.1	Cymbella cistulif	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
HQ912556.1	Phaeodactylum tri	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
AB546639.1	Triparma sp.	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				
HQ912557.1	Bolidomonas pacif	TATGGTCG	CAAGGCTGAAACTTAAAGGAATTGACGGAAAGGCACACACAGGAGTGGAGCTGCGGC	TTAA				

EF165138.1	Ochromonas marina	TATGGTCGCAAGGCTGAAACTTAAAGAAATTGACGGAAGGGCACCACCAGGAGTGGAGCCTCGGCCTAA
EF165116.1	Synura petersenii	TATGGTCGCAAGGCTGAAACTTAAAGAAATTGACGGAAGGGCACCACCAGGAGTGGAGCCTCGGCCTAA
JQ281519.1	Mallomonas papill	TATGGTCGCAAGGCTGAAACTTAAAGAAATTGACGGAAGGGCACCACCAGGAGTGGAGCCTCGGCCTAA
EF432519.1	Paraphysomonas im	TATGGTCGCAAGGCTGAAACTTAAAGAAATTGACGGAAGGGCACCACCAGGAGTGGAGCCTCGGCCTAA
EF165146.1	Lagynion cf. ampu	TATGGTCGCAAGGCTGAAACTTAAAGAAATTGACGGAAGGGCACCACCAGGAGTGGAGCCTCGGCCTAA
AB096710.1	Dictyocha fibula	TATGGTCGCAAGGCTGAAACTTAAAGAAATTGACGGAAGGGCACCACCAGGAGTGGAGCCTCGGCCTAA
AB097408.1	Helicopedinella t	TATGGTCGCAAGGCTGAAACTTAAAGAAATTGACGGAAGGGCACCACCAGGAGTGGAGCCTCGGCCTAA

		1130	1140	1150	1160	1170	1180	1190
AB183265.1	Prymnesium neolep	TTTGACTCAACACGGGGACACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
Prymnesium neolepis strain TMR		TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
FN551248.1	Chrysochromulina	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AM779755.1	Prymnesium palpeb	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AM491014.2	Imantonia rotunda	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AJ544117.1	Coccolithus braar	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AJ544118.1	Umbilicosphaera s	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AJ544119.1	Umbilicosphaera f	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AM491024.2	Calyptrosphaera r	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
HQ877901.1	Emiliana huxleyi	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AB183665.1	Gephyrocapsa ocea	TTTGACTCAACACGGGGAAACTTACCAGTCCAGCACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
JF489945.1	Isochrysis galban	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AM490974.2	Pleurochrysis ros	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AM491017.2	Chrysochromulina	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AM491019.2	Chrysochromulina	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
JF489961.1	Pavlova lutheri	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
HQ912555.1	Thalassiosira pse	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
JN091722.1	Pseudo-nitzschia	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
JF790983.1	Cymbella cistulif	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
HQ912556.1	Phaeodactylum tri	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AB546639.1	Triparma sp.	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
HQ912557.1	Bolidomonas pacif	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
EF165138.1	Ochromonas marina	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
EF165116.1	Synura petersenii	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
JQ281519.1	Mallomonas papill	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
EF432519.1	Paraphysomonas im	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
EF165146.1	Lagynion cf. ampu	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AB096710.1	Dictyocha fibula	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGAGCTCTTCT						
AB097408.1	Helicopedinella t	TTTGACTCAACACGGGGAAACTTACCAGTCCAG-ACATTGTGAGGATTGACAGTTTGAGG--TCTTCT						

		1200	1210	1220	1230	1240	1250	1260
AB183265.1	Prymnesium neolep	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
Prymnesium neolepis strain TMR		TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
FN551248.1	Chrysochromulina	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AM779755.1	Prymnesium palpeb	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AM491014.2	Imantonia rotunda	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AJ544117.1	Coccolithus braar	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AJ544118.1	Umbilicosphaera s	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AJ544119.1	Umbilicosphaera f	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AM491024.2	Calyptrosphaera r	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
HQ877901.1	Emiliana huxleyi	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AB183665.1	Gephyrocapsa ocea	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
JF489945.1	Isochrysis galban	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AM490974.2	Pleurochrysis ros	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AM491017.2	Chrysochromulina	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AM491019.2	Chrysochromulina	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
JF489961.1	Pavlova lutheri	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
HQ912555.1	Thalassiosira pse	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
JN091722.1	Pseudo-nitzschia	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
JF790983.1	Cymbella cistulif	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
HQ912556.1	Phaeodactylum tri	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AB546639.1	Triparma sp.	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
HQ912557.1	Bolidomonas pacif	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
EF165138.1	Ochromonas marina	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
EF165116.1	Synura petersenii	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
JQ281519.1	Mallomonas papill	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
EF432519.1	Paraphysomonas im	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
EF165146.1	Lagynion cf. ampu	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AB096710.1	Dictyocha fibula	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						
AB097408.1	Helicopedinella t	TGATTCGATGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGTGATTTGCTGGTTAATTCGGTTAAC						

		1270	1280	1290	1300	1310	1320	1330
AB183265.1	Prymnesium neolep	G	AACGAGACCTTAGCCTATTTAAATAGT	GGCGCG	AACACCTTGTTG	GCG	G	GCACCTCTTAGAGG
Prymnesium neolepis strain TMR		G	AACGAGACCTTAGCCTATTTAAATAGT	GGCGCG	AACACCTTGTTG	GCG	G	GCACCTCTTAGAGG
FN551248.1	Chrysochromulina	G	AACGAGACCTTAGCCTATTTAAATAGT	GGCGCG	AACACCTTGTTG	GCG	G	GTCACCTCTTAGAGG
AM779755.1	Prymnesium palpeb	G	AACGAGACCTTAGCCTATTTAAATAGT	GGCGCG	AACACCTTGTTG	GCG	G	GTCACCTCTTAGAGG
AM491014.2	Imantonia rotunda	G	AACGAGACCTTAGCCTATTTAAATAGT	GTCGCG	AACACCTTGTTG	GCG	T	TCACCTCTTAGAGG
AJ544117.1	Coccolithus braar	G	AACGAGACCCGAGCCTGCTAAATAGT	CCCGCG	AACCCCTCGTTG	GCG	GG	TCACCTCTTAGAGG
AJ544118.1	Umbilicosphaera s	G	AACGAGACCCGAGCCTGCTAAATAGT	CCCGCG	AACCCCTCGTTG	GCG	GG	TCACCTCTTAGAGG
AJ544119.1	Umbilicosphaera f	G	AACGAGACCCGAGCCTGCTAAATAGT	CCCGCG	AACCCCTCGTTG	GCG	GG	TCACCTCTTAGAGG
AM491024.2	Calyptrosphaera r	G	AACGAGACCCGAGCCTGCTAAATAGT	GTCGCG	AACCCCTTGTTG	GCG	GAT	TCACCTCTTAGAGG
HQ877901.1	Emiliana huxleyi	G	AACGAGACCCGAGCCTGCTAAATAGC	GACGCG	AACCCCTCCGTTG	GCT	GG	AGCTCTTAGAGG
AB183665.1	Gephyrocapsa ocea	G	AACGAGACCCGAGCCTGCTAAATAGC	GACGCG	AACCCCTCCGTTG	GCT	GG	AGCTCTTAGAGG
JF489945.1	Isochrysis galban	G	AACGAGACCCGAGCCTGCTAAATAGT	GTCGCG	AACCCCTTGTTG	GCG	GG	TCACCTCTTAGAGG
AM490974.2	Pleurochrysis ros	G	AACGAGACCCGAGCCTGCTAAATAGT	TTCGCG	AACACTCCGTTG	GCG	TT	GAGCTCTTAGAGG
AM491017.2	Chrysochromulina	G	AACGAGACCCGAGCCTGCTAAATAGT	GGCGCG	AACACTCCGTTG	GCT	CG	TCACCTCTTAGAGG
AM491019.2	Chrysochromulina	G	AACGAGACCTTAGCCTGCTAAATAGT	GACGCG	AACACTCCGTTG	GCT	GG	CCGCTCTTAGAGG
JF489961.1	Pavlova lutheri	G	AACGAGACCTTAGCCTGCTAAATAGT	GACGCG	AACACTCCGTTG	GCT	GG	CCGCTCTTAGAGG
HQ912555.1	Thalassiosira pse	G	AACGAGACCCGCGCCTGCTAAATAGT	TTCGCG	AACACTCCGTTG	GCG	TT	GAGCTCTTAGAGG
JN091722.1	Pseudo-nitzschia	G	AACGAGACCCCTGCTGCTAAATAGCAC	GCAAT	AGTGTTTATCACTGTG		TAG	TGCTCTTAGAGG
JF790983.1	Cymbella cistulif	G	AACGAGACCCCTGCTGCTAAATAGTTC	GCGT	AGTGCTTGTCACTGCG		TG	GAGCTCTTAGAGG
HQ912556.1	Phaeodactylum tri	G	AACGAGACCCCTGCTGCTAAATAGTTC	AGTG	AGTGAATTCCTGAC		G	AGGCTCTTAGAGG
AB5446639.1	Triparma sp.	G	AACGAGACCCCGCCTGCTAAATAGTTCG	GCGT	AATGAATTTCACTGCG		TAC	GCTCTCTTAGAGG
HQ912557.1	Bolidomonas pacif	G	AACGAGACCCCGCCTGCTAAATAGTTG	GCGG	AATGAATTTCACTGCG		TAC	ATCTCTTAGAGG
EF165138.1	Ochromonas marina	G	AACGAGACCCCGCCTGCTAAATAGTCA	TATT	AATGCTTAGCATTGAT		G	TGGCTCTTAGAGG
EF165116.1	Synura petersenii	G	AACGAGACCCCGCCTGCTAAATAGTCC	TATG	AATGCTTAGCATTGAT		G	TGGCTCTTAGAGG
JQ281519.1	Mallomonas papill	G	AACGAGACCCCGCCTGCTAAATAGTCA	TATT	AATGCTTAGCATTGAT		G	TGGCTCTTAGAGG
EF432519.1	Paraphysomonas im	G	AACGAGACCCCGCCTGCTAAATAGTTG	AGCG	AATGCTTAGCATTGCG		G	TCACTCTTAGAGG
EF165146.1	Lagynion cf. ampu	G	AACGAGACCCCGCCTGCTAAATAGTTG	TACT	GATGCTTTCATCAGC		AAC	AGCTCTTAGAGG
AB096710.1	Dictyocha fibula	G	AACGAGACCCCGCCTGCTAAATAGTGA	CAGG	AATGCTTTCATTCGTTG		G	ATCTCTTAGAGG
AB097408.1	Helicopedinella t	G	AACGAGACCCCGCCTGCTAAATAGCC	CGGG	AATGCTTTCATTCGCG		TG	TGCTCTTAGAGG

		1340	1350	1360	1370	1380	1390	1400
AB183265.1	Prymnesium neolep	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
Prymnesium neolepis strain TMR		G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
FN551248.1	Chrysochromulina	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AM779755.1	Prymnesium palpeb	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AM491014.2	Imantonia rotunda	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AJ544117.1	Coccolithus braar	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AJ544118.1	Umbilicosphaera s	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AJ544119.1	Umbilicosphaera r	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AM491024.2	Calyptrosphaera f	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
HQ877901.1	Emiliana huxleyi	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AB183665.1	Gephyrocapsa ocea	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
JF489945.1	Isochrysis galban	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AM490974.2	Pleurochrysis ros	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AM491017.2	Chrysochromulina	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AM491019.2	Chrysochromulina	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
JF489961.1	Pavlova lutheri	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
HQ912555.1	Thalassiosira pse	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
JN091722.1	Pseudo-nitzschia	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
JF790983.1	Cymbella cistulif	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
HQ912556.1	Phaeodactylum tri	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AB5446639.1	Triparma sp.	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
HQ912557.1	Bolidomonas pacif	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
EF165138.1	Ochromonas marina	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
EF165116.1	Synura petersenii	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
JQ281519.1	Mallomonas papill	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
EF432519.1	Paraphysomonas im	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
EF165146.1	Lagynion cf. ampu	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AB096710.1	Dictyocha fibula	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			
AB097408.1	Helicopedinella t	G	ACAACCTT	GCTTTCAACAAGT	TGGAAAGTTTGAGGCAATAACAGGCTCTGTGATGCCCTTAGATGTTCTGGG			

		1410	1420	1430	1440	1450	1460	1470
AB183265.1	Prymnesium neolep	C	CGCACGCGCGTACACTGATGCACCTCAACGAGTCTC	-----	GCTTGCCGAGAGGTCCGGCAAACCTT			
Prymnesium neolepis strain TMR		C	CGCACGCGCGTACACTGATGCACCTCAACGAGTCTC	-----	GCTTGCCGAGAGGTCCGGCAAACCTT			
FN551248.1	Chrysochromulina	C	CGCACGCGCGTACACTGATGCACCTCAACGAGTCTC	-----	GCTTGCCGAGAGGTCCGGCAAACCTT			
AM779755.1	Prymnesium palpeb	C	CGCACGCGCGTACACTGATGCACCTCAACGAGTCTC	-----	GCTTGCCGAGAGGTCCGGCAAACCTT			

JF489945.1	Isochrysis galban	TGTGTCATCAGCGCACGTTGATTACGTC
AM490974.2	Pleurochrysis ros	CATGTCATCAGCGTGCCTGATTACGTC
AM491017.2	Chrysochromulina	CATGTCATCAGCGTGCCTGATTACGTC
AM491019.2	Chrysochromulina	CATGTCATCAGCGTGCCTGATTACGTC
JF489961.1	Pavlova lutheri	TGAGTCATCAGCTCGCGTTGATTACGTC
HQ912555.1	Thalassiosira pse	CAGATCATCAATCTGCAATGATTACGTC
JN091722.1	Pseudo-nitzschia	CAGATCATCAATCTGCAATGATTACGTC
JF790983.1	Cymbella cistulif	CAGTTCATCAAATCTGCATTGGTTACGTC
HQ912556.1	Phaeodactylum tri	CAGATCATCAATCTGCAATGATTACGTC
AB546639.1	Triparma sp.	CAGTTCATCAGACTGCATTGATTACGTC
HQ912557.1	Bolidomonas pacif	CAGTTCATCAGACTGCATTGATTACGTC
EF165138.1	Ochromonas marina	CGAGTCATCAGCTCGCGTTGATTACGTC
EF165116.1	Synura petersenii	CGAGTCATCAGCTCGCGTTGATTACGTC
JQ281519.1	Mallomonas papill	CGAGTCATCAGCTCGCGTTGATTACGTC
EF432519.1	Paraphysomonas im	CGAGTCATCAGCTCGCGTTGATTACGTC
EF165146.1	Lagynion cf. ampu	CGAGTCATCAGCTCGCGTTGATTACGTC
AB096710.1	Dictyocha fibula	TGAGTCATCAGCTCACATTGATTACGTC
AB097408.1	Helicopedinella t	-----

		1620	1630	1640	1650	1660	1670	1680	
AB183265.1	Prymnesium neolep	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
Prymnesium neolepis strain TMR		TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
FN551248.1	Chrysochromulina	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
AM779755.1	Prymnesium palpeb	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
AM491014.2	Imantonia rotunda	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
AJ544117.1	Coccolithus braar	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
AJ544118.1	Umbilicosphaera s	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
AJ544119.1	Umbilicosphaera f	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
AM491024.2	Calyptrosphaera r	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
HQ877901.1	Emiliana huxleyi	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
AB183665.1	Gephyrocapsa ocea	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
JF489945.1	Isochrysis galban	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
AM490974.2	Pleurochrysis ros	TGATCCGGT	TGAGCCCCGGACT	TGGCAATGCAGG	TGGTTCCGCAT	CCCGGATGCCG	CGGGGAA	AGCTGTC	
AM491017.2	Chrysochromulina	TAATCCGGT	TGAGTTTTTTGGACCC	TGGCAACGGCTTT	TGGTTCCGCAAA	-TGATGCT	TGGGGAA	AGATACG	
AM491019.2	Chrysochromulina	TGATCCGGT	TGAGCCCCGGAA	TGGACTAC	TGC -GCGTTTTCCGCAA	-TGAGATTCT	TGTAAGCT	TGTC	
JF489961.1	Pavlova lutheri	TGGTCCGGT	TGAGTTTTT	CGGACTGGCG	CAGTGCCAGG	TTCCGCTTG	-GTGCTGCG	CCGGAA	AGTCA
HQ912555.1	Thalassiosira pse	TGGTCCGGT	TGAGGAGTC	GAGATTG	TGGCCTGGTTCC	---	TTTATTGGG	ATTGGCTAC	GAGAACTTCTC
JN091722.1	Pseudo-nitzschia	TGGTCCGGT	TGAAGCCTCGGG	ATTGTGATTAG	TTTCC	---	TTTATTGGA	AGGTAGTTAT	GAGAACC
JF790983.1	Cymbella cistulif	TGGTCCGGT	TGAAGCCTCGGG	ATTGTGATTAG	TTTCC	---	TTTATTGGA	AGGTAGTTAT	GAGAACC
HQ912556.1	Phaeodactylum tri	TGGTCCGGT	TGAAGCCTCGGG	ATTGTGATTAG	TTTCC	---	TTTATTGGA	AGGTAGTTAT	GAGAACC
AB546639.1	Triparma sp.	TGGTCCGGT	TGAAATTT	CGGGACTGAGC	GATTCTTGA	---	TTTATTT	CGAGTTT	TGCTTGGGAACTTACT
HQ912557.1	Bolidomonas pacif	TGGTCCGGT	TGAAATTT	CGGGACTGATC	GTGTTGGTGG	---	TTTATTCT	GCCTTACGAT	CGGGAACTTACT
EF165138.1	Ochromonas marina	TGATTCGGT	TGAAATTT	CGGACTGAGC	CGTGGCAGGACGC	---	CATT -GGC	ACCGTGGG	AAAGTTATT
EF165116.1	Synura petersenii	TGATTCGGT	TGAAATTT	CGGACTGAGC	CGTGGCAGGACGC	---	CTTCGGG	CGACCTTGC	TGTGGGAA
JQ281519.1	Mallomonas papill	TGATTCGGT	TGAAATTT	CGGACTGAGC	CGTGGCAGGACGC	---	CTTCGGG	CGACCTTGC	TGTGGGAA
EF432519.1	Paraphysomonas im	TGGTTCGGT	TGAAATTT	CGGACTGAGC	CGTGGGATGGATG	---	CTTCGGG	CAACAGGC	TGTGGGAA
EF165146.1	Lagynion cf. ampu	TGATTCGGT	TGAAATTT	CGGACTGAGC	ATGGAGACAC	---	CCTCGGG	CGACTCTGT	ATTGGGAA
AB096710.1	Dictyocha fibula	TGGCTCGGT	TGAGGCTC	AGGATTTT	TGGTCTAACACC	---	TTAACCG	GAGTTT	GATTAGA
AB097408.1	Helicopedinella t	-----	-----	-----	-----	-----	-----	-----	-----

AB183265.1	Prymnesium neolep	CAAA
Prymnesium neolepis strain TMR		CAAA
FN551248.1	Chrysochromulina	CAAA
AM779755.1	Prymnesium palpeb	CAAA
AM491014.2	Imantonia rotunda	CAAA
AJ544117.1	Coccolithus braar	CAAA
AJ544118.1	Umbilicosphaera s	CAAA
AJ544119.1	Umbilicosphaera f	CAAA
AM491024.2	Calyptrosphaera r	CAAA
HQ877901.1	Emiliana huxleyi	CGAA
AB183665.1	Gephyrocapsa ocea	CGAA
JF489945.1	Isochrysis galban	CGAA
AM490974.2	Pleurochrysis ros	CAAA
AM491017.2	Chrysochromulina	CAAA
AM491019.2	Chrysochromulina	CAAA
JF489961.1	Pavlova lutheri	CAAA
HQ912555.1	Thalassiosira pse	CAAA
JN091722.1	Pseudo-nitzschia	TAAA


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|JF790983.1| Cymbella cistulif TAAA
|HQ912556.1| Phaeodactylum tri TAAA
|AB5446639.1| Triparma sp. TAAA
|HQ912557.1| Bolidomonas pacif TAAA
|EF165138.1| Ochromonas marina TAAA
|EF165116.1| Synura petersenii TAAA
|JQ281519.1| Mallomonas papill TAAA
|EF432519.1| Paraphysomonas im TAAA
|EF165146.1| Lagynion cf. ampu TAAA
|AB096710.1| Dictyocha fibula CAAA
|AB097408.1| Helicopedinella t ----
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3. *rbcL* alignment.

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          10          20          30          40          50          60          70
Prymnesium neolepis TMR5 RbcL  GATCCTGATTACGTTATCAAGGAAACTGACATCTTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTTG
Prymnesium neolepis PZ241 RbcL  GATCCTGATTACGTTATCAAGGAAACTGACATCTTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTTG
Prymnesium neolepis VF28 RbcL  GATCCTGATTACGTTATCAAGGAAACTGACATCTTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTTG
gi|76880158|dbj|AB183266.1| Hy  GATCCTGATTACGTTATCAAGGAAACTGACATCTTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTTG
gi|12082155|dbj|AB043697.1| Ch  GATCCTGATTACGTTATTAAGGAAACTGACGTTTGTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTTG
gi|8099172|dbj|AB043632.1| Chr  GATCCTGATTACGCAATCAAGGAAACTGATATCTTAGCATTTATTCCGTTGTACTCCTCAACCAGGTGTTG
gi|12082157|dbj|AB043698.1| Pr  GATCCTGATTACGTTATTAAGGAACTGATATCTTAGCTCTATTCCGTTGTACGCCACAACCAGGTGTTG
gi|12082151|dbj|AB043695.1| Ch  GATCCTGATTACGTTATCAAGGAACTGATCTTCTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTAG
gi|12082153|dbj|AB043696.1| Im  GATCCTGATTACGTTATCAAGGAACTGATCTTCTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTAG
gi|12082149|dbj|AB043694.1| Ch  GATCCTGATTACGTTATCAAGGAACTGATCTTCTAGCTCTATTCCGTTGTACTCCACAACCAGGTGTAG
gi|12082159|dbj|AB043699.1| Pl  GATCCTGATTATGTTATTAAGGAACTGACATCTTAGCTCTATTCCGTTGTACACCACAACCAGGAGTTG
gi|8099166|dbj|AB043629.1| Umb  GATCCAGAGTACTCGATCAAGGAACTGATCTTCTAGCATTTATTCCGTTGTACTCCACAACCAGGTGTTG
gi|456605|dbj|D11140.1| PEHRBCL  GATCCAGAATATTCAAATTAAGGAACTGATATTTTAGCGCTTTCCGTTGTACACCTCAACCAGGTGTTG
gi|436905916|gb|JX292160.1| Em  GCTGTTGAATACGTAATCAAGGAACTGATCTTCTAGCAATGTAATCTGGTGAATCCCTTACGCTAAAATGG
gi|685217|dbj|D45844.1| GEOCPRB  GATCCAGAATATGTAATCAAGGAACTGATATCTTAGCACTATTCCGTTGTACACCTCAACCAGGTGTAG
gi|356472750|gb|HQ656833.1| Co  GATCCAGAATATGCAATTAAGGAACTGATATCTTAGCACTATTCCGTTGTACTCCACAACCAGGTGTTG
gi|12082137|dbj|AB043688.1| Pl  GATCCAGAATATTCAAATTAAGGAACTGATATTTTAGCGCTTTCCGTTGTACACCTCAACCAGGTGTTG
gi|356472744|gb|HQ656830.1| Pa  GATCCTGACTACGCAATCAAGGAACTGATGTTCTAGCAATGTTTCCGTTGACTCCCAACCAGGCGTTG
gi|12082141|dbj|AB043690.1| Ca  GATCCAGAGTACTCGATCAAGGAACTGATCTTCTAGCATTTATTCCGTTGTACTCCACAACCAGGTGTTG
gi|12082147|dbj|AB043693.1| Is  GATCCAGAATACGCAATTAAGGAACTGATCTTACTAGCACTGTTCCGTTGTACACCACAACCAGGTGTAG
gi|12082145|dbj|AB043692.1| He  GATCCAGAGTACACTATTAAGGAACTGATCTTACTAGCACTATTCCGTTGTACTCCACAACCAGGAGTTG
gi|12082163|dbj|AB043701.1| Ex  GATCCTGACTACGCAATTAAGGAACTGATGTTCTAGCAATGTTCCGTTCTAACACCTCAACCAGGTGTAG
gi|8099174|dbj|AB043633.1| Pav  GATCCTGACTACGCTATTAAGGAGACTGATGTTCTAGCAATGTTCCGTTCTTACACCTCAACCAGGTGTAG

          80          90          100         110         120         130         140
Prymnesium neolepis TMR5 RbcL  ACCCTGTAGAAGCTGCTGCAGCTCTTCTGGTGGTGGTCTTCAACAGCAACATGGACTGTTGTATGGACAGA
Prymnesium neolepis PZ241 RbcL  ACCCTGTAGAAGCTGCTGCAGCTCTTCTGGTGGTGGTCTTCAACAGCAACATGGACTGTTGTATGGACAGA
Prymnesium neolepis VF28 RbcL  ACCCTGTAGAAGCTGCTGCAGCTCTTCTGGTGGTGGTCTTCAACAGCAACATGGACTGTTGTATGGACAGA
gi|76880158|dbj|AB183266.1| Hy  ACCCTGTAGAAGCTGCTGCAGCTCTTCTGGTGGTGGTCTTCAACAGCAACATGGACTGTTGTATGGACAGA
gi|12082155|dbj|AB043697.1| Ch  ACCCTGTAGAAGCTGCTGCAGCTCTTCTGGTGGTGGTCTTCAACAGCAACATGGACTGTTGTATGGACAGA
gi|8099172|dbj|AB043632.1| Chr  ACCCTGTAGAAGCTGCTGCAGCTCTTCTGGTGGTGGTCTTCAACTGCAACATGGACTGTTGTATGGACGGA
gi|12082157|dbj|AB043698.1| Pr  ATCCTGTAGAAGCTGCTGCAGCTCTTCTGGTGAATCTTCAACAGCAACATGGACTGTTGTATGGACGGA
gi|12082151|dbj|AB043695.1| Ch  ACCCAGTAGAGCTGCAGCAGCTAGCTGGTGGTGGTCTTCAACTGCAACATGGACTGTTGTATGGACAGA
gi|12082153|dbj|AB043696.1| Im  ACCCAGTTGAAGCTGCTGCTGCTTTCAGGTTGAATCTTCAACAGCAACATGGACTGTTGTATGGACAGA
gi|12082149|dbj|AB043694.1| Ch  ACCCTGTAGAAGCTGCAGCAGCTTCTGGTGGTGGTCTTCAACTGCAACATGGACTGTTGTATGGACAGA
gi|12082159|dbj|AB043699.1| Pl  ACCCTGTAGAAGCTGCAGCAGCTTCTGGTGGTGAATCTTCAAGCAACATGGACTGTTGTATGGACAGA
gi|8099166|dbj|AB043629.1| Umb  ACCCTGTAGAAGCTGCTGCCGCTAGCTGGTGGTGGTCTTCAACAGCAACATGGACTGTTGTATGGACGGA
gi|456605|dbj|D11140.1| PEHRBCL  GTTACTGGGATCCAGAAATATGTAATCAAGGAACTGATATCTTAGCACTATTCCGTTGTACACCTCAACC
gi|436905916|gb|JX292160.1| Em  ATCCAGTTGAAGCGGCTGCTGCAGCTAGCAGGTGAGTCTTCTACTGCTACATGGACTGTAGTATGGACGGA
gi|685217|dbj|D45844.1| GEOCPRB  ACCCTGTAGAAGCTGCAGCTGCATTTAGCTGGTGGTGGTCTTCAACAGCAACATGGACTGTAGTATGGACTGA
gi|356472750|gb|HQ656833.1| Co  ACCCTGTAGAAGCTGCTGCTGCAGCTAGCTGGTGGTGGTCTTCAACAGCAACATGGACTGTAGTATGGACTGA
gi|12082137|dbj|AB043688.1| Pl  ACCCTGTAGAAGCTGCTGCTGCAGCTAGCTGGTGGTGGTCTTCAACAGCAACATGGACTGTAGTATGGACTGA
gi|356472744|gb|HQ656830.1| Pa  ACCCTGTAGAAGCTGCTGCTGCAGCTAGCTGGTGGTGGTCTTCAACAGCAACATGGACTGTAGTATGGACTGA
gi|12082141|dbj|AB043690.1| Ca  ACCCTGTAGAAGCTGCAGCTGCTTTAGCTGGTGGTGGTCTTCAACAGCAACATGGACTGTAGTATGGACTGA
gi|12082147|dbj|AB043693.1| Is  ACCCAGTAGAGCTGCAGCTGCATTTGAGGTTGAATCTTCAACTGCTACATGGACTGTTGTATGGACAGA

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Prymnesium neolepis TMR5 RbcL
Prymnesium neolepis PZ241 RbcL
Prymnesium neolepis VF28 RbcL
gi|76880158|dbj|AB183266.1| Hy
gi|12082155|dbj|AB043697.1| Ch
gi|8099172|dbj|AB043632.1| Chr
gi|12082157|dbj|AB043698.1| Pr
gi|12082151|dbj|AB043695.1| Ch
gi|12082153|dbj|AB043696.1| Im
gi|12082149|dbj|AB043694.1| Ch
gi|12082159|dbj|AB043699.1| Pl
gi|8099166|dbj|AB043629.1| Umb
gi|456605|dbj|D11140.1| PEHRBCL
gi|436905916|gb|JX292160.1| Em
gi|685217|dbj|D45844.1|GEOCPRB
gi|356472750|gb|HQ656833.1| Co
gi|12082137|dbj|AB043688.1| Pl
gi|356472744|gb|HQ656830.1| Pa
gi|12082141|dbj|AB043690.1| Ca
gi|12082147|dbj|AB043693.1| Is
gi|12082145|dbj|AB043692.1| He
gi|12082163|dbj|AB043701.1| Ex
gi|8099174|dbj|AB043633.1| Pav

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780 790 800 810 820 830 840

Prymnesium neolepis TMR5 RbcL
Prymnesium neolepis PZ241 RbcL
Prymnesium neolepis VF28 RbcL
gi|76880158|dbj|AB183266.1| Hy
gi|12082155|dbj|AB043697.1| Ch
gi|8099172|dbj|AB043632.1| Chr
gi|12082157|dbj|AB043698.1| Pr
gi|12082151|dbj|AB043695.1| Ch
gi|12082153|dbj|AB043696.1| Im
gi|12082149|dbj|AB043694.1| Ch
gi|12082159|dbj|AB043699.1| Pl
gi|8099166|dbj|AB043629.1| Umb
gi|456605|dbj|D11140.1| PEHRBCL
gi|436905916|gb|JX292160.1| Em
gi|685217|dbj|D45844.1|GEOCPRB
gi|356472750|gb|HQ656833.1| Co
gi|12082137|dbj|AB043688.1| Pl
gi|356472744|gb|HQ656830.1| Pa
gi|12082141|dbj|AB043690.1| Ca
gi|12082147|dbj|AB043693.1| Is
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gi|8099174|dbj|AB043633.1| Pav

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850 860 870 880 890 900 910

Prymnesium neolepis TMR5 RbcL
Prymnesium neolepis PZ241 RbcL
Prymnesium neolepis VF28 RbcL
gi|76880158|dbj|AB183266.1| Hy
gi|12082155|dbj|AB043697.1| Ch
gi|8099172|dbj|AB043632.1| Chr
gi|12082157|dbj|AB043698.1| Pr
gi|12082151|dbj|AB043695.1| Ch
gi|12082153|dbj|AB043696.1| Im
gi|12082149|dbj|AB043694.1| Ch
gi|12082159|dbj|AB043699.1| Pl
gi|8099166|dbj|AB043629.1| Umb
gi|456605|dbj|D11140.1| PEHRBCL
gi|436905916|gb|JX292160.1| Em
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