Phenomics reveals a novel chloroplast fatty acid transporter in the marine diatom *Skeletonema marinoi* involved in temperature acclimation

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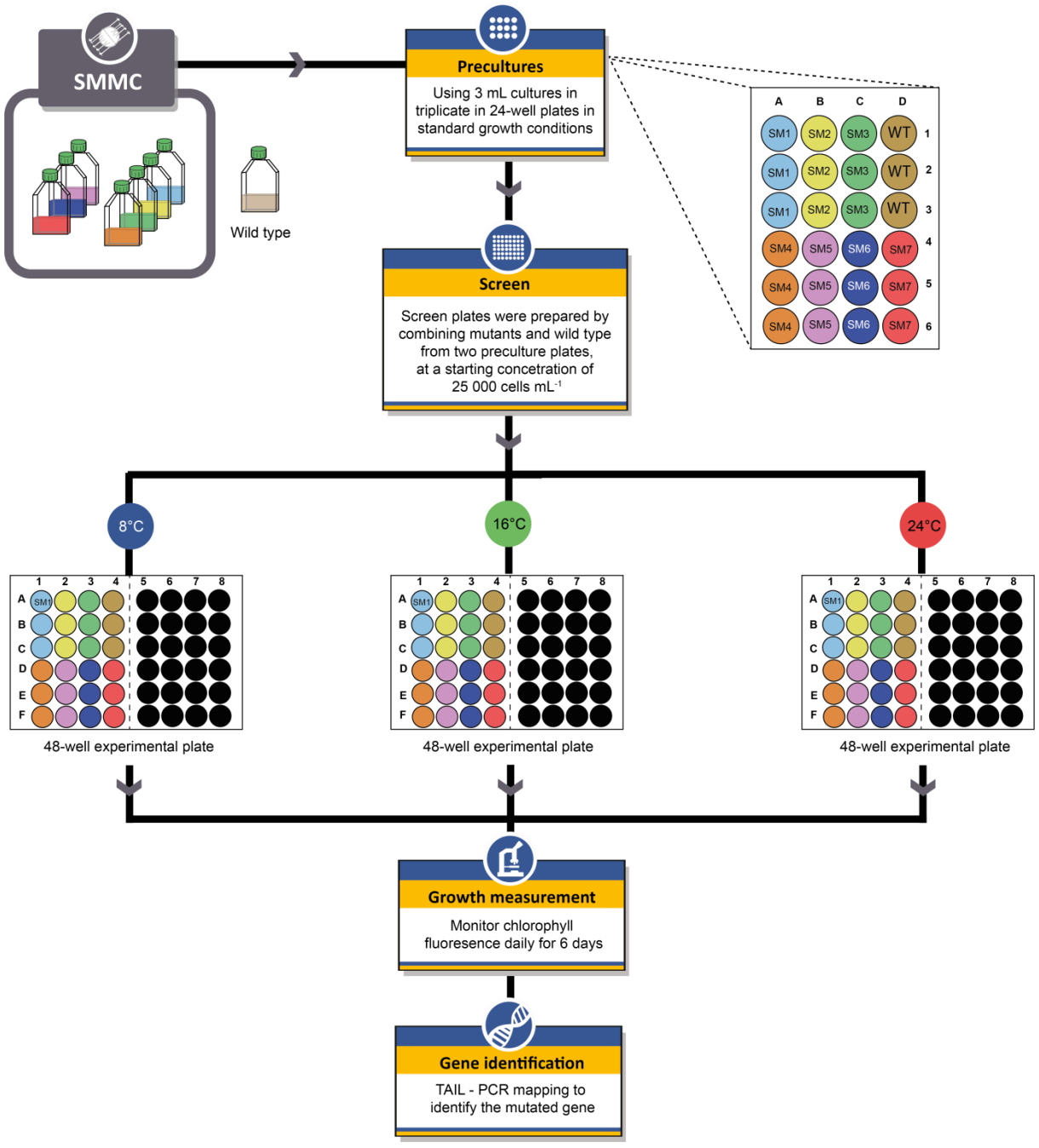
Supplementary Figure 1. Overview of the temperature screening for *S. marinoi* mutant collection.



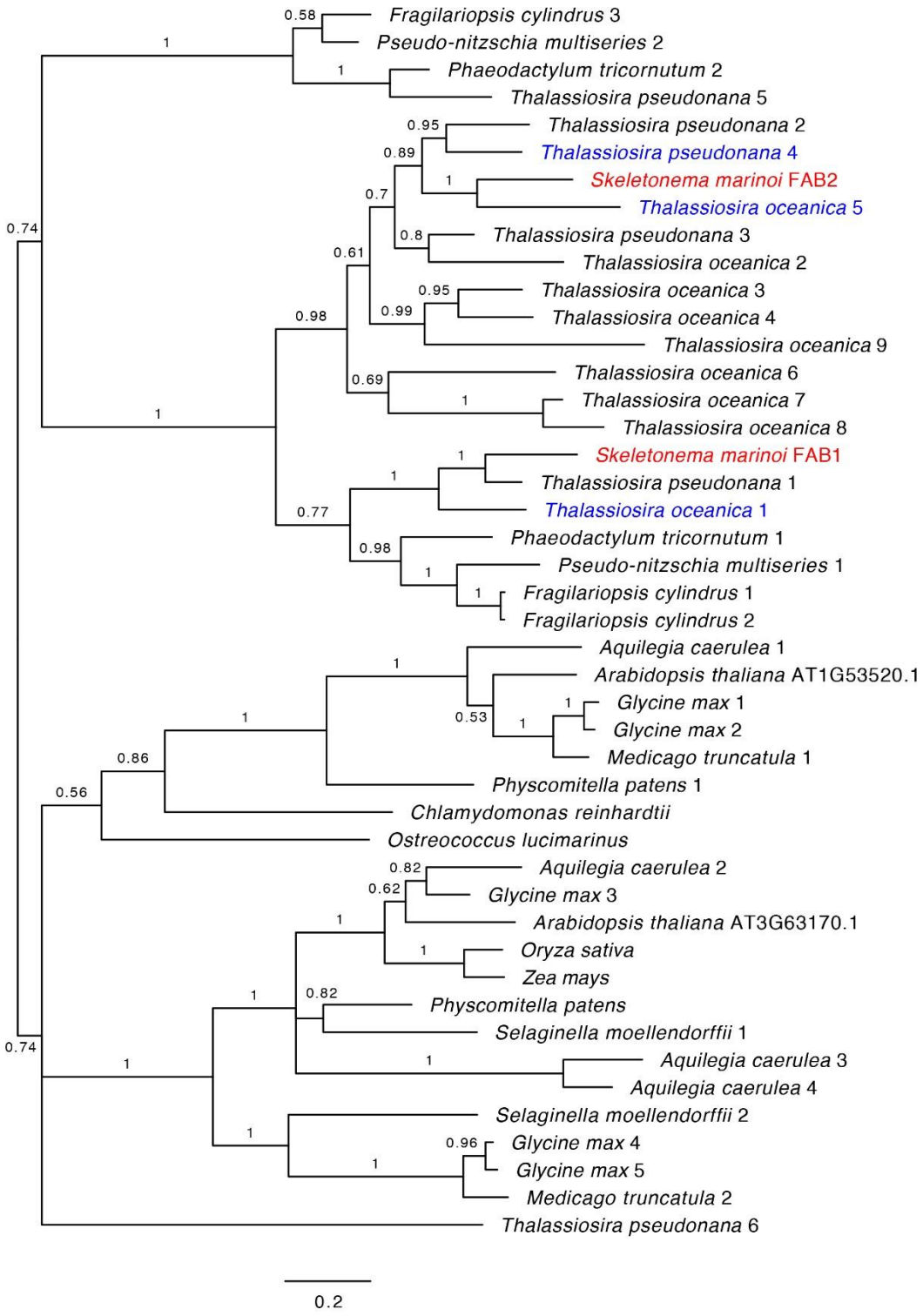
Supplementary Figure 2. List of primers

Primer	Sequence (5'->3')
TAIL-PCR	
Insert specific primers	
Promoter	
pISP[1]	CCTGCGAAATCATCCTCCACAAAATCTCG
pISP[2]	GAGAATCCGAGACGATCTGTCCAGAACTC
pISP[3]	AGCACTGGAACAGCACTTGTCAACTTTGC
Terminator	
tISP[1]	CGAGATTTTGTGGAGGATGATTTCGCAGG
tISP[2]	GAATGGTCTGAAGTAGTGTCTACAAATTTCCGTG
tISP[3]	GCGTGCATTTCGTGGCAGAAGAGCAAG
Degenerate primers	
Fusion-1	GGGCACGTCTACTATAGGGCACGCGTGGT**NTCGASTWTSGWGTT**
Fusion-2	GGGCACGTCTACTATAGGGCACGCGTGGT**NGTCGASWGANAWGAA**
Fusion-3	GGGCACGTCTACTATAGGGCACGCGTGGT**WGTGNAGWANCANAGA**
Fusion-4	GGGCACGTCTACTATAGGGCACGCGTGGT**AGWGNAGWANCAWAGG**
Fusion-5	GGGCACGTCTACTATAGGGCACGCGTGGT**NGTAWAASGTNTSCAA**
Fusion-6	GGGCACGTCTACTATAGGGCACGCGTGGT**NGACGASWGANAWGAA**
Fusion-7	GGGCACGTCTACTATAGGGCACGCGTGGT**GTNCGASWCANAWGTT**
Fusion-8	GGGCACGTCTACTATAGGGCACGCGTGGT**NCAGCTWSCTNTSCTT**
Amplicon specific primer	
ASP1	GGGCACGTCTACTATAGGGC
ASP2	ACTATAGGGCACGCGTGGT
Genotyping	
SM127-fwd	ACTGGACAAAAATTACTGCAAAGCAAGAGACGGC
SM127-rev	ATCCTATCTCCGTTCCATCAACAGATACTTTGACTCCC
qRT-PCR	
q_Lsu4e_Fwd	CATGGGGAACTGGACGTGCCG
q_Lsu4e_Rev	GGTGTACTTACGGCCACGGGC
q_fat1_Fwd	AACAACTTATTCTTGATGGCGTAGCGG
q_fat1_Rev	CGC TCCTGCGATAGTTTTTGCATCC

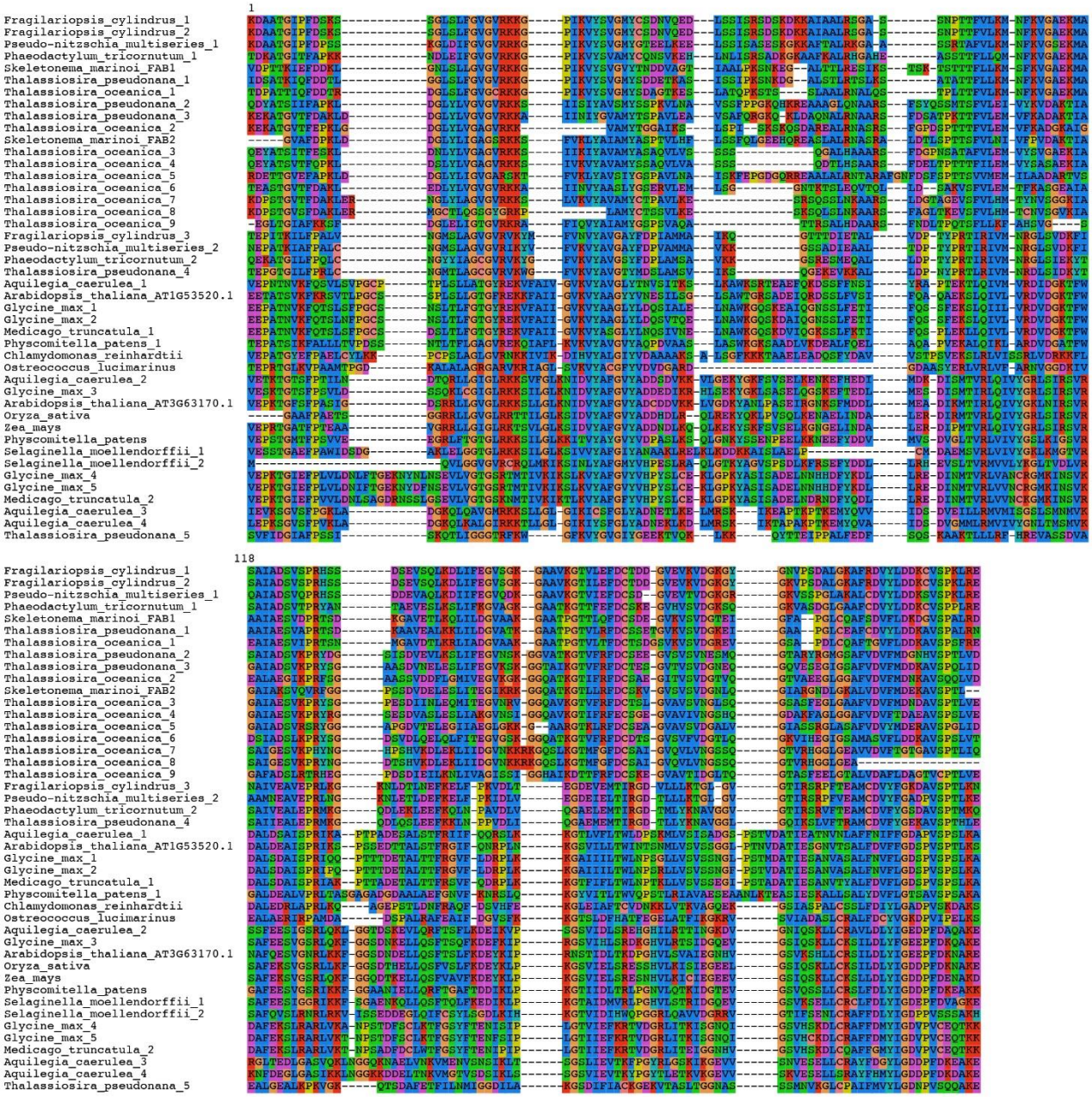
Supplementary Figure 3. Thermal conditions for the modified TAIL-PCR approach used to map the genomic insertion sites in *S. marinoi* transformants.

Primary reaction (1°)			Secondary reaction (2°)			Tertiary reaction (3°)		
Step	**Temp.**	**Time**	**Step**	**Temp.**	**Time**	**Step**	**Temp.**	**Time**
1	96°C	5 min	1	98°C	20 s	1	98°C	30 s
2	98°C	10 s	2	65°C	1 min	2	98°C	10 s
3	70°C	15 s	3	72°C	2 min	3	57°C	15 s
4	72°C	2 min	4	Go to 1	1 x	4	72°C	2 min
5	Go to 2	30 x	5	94°C	20 s	5	Go to 2	14 x
6	98°C	10 s	6	68°C	1 min	6	72°C	5 min
7	25°C	1 min	7	72°C	2 min	7	4°C	∞
8	72°C ramp 0.5 °C / sec	2 min	8	94°C	20 s			
9	Go to 6	1 x	9	68°C	1 min			
10	98°C	10 s	10	72°C	2 min			
11	70°C	15 s	11	94°C	20 s			
12	72°C	2 min	12	55°C	1 min			
13	98°C	10 s	13	72°C	2 min			
14	70°C	15 s	15	72°C	5 min			
15	72°C	2 min	16	4°C	∞			
16	98°C	10 s						
17	40°C	15 s						
18	72°C	2 min						
19	Go to 10	10 x						
21	72°C	5 min						
22	4°C	∞						

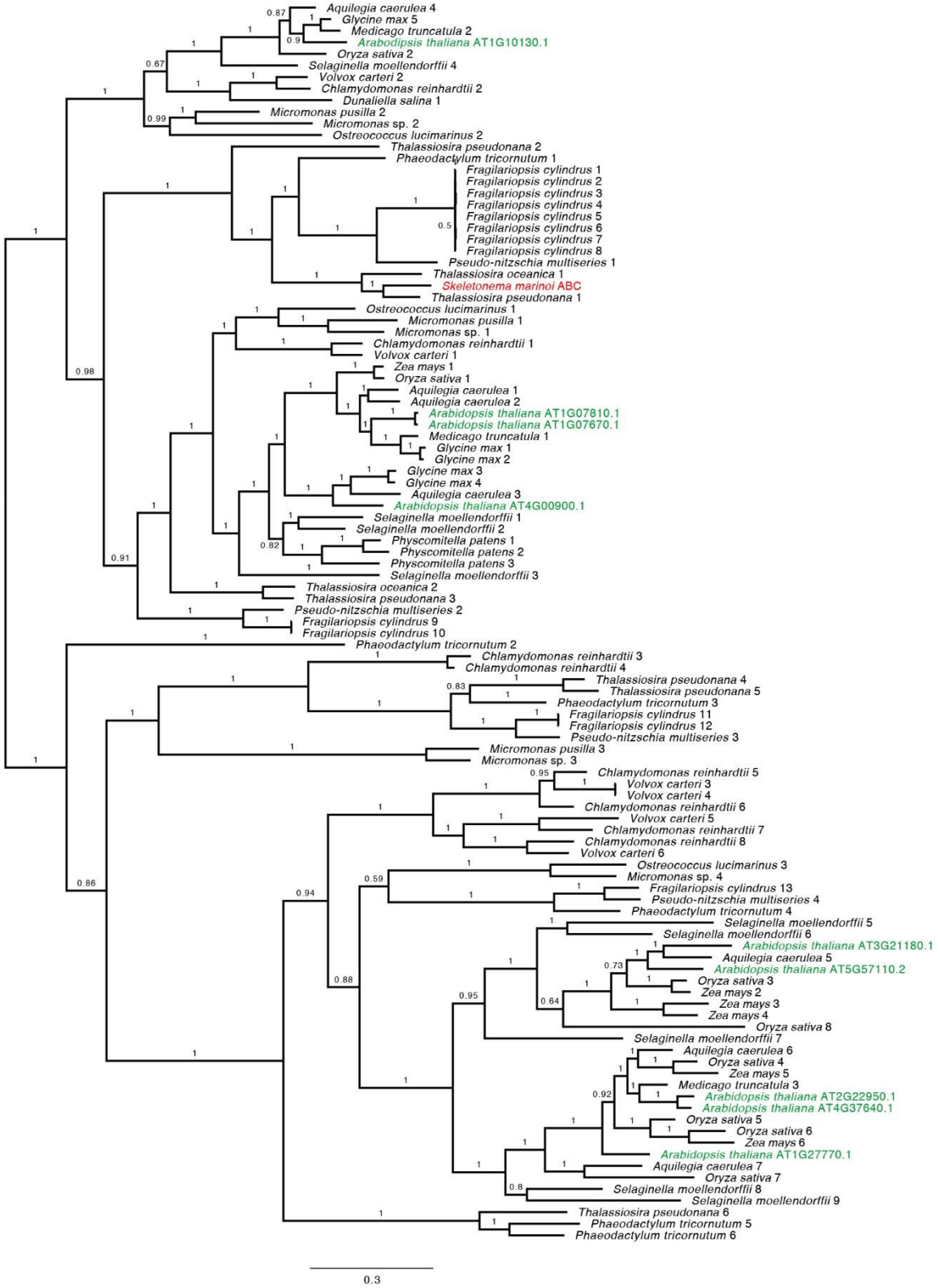
Supplementary Figure 4. Amino acid sequence alignment of the *S. marinoi* FAT1 protein with the orthologs in *T. oceanica* and *T. pseudonana*. The sequence from *T. pseudonana* consists of several ORF predictions (generated using the program getorf in the EMBOSS v6.3.1 package) grafted together after putative intron sequences where removed. Conserved sites are indicated by a black background, and similar amino acids by a grey background.



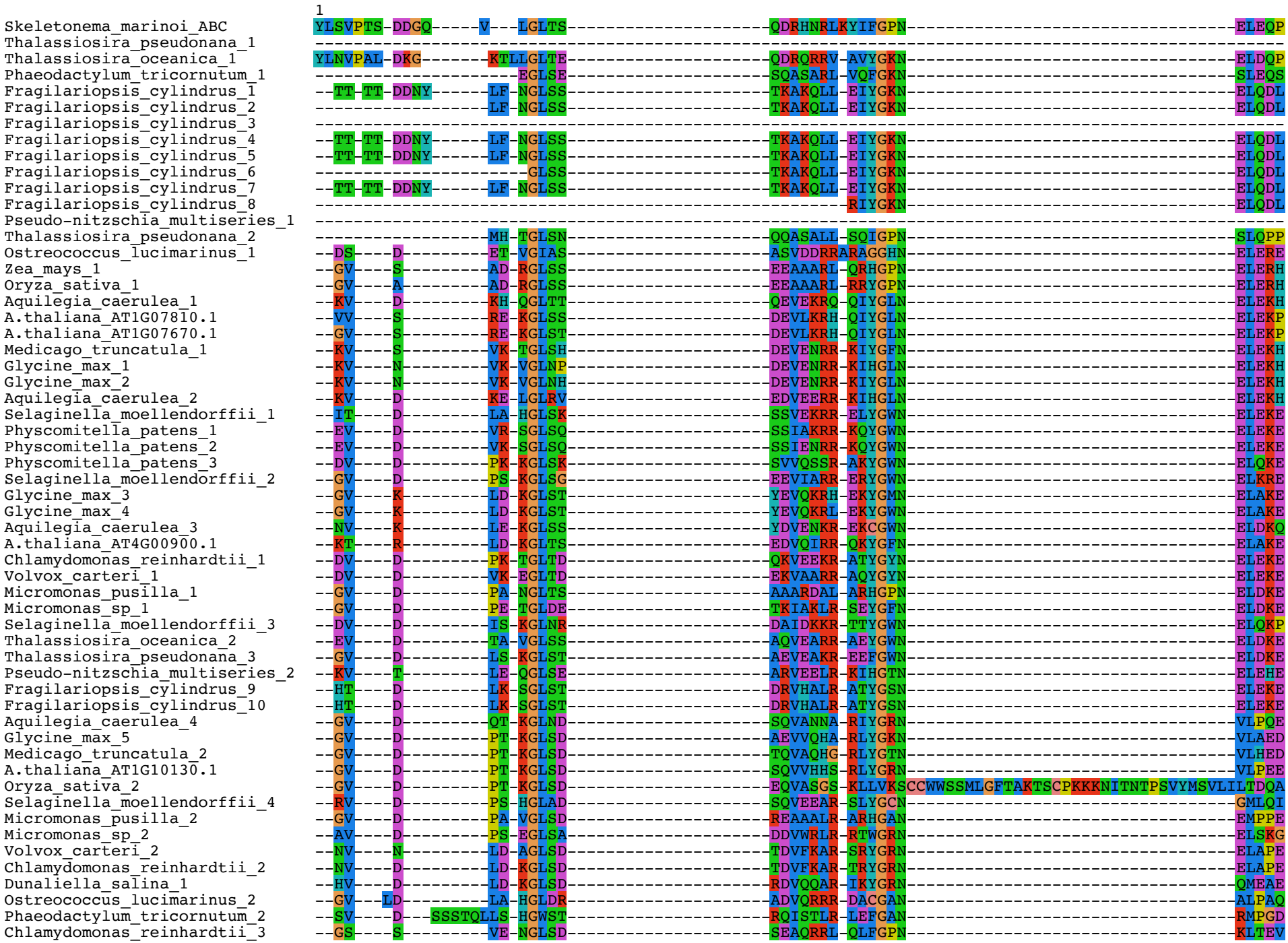
Supplementary Figure 5. Unrooted phylogenetic tree of the fatty acid-binding (FAB) domains presented in supplementary table SX. Highlighted in red are the two FAB regions found in the *S. marinoi* FAT1 protein. Highlighted in blue are the three domains from *T. oceanica* and *T. pseudonana* that are part of the proteins shown in Supplementary Figure 4. Posterior probability values appear above the branches, and the expected number of changes per site along the branches is indicated by the scale bar.



Supplementary Figure 6. Alignment of the FAB domains identified in green algae, land plants and diatoms and used for the phylogenetic analysis presented in Supplementary Figure 5. The length of the sequences has been adjusted to the length of the two domains found in *S. marinoi*. Numbers above the sequences indicate the positions in the alignment and the background color of the letters indicates size, shape, solubility, and ionization properties of the different amino acids.



Supplementary Figure 7. Unrooted phylogenetic tree of the ABC transporter domains presented in Supplementary Table SX. The position of the *S. marinoi* sequence is highlighted in red and eight homologous domains found in *Arabidopsis thaliana* are highlighted in green. Posterior probability values appear above the branches, and the expected number of changes per site along the branches is indicated by the scale bar.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Phaeodactylum_tricornutum_1 ----------EGLSE----------SQASARL-VQFGKN----------SLEQS
Fragilariopsis_cylindrus_1 --TT-TT-DDNY-----LF-NGLSS----------TKAKQLL-EIYGKN----------ELQDL
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Fragilariopsis_cylindrus_3 ----------
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Oryza_sativa_1 --GV---A--------AD-RGLSS----------EEAAARL-RRYGPN----------ELERH
Aquilegia_caerulea_1 --KV---D--------KH-QGLTT----------QEVEKRQ-QIYGLN----------ELEKH
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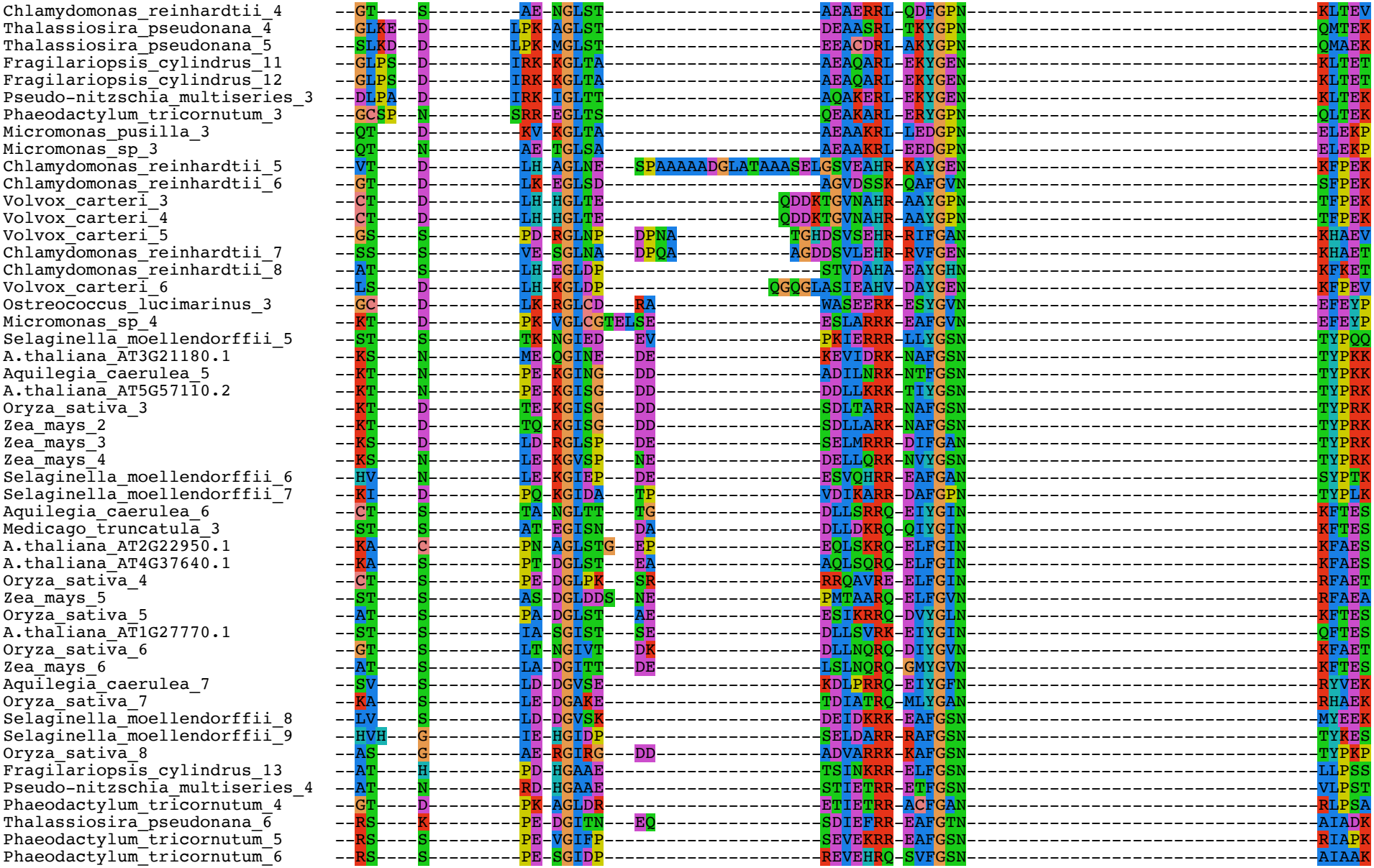
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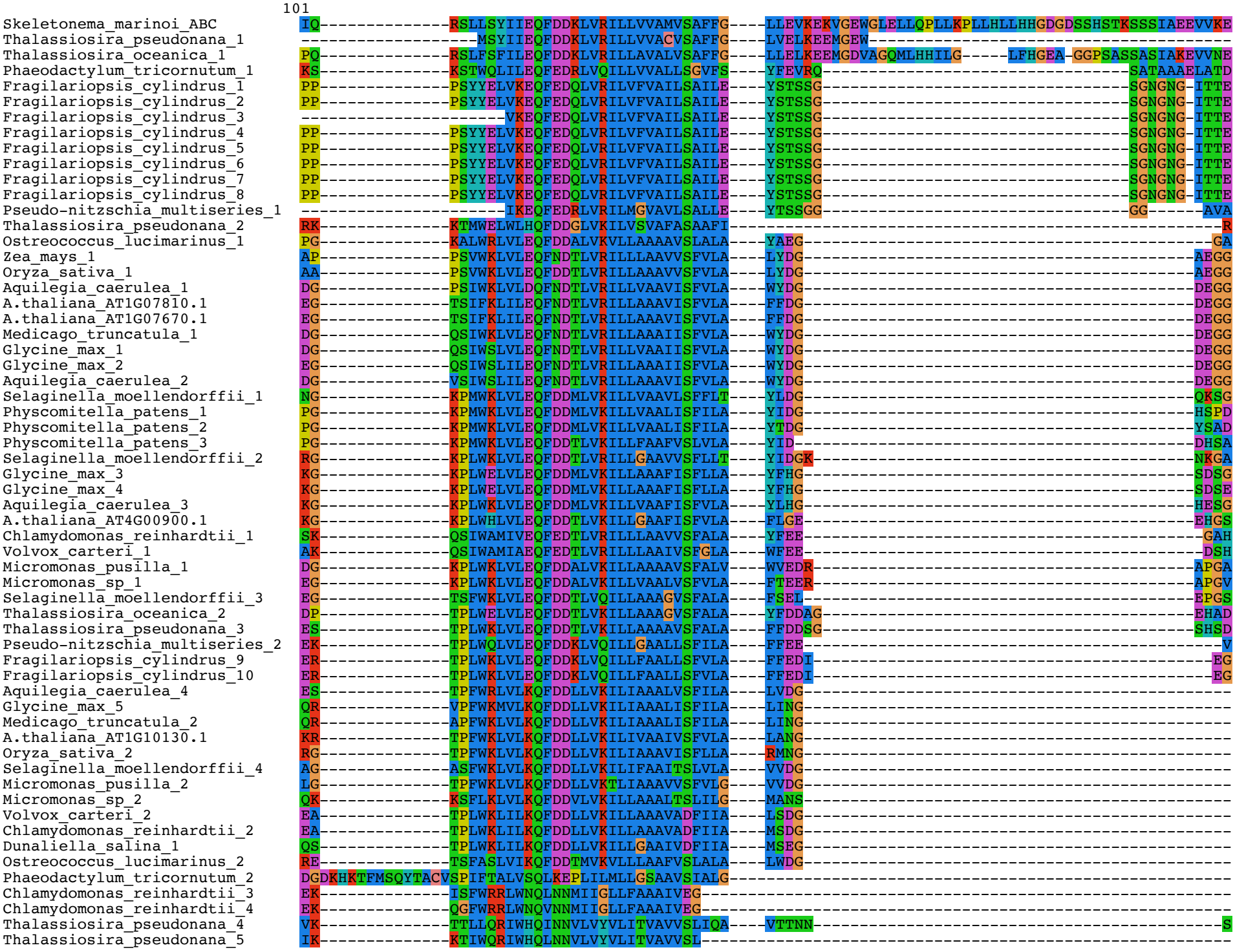
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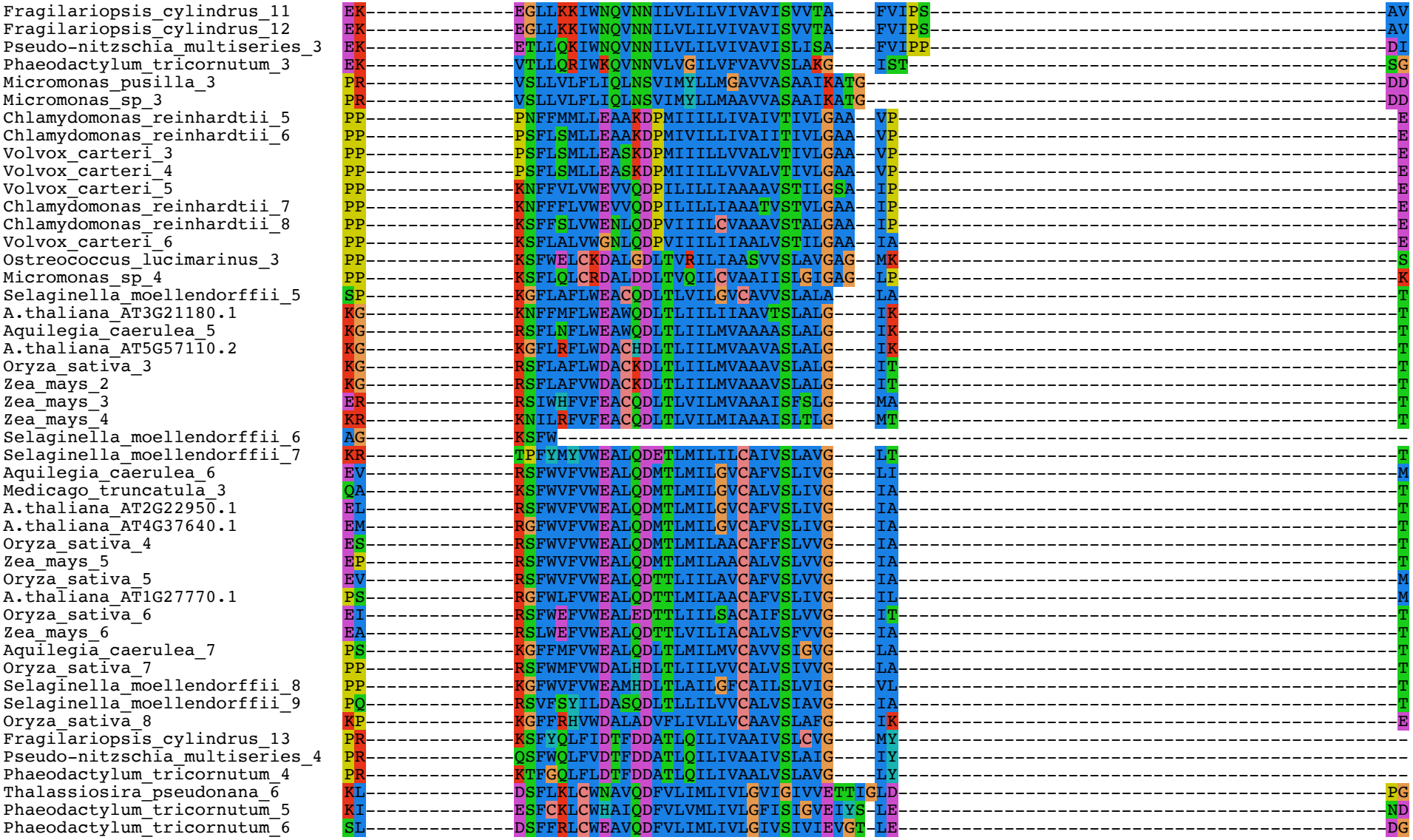
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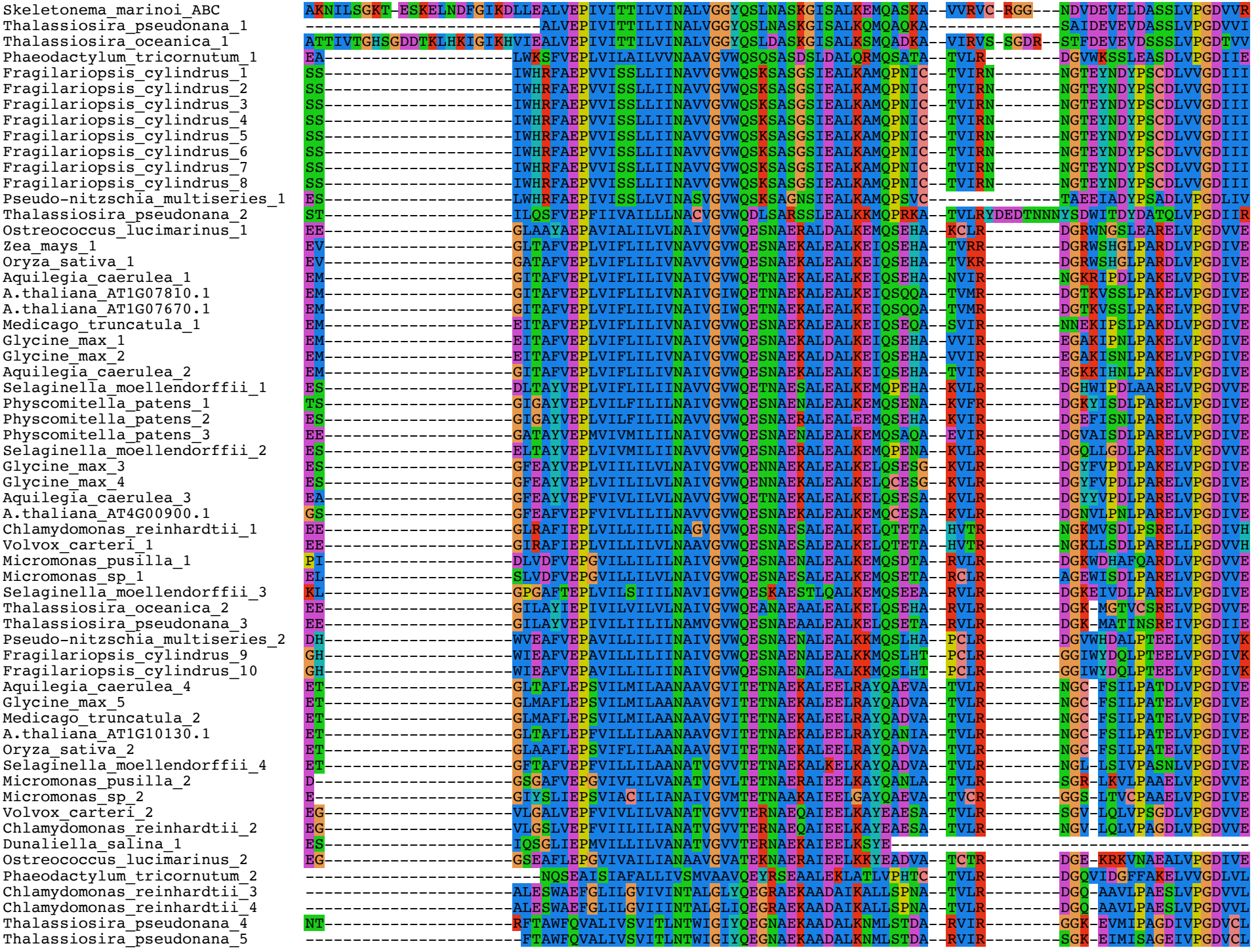
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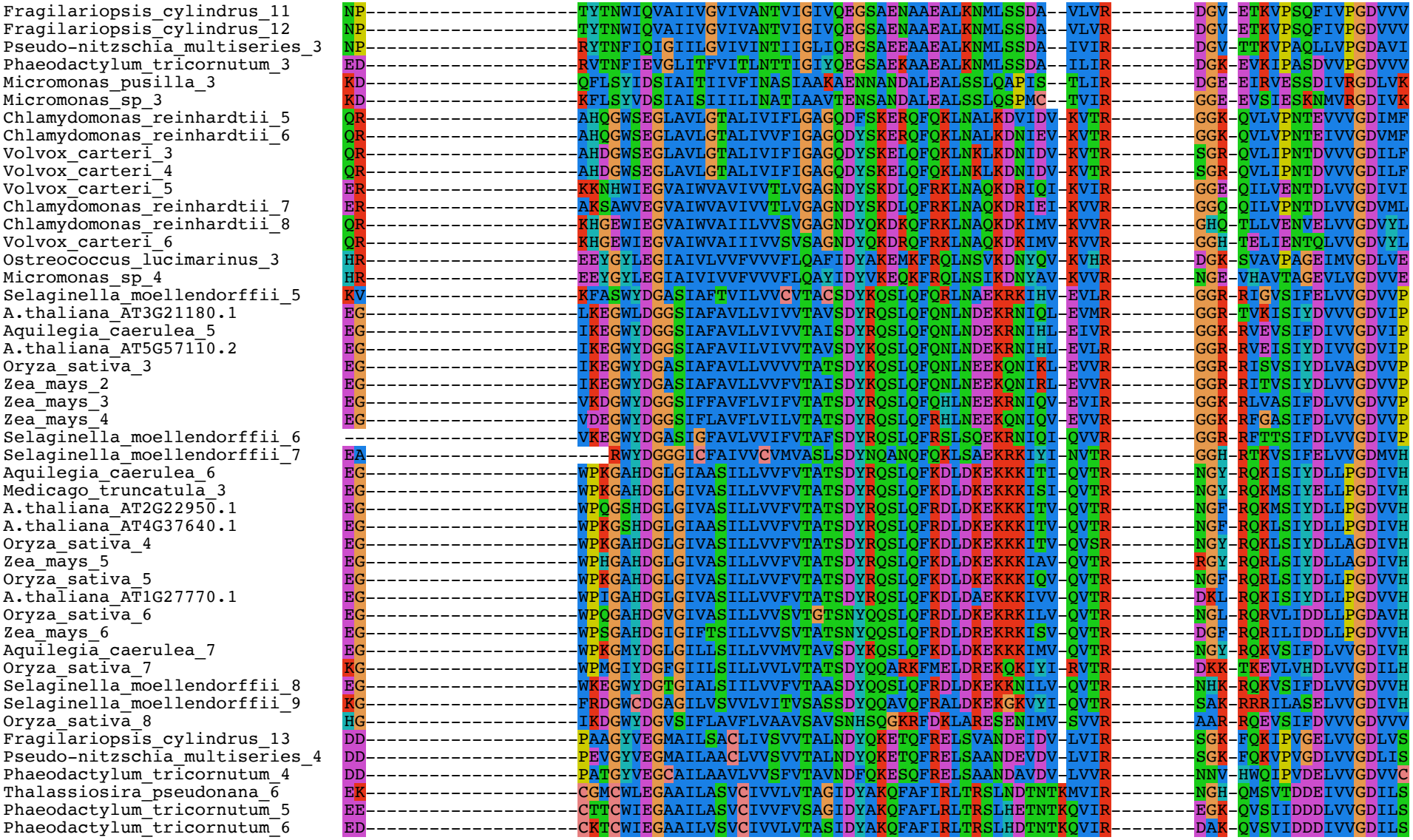
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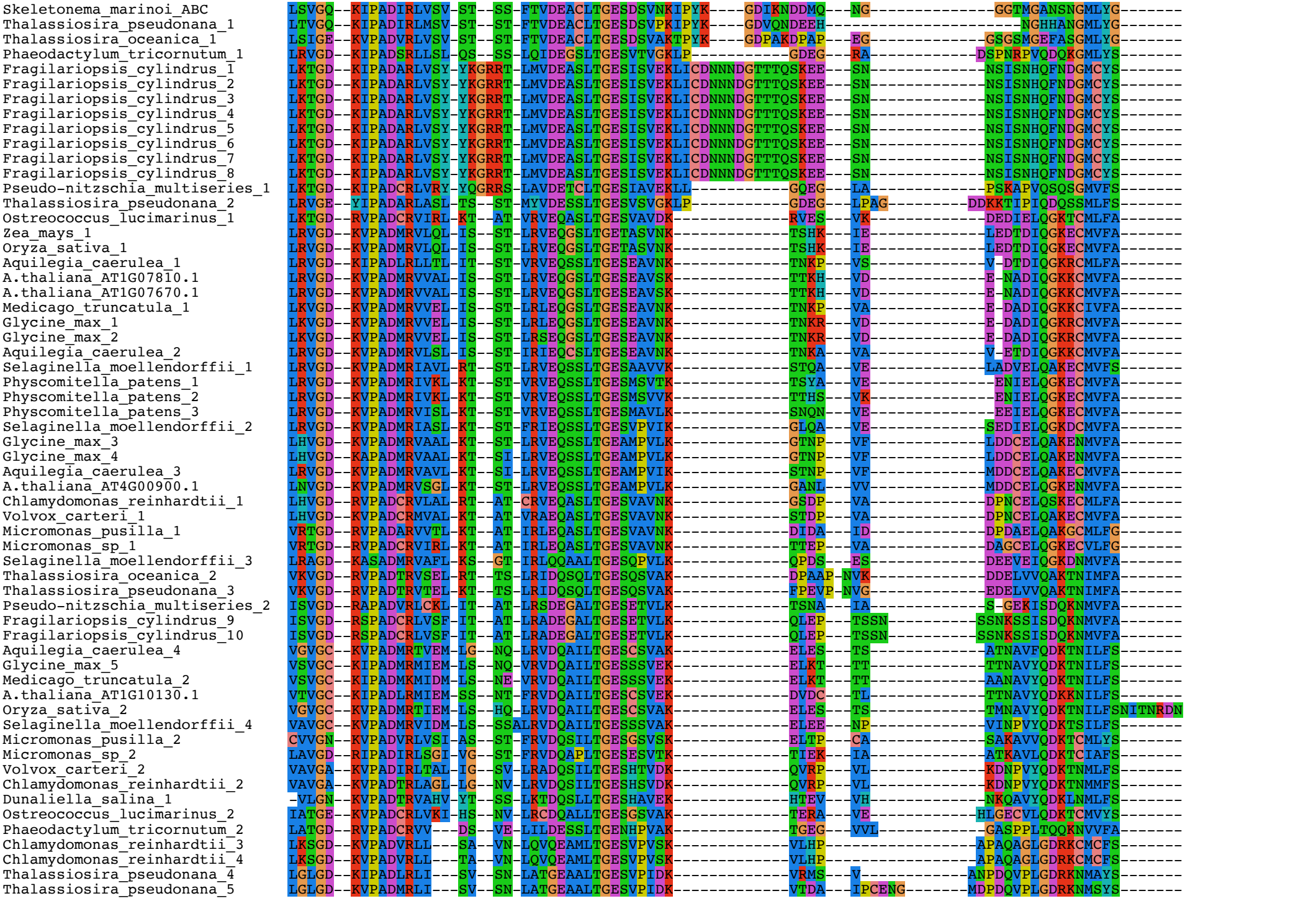
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6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Fragilariopsis_cylindrus_2
Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
Glycine_max_1
Glycine_max_2
Aquilegia_caerulea_2
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Physcomitella_patens_1
Physcomitella_patens_2
Physcomitella_patens_3
Selaginella_moellendorffii_2
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Glycine_max_4
Aquilegia_caerulea_3
A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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Chlamydomonas_reinhardtii_4
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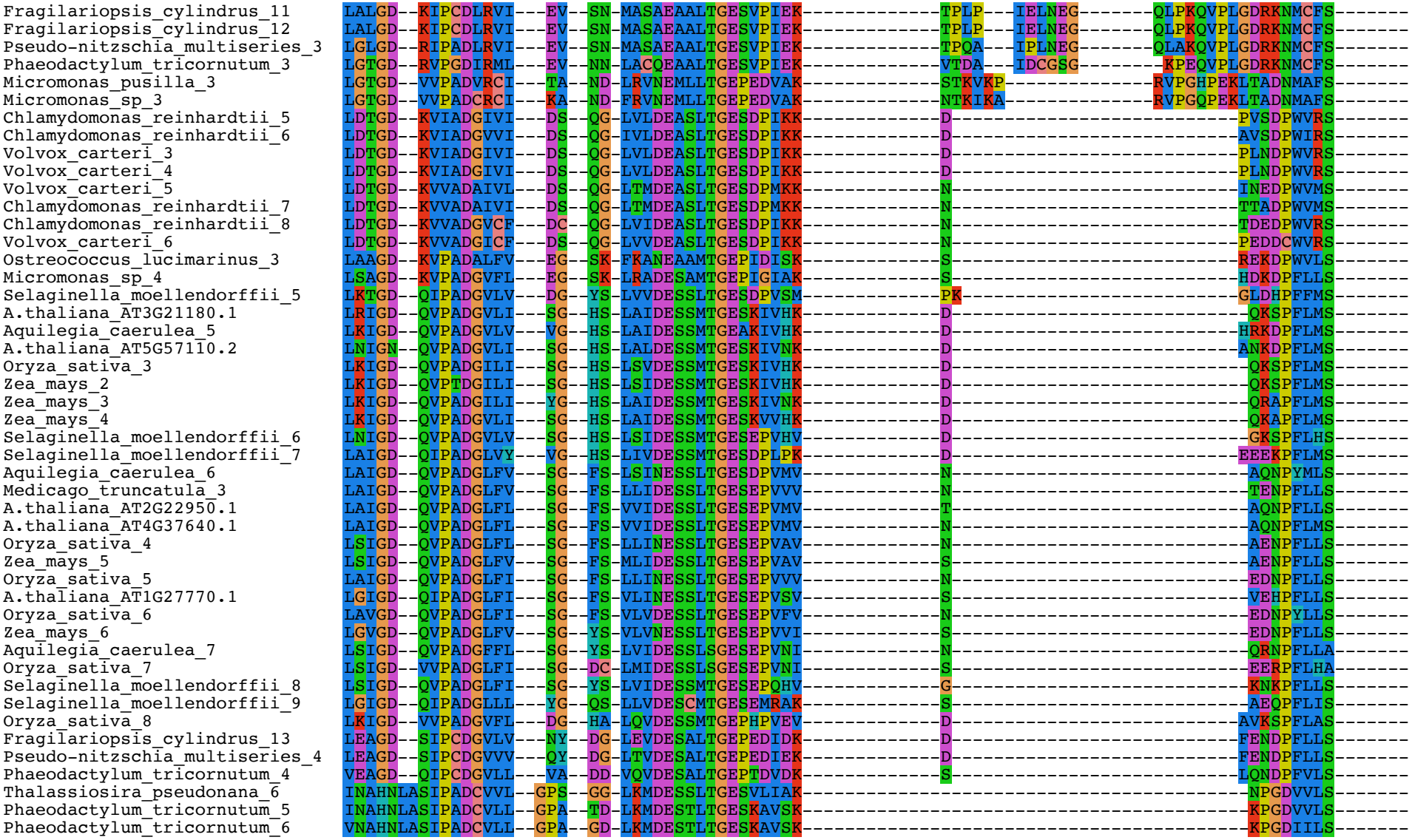
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Fragilariopsis_cylindrus_12
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Phaeodactylum_tricornutum_3
Micromonas_pusilla_3
Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
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A.thaliana_AT5G57110.2
Oryza_sativa_3
Zea_mays_2
Zea_mays_3
Zea_mays_4
Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
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Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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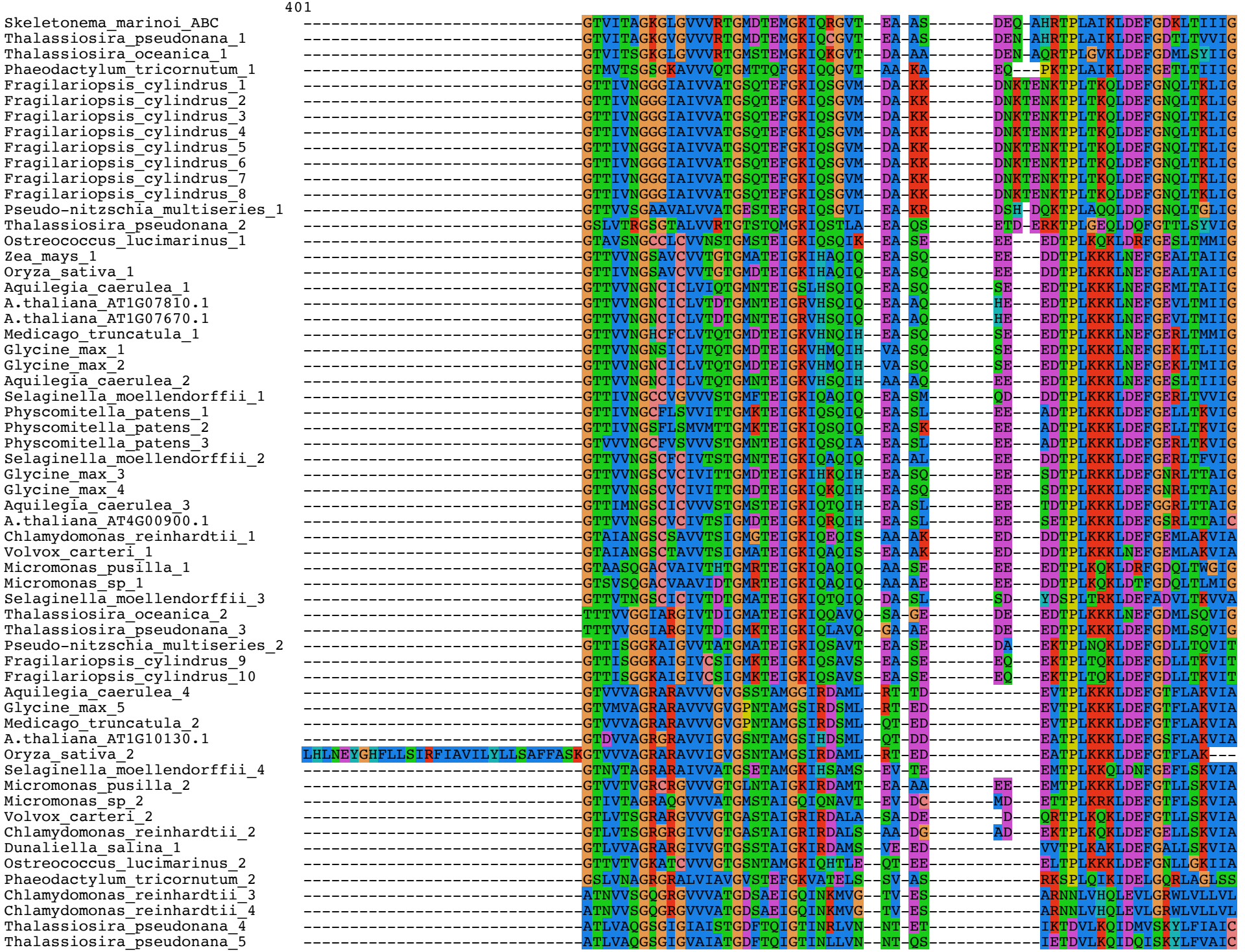
Phaeodactylum_tricornutum_6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Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
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A.thaliana_AT1G07670.1
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Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
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Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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Chlamydomonas_reinhardtii_4
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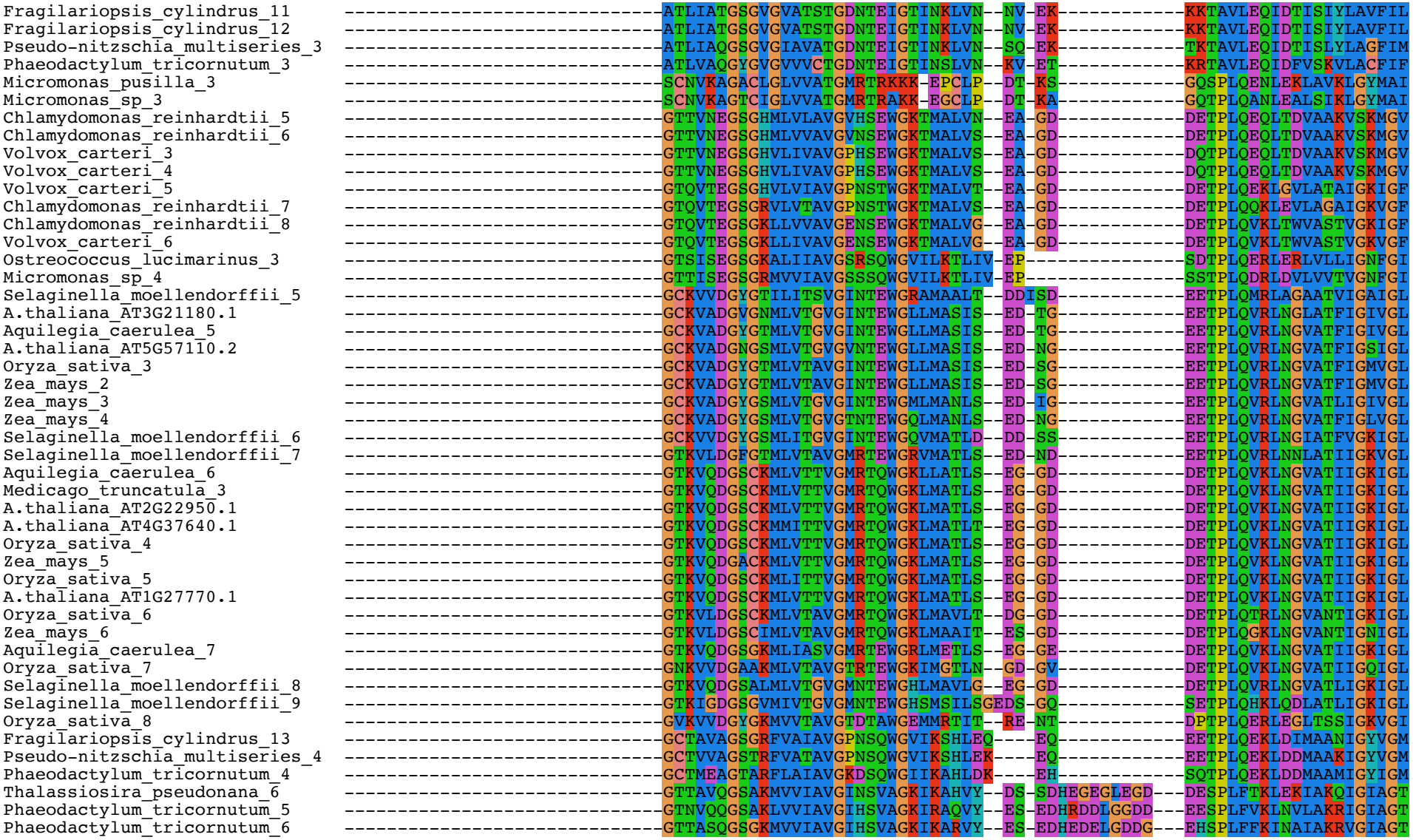
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Micromonas_pusilla_3
Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
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A.thaliana_AT5G57110.2
Oryza_sativa_3
Zea_mays_2
Zea_mays_3
Zea_mays_4
Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
Zea_mays_5
Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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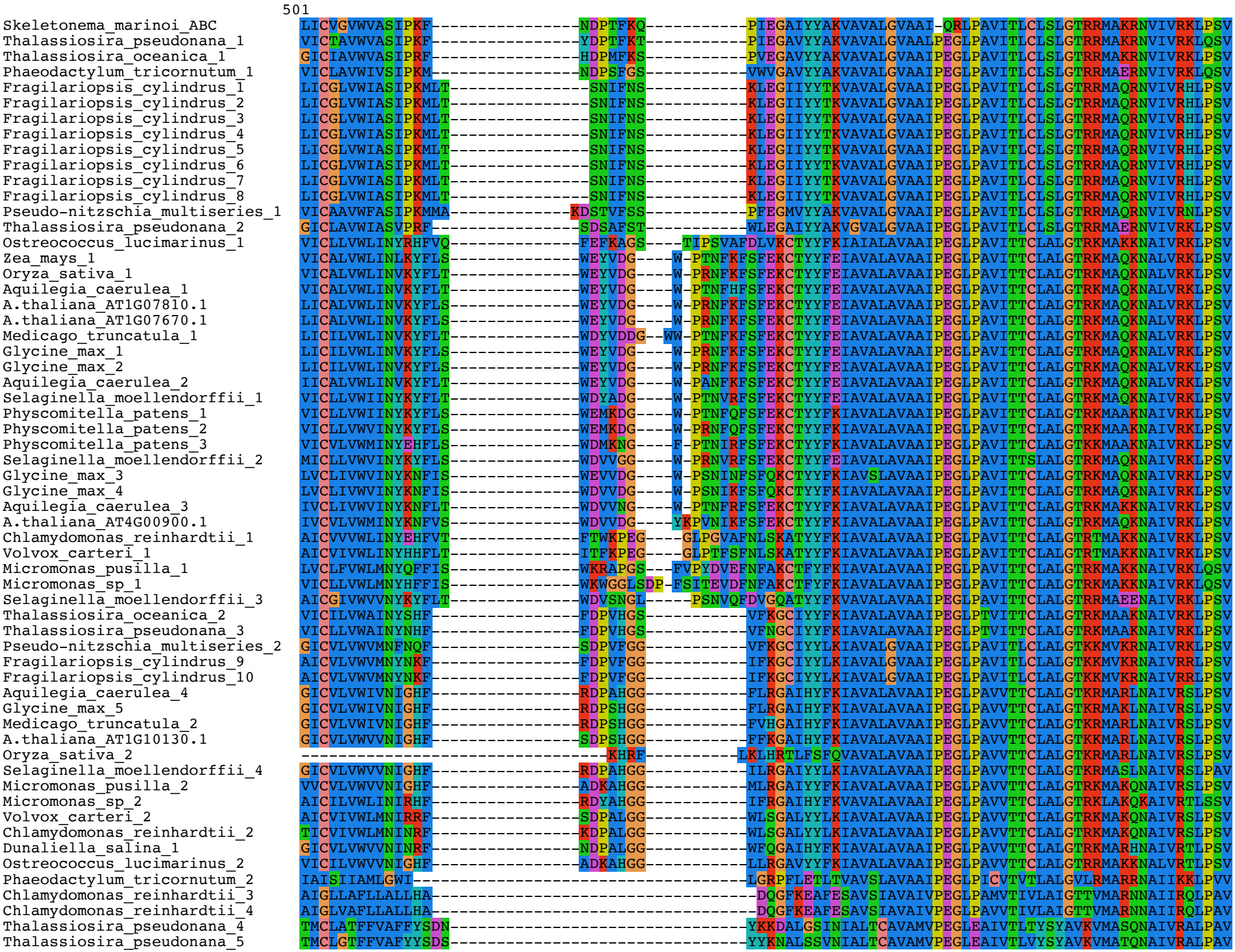
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6


501
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Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
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Glycine_max_2
Aquilegia_caerulea_2
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Micromonas_sp_1
Selaginella_moellendorffii_3
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Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
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Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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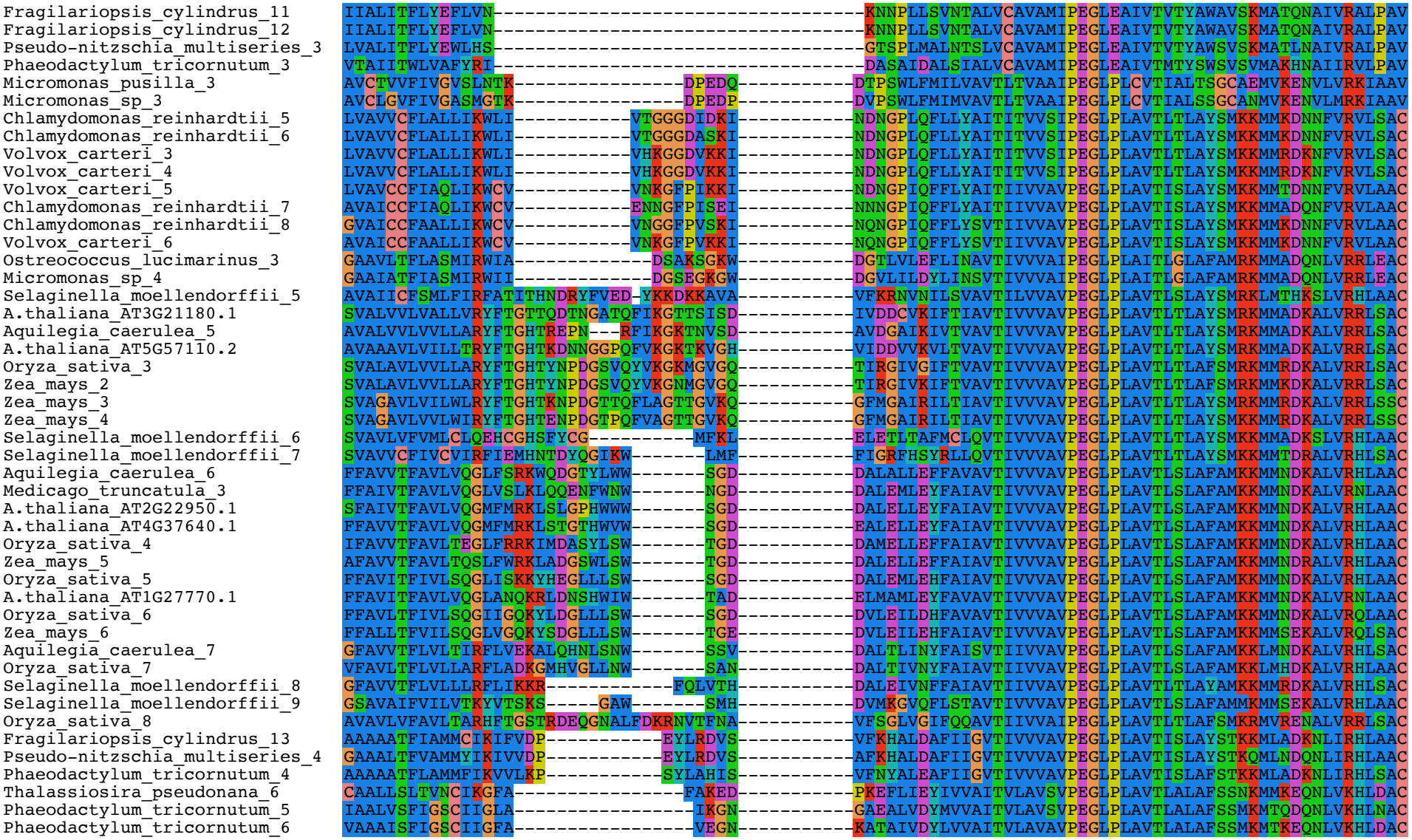
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Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
A.thaliana_AT3G21180.1
Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
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Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
Zea_mays_5
Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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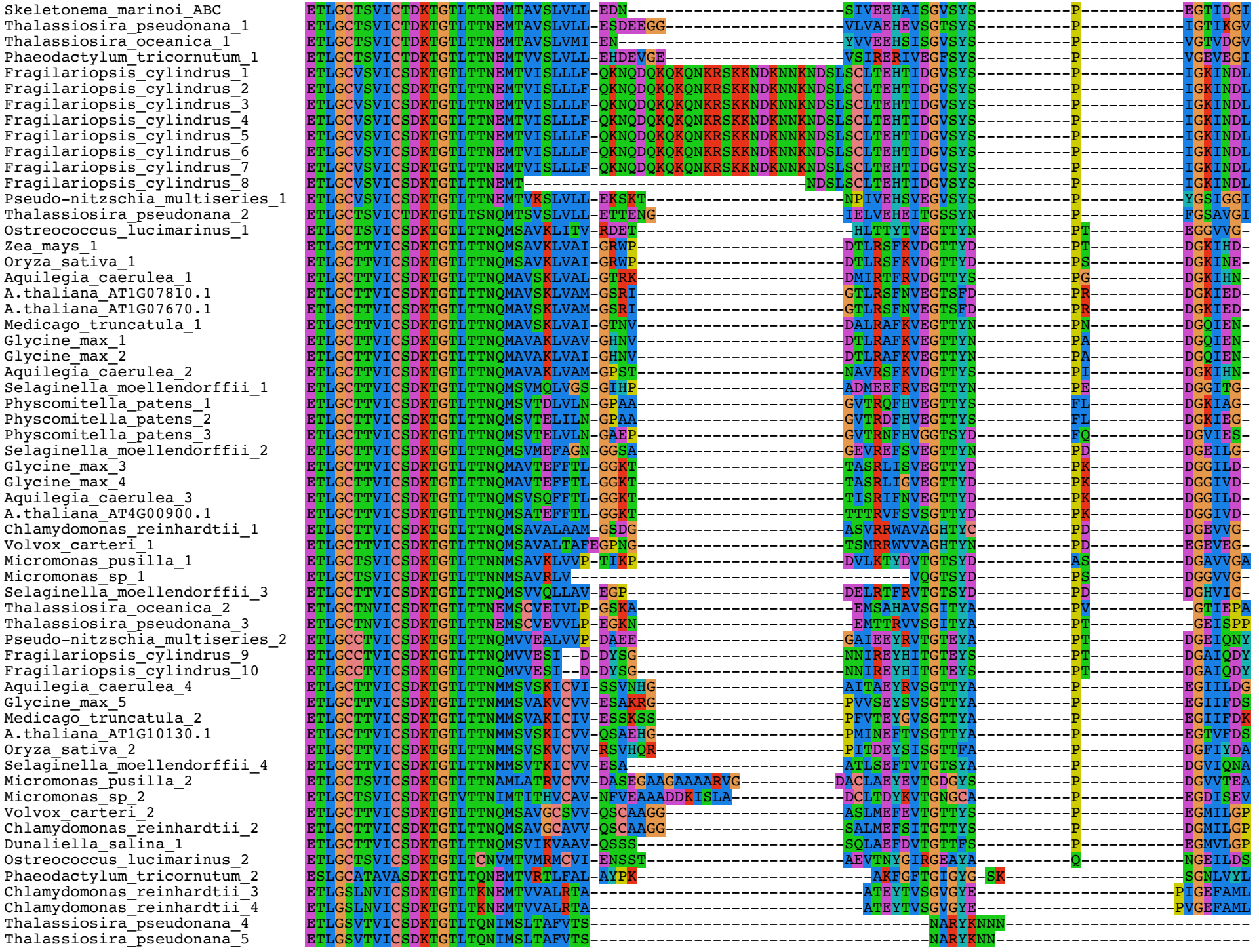
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6


601
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Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
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A.thaliana_AT1G07670.1
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Glycine_max_3
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Chlamydomonas_reinhardtii_1
Volvox_carteri_1
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Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
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Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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Chlamydomonas_reinhardtii_4
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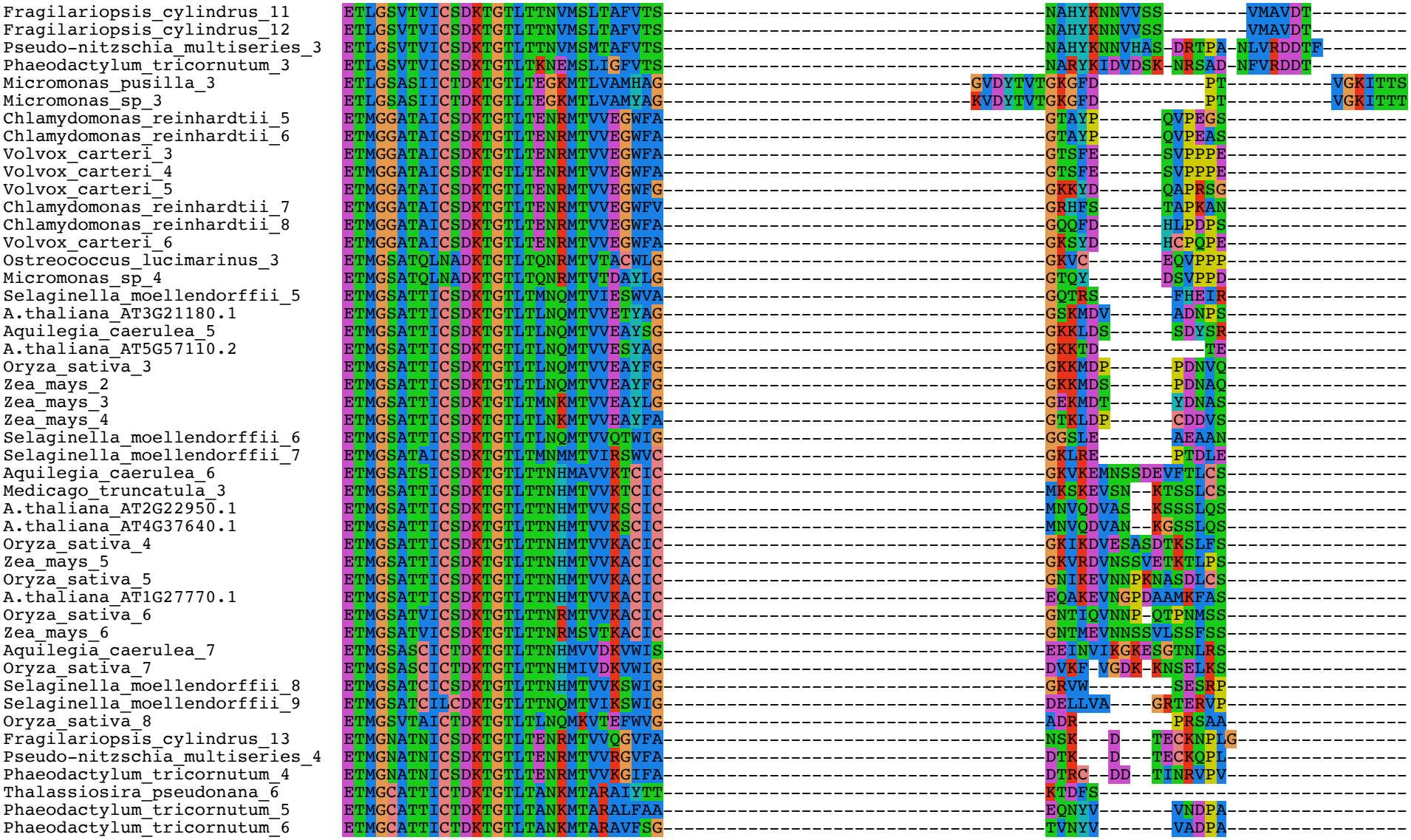
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Micromonas_sp_3
Chlamydomonas_reinhardtii_5
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Volvox_carteri_3
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Volvox_carteri_5
Chlamydomonas_reinhardtii_7
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Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
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Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
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Zea_mays_4
Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
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Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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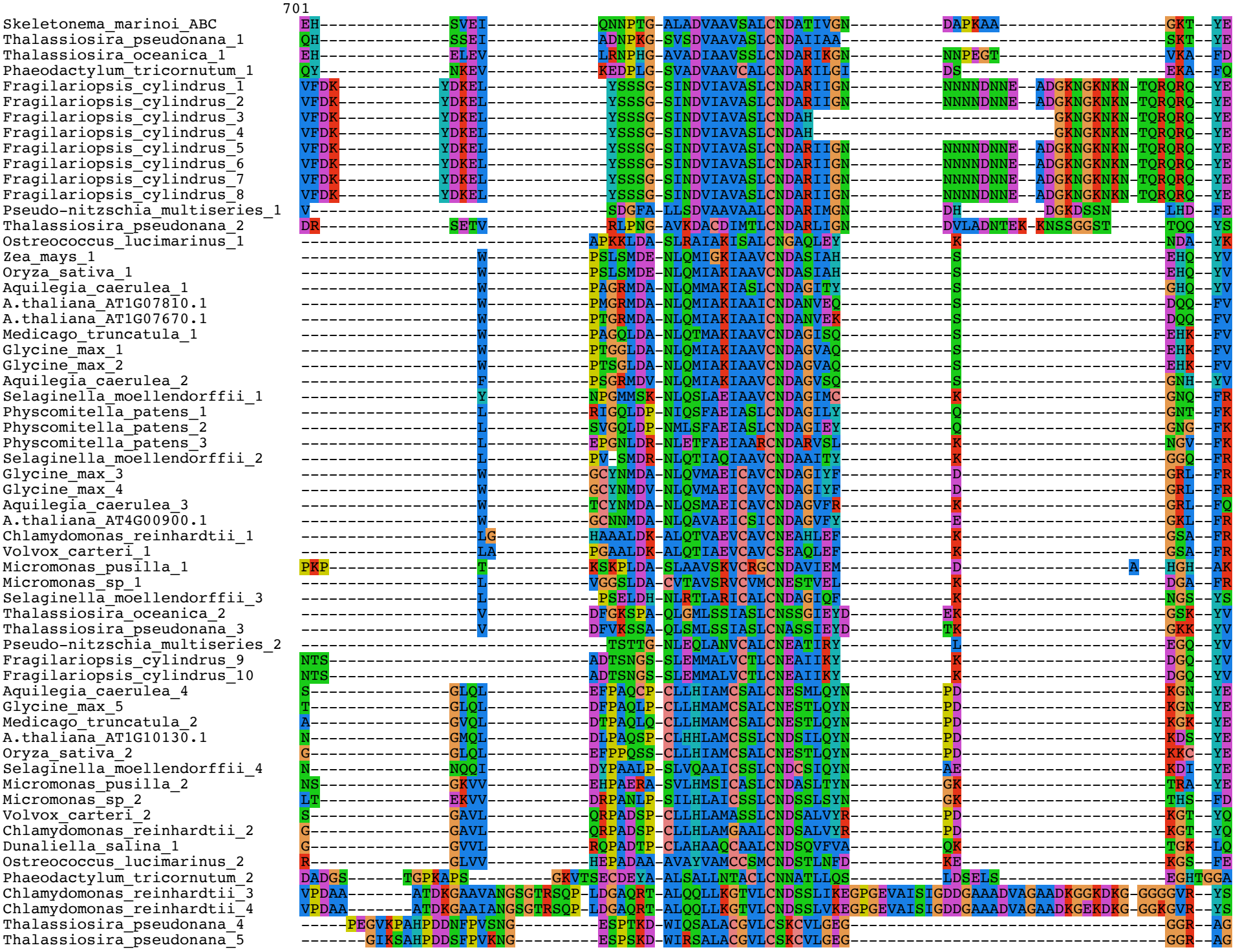
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6


701
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Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
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Glycine_max_2
Aquilegia_caerulea_2
Selaginella_moellendorffii_1
Physcomitella_patens_1
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Physcomitella_patens_3
Selaginella_moellendorffii_2
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A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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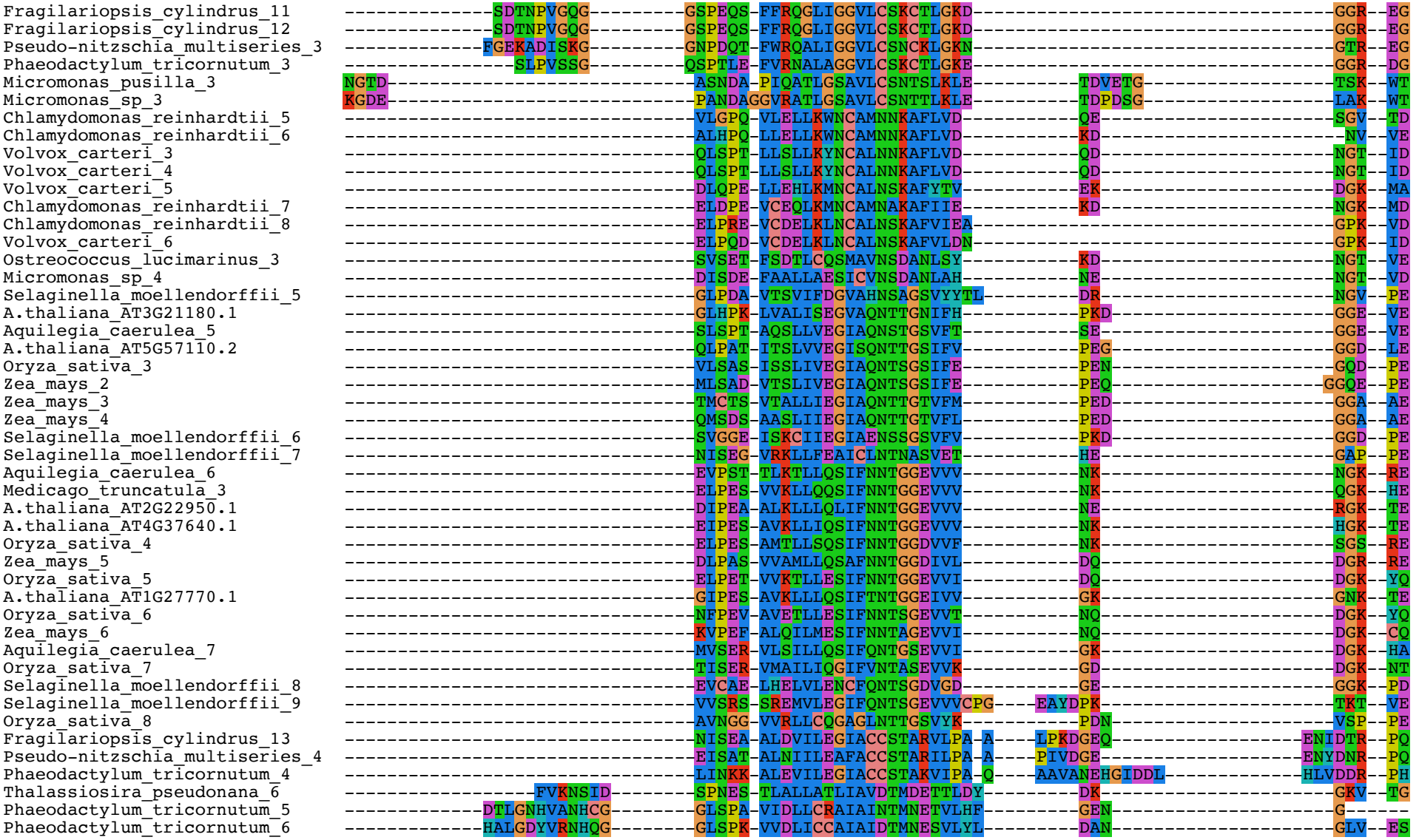
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Micromonas_sp_3
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Volvox_carteri_3
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Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
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Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
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Aquilegia_caerulea_6
Medicago_truncatula_3
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A.thaliana_AT4G37640.1
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A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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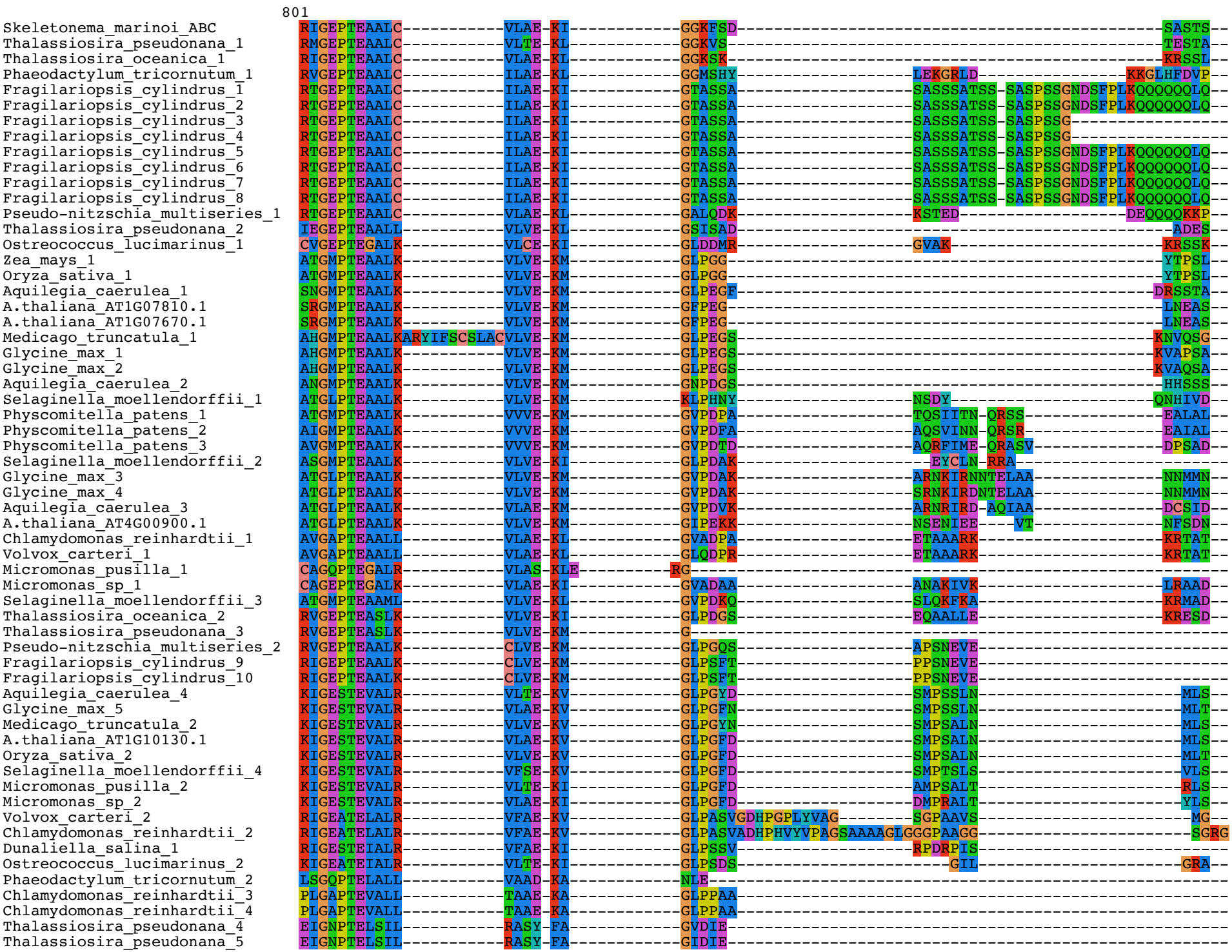
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6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Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
Glycine_max_1
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Aquilegia_caerulea_2
Selaginella_moellendorffii_1
Physcomitella_patens_1
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Physcomitella_patens_3
Selaginella_moellendorffii_2
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Glycine_max_4
Aquilegia_caerulea_3
A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
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Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
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Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
Chlamydomonas_reinhardtii_3
Chlamydomonas_reinhardtii_4
Thalassiosira_pseudonana_4
Thalassiosira_pseudonana_5


Fragilariopsis_cylindrus_11
Fragilariopsis_cylindrus_12
Pseudo-nitzschia_multiseries_3
Phaeodactylum_tricornutum_3
Micromonas_pusilla_3
Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
A.thaliana_AT3G21180.1
Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
Zea_mays_2
Zea_mays_3
Zea_mays_4
Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
Zea_mays_5
Oryza_sativa_5
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Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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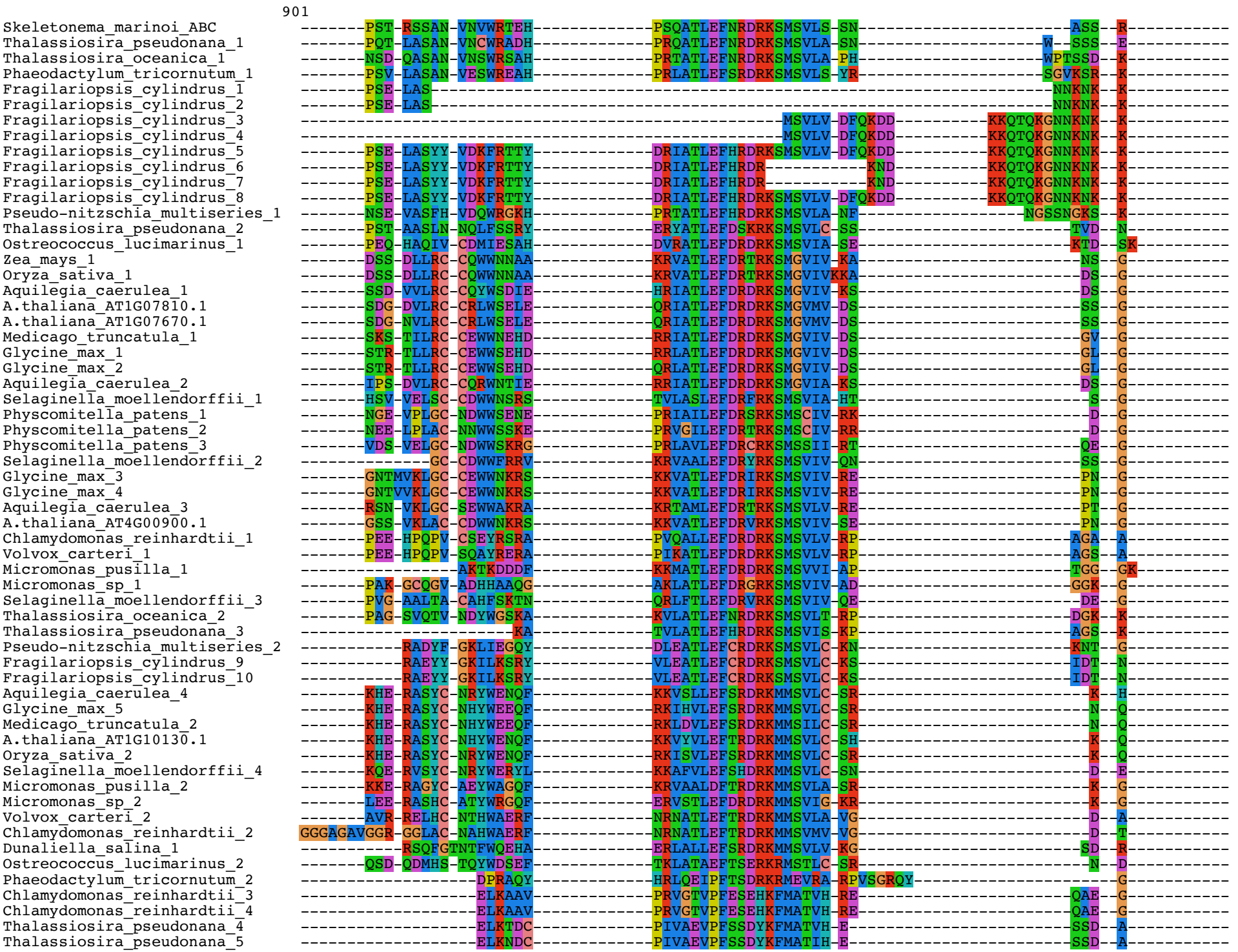
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Fragilariopsis_cylindrus_2
Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
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Glycine_max_2
Aquilegia_caerulea_2
Selaginella_moellendorffii_1
Physcomitella_patens_1
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Physcomitella_patens_3
Selaginella_moellendorffii_2
Glycine_max_3
Glycine_max_4
Aquilegia_caerulea_3
A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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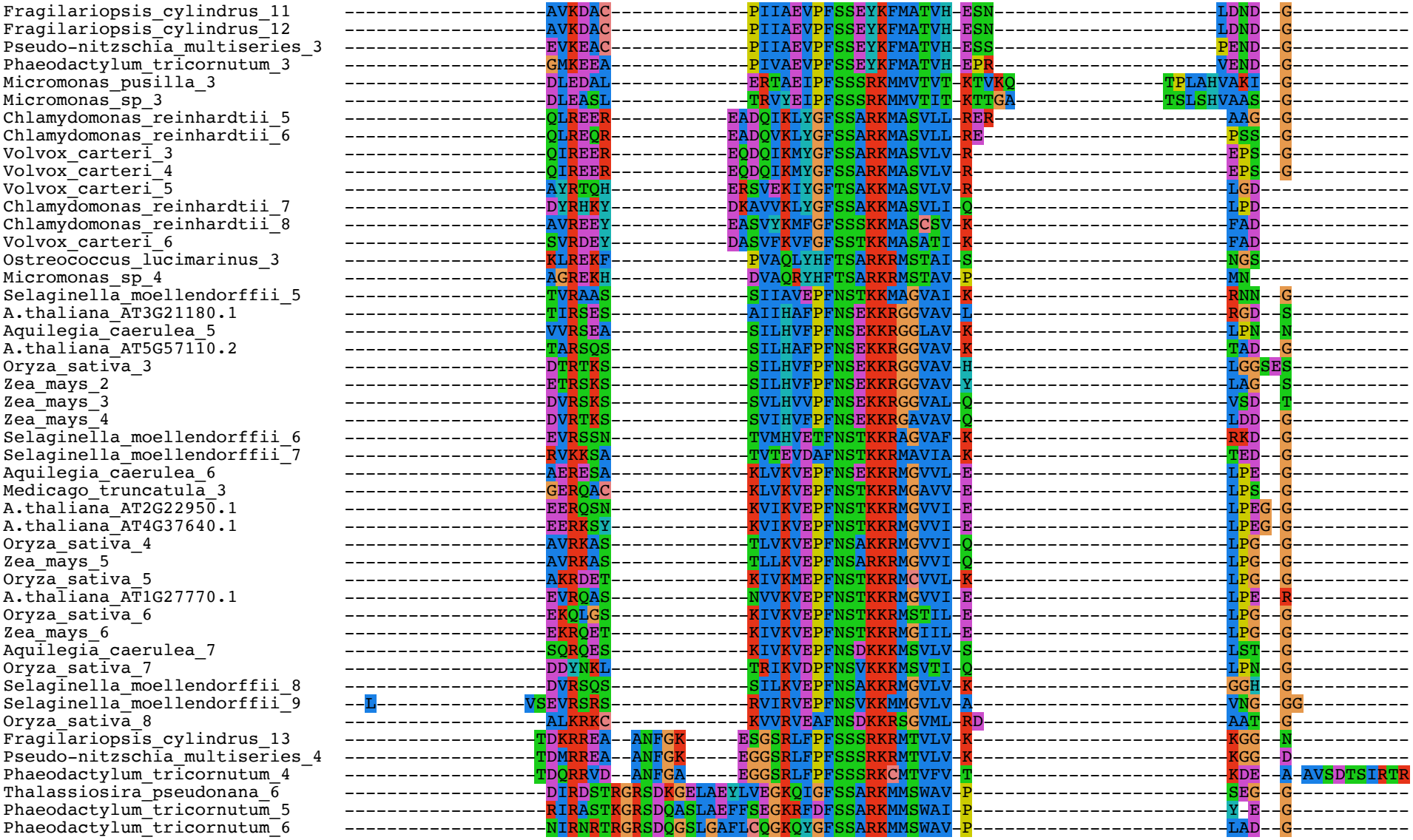
Chlamydomonas_reinhardtii_4
Thalassiosira_pseudonana_4
Thalassiosira_pseudonana_5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Fragilariopsis_cylindrus_12
Pseudo-nitzschia_multiseries_3
Phaeodactylum_tricornutum_3
Micromonas_pusilla_3
Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
A.thaliana_AT3G21180.1
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A.thaliana_AT5G57110.2
Oryza_sativa_3
Zea_mays_2
Zea_mays_3
Zea_mays_4
Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
Zea_mays_5
Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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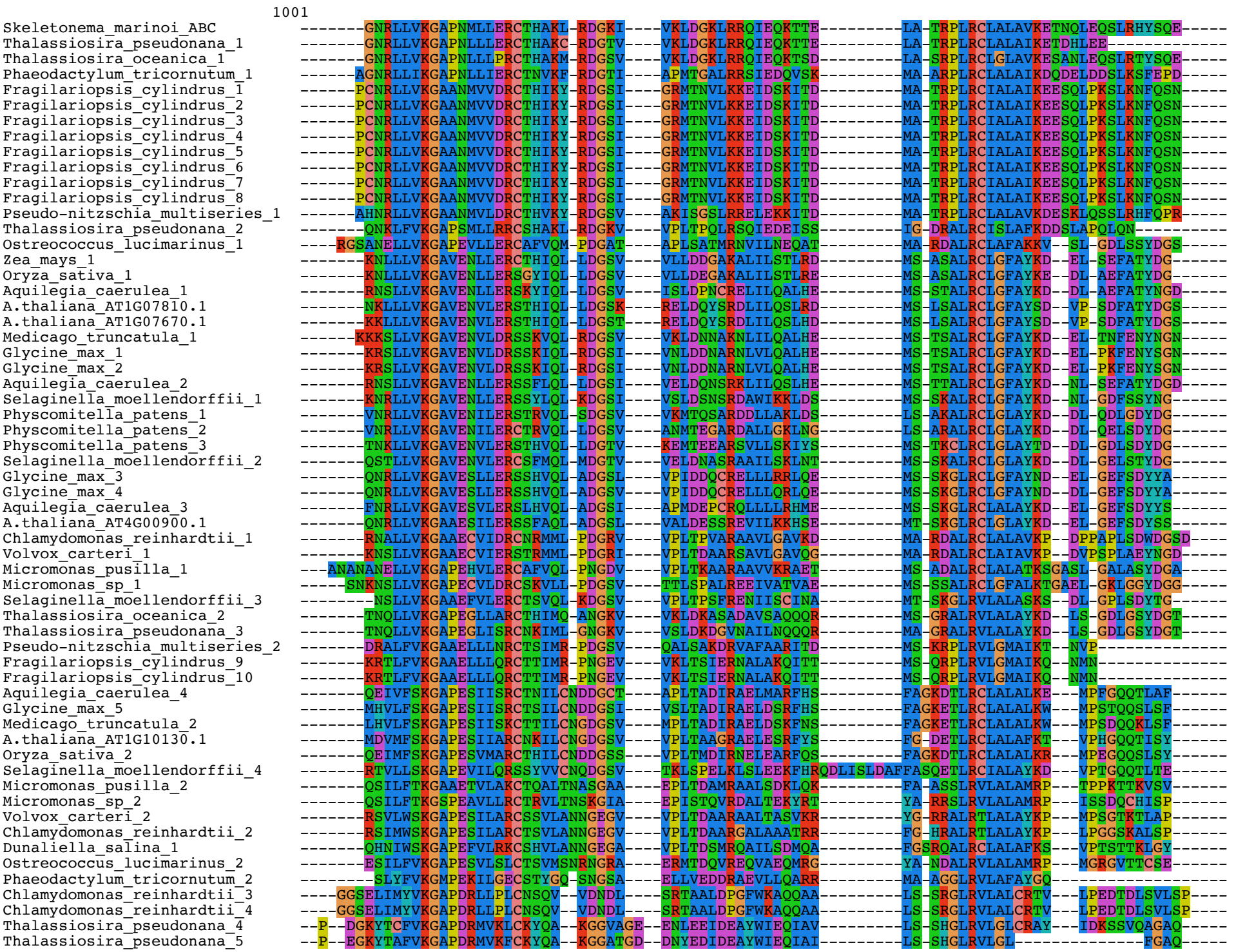
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6


1001
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Thalassiosira_oceanica_1
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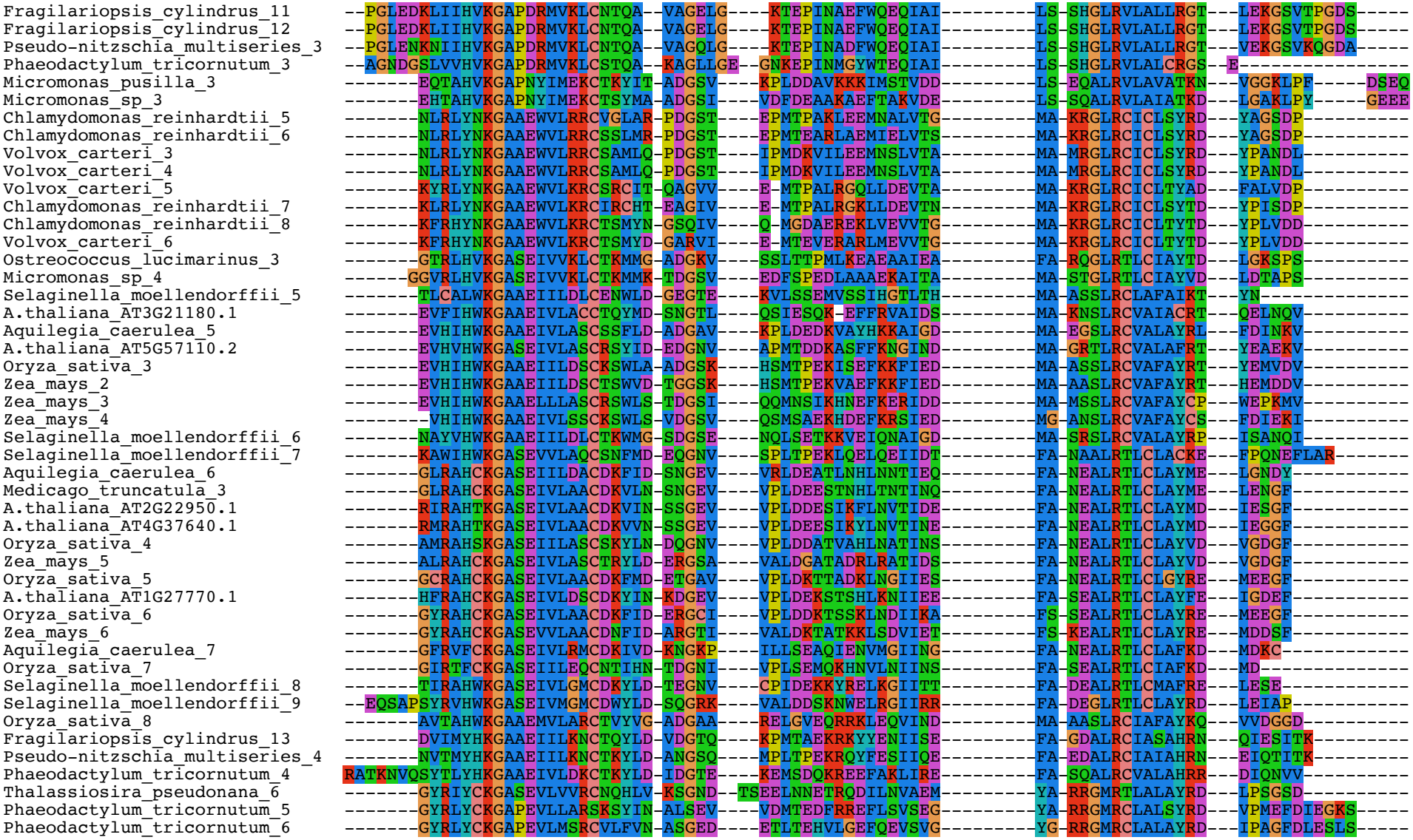
Fragilariopsis_cylindrus_2
Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
Glycine_max_1
Glycine_max_2
Aquilegia_caerulea_2
Selaginella_moellendorffii_1
Physcomitella_patens_1
Physcomitella_patens_2
Physcomitella_patens_3
Selaginella_moellendorffii_2
Glycine_max_3
Glycine_max_4
Aquilegia_caerulea_3
A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
Chlamydomonas_reinhardtii_3
Chlamydomonas_reinhardtii_4
Thalassiosira_pseudonana_4
Thalassiosira_pseudonana_5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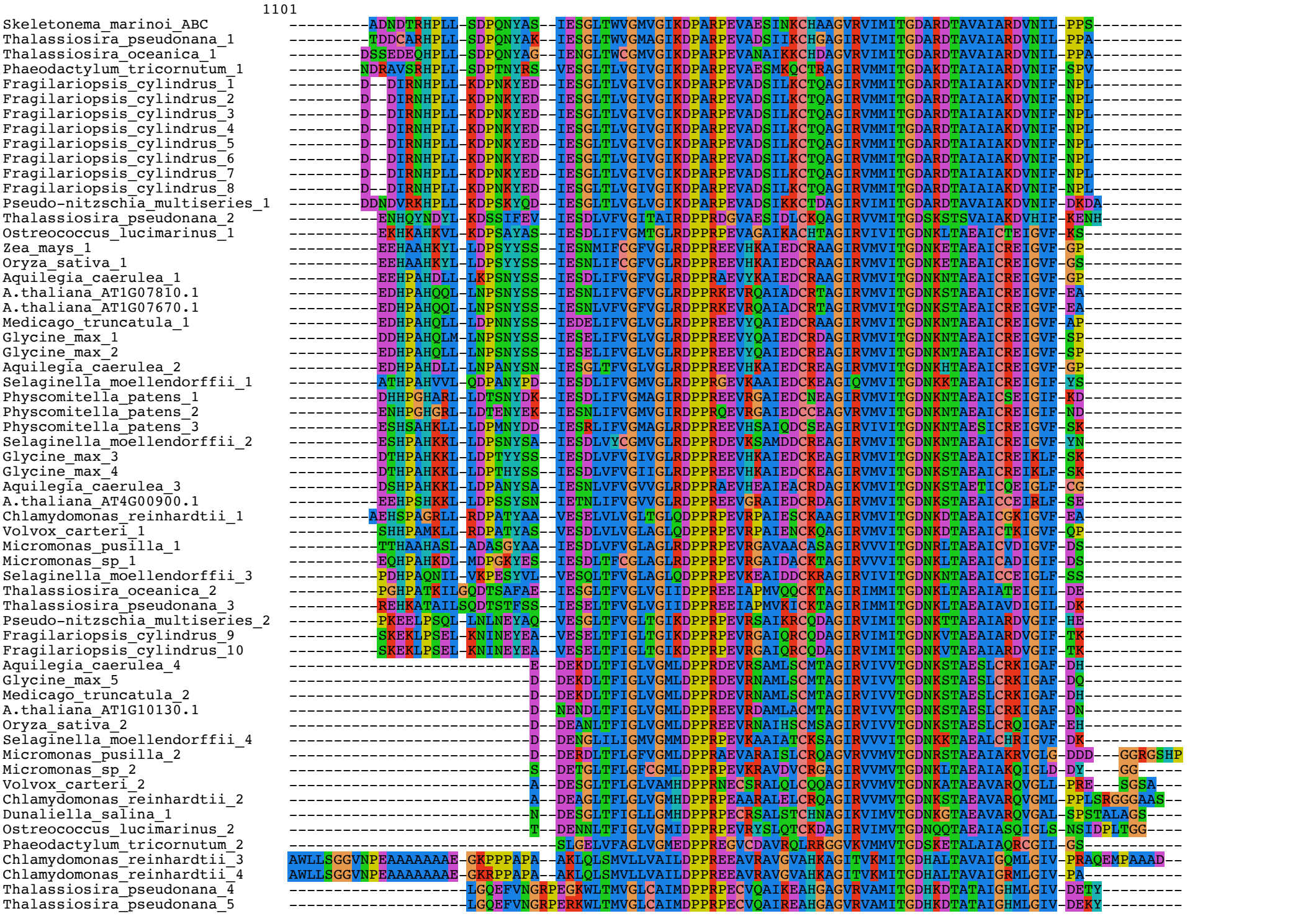
Fragilariopsis_cylindrus_12
Pseudo-nitzschia_multiseries_3
Phaeodactylum_tricornutum_3
Micromonas_pusilla_3
Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
A.thaliana_AT3G21180.1
Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
Zea_mays_2
Zea_mays_3
Zea_mays_4
Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
Zea_mays_5
Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
Phaeodactylum_tricornutum_4
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6


1101
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Phaeodactylum_tricornutum_1
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Fragilariopsis_cylindrus_2
Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
Glycine_max_1
Glycine_max_2
Aquilegia_caerulea_2
Selaginella_moellendorffii_1
Physcomitella_patens_1
Physcomitella_patens_2
Physcomitella_patens_3
Selaginella_moellendorffii_2
Glycine_max_3
Glycine_max_4
Aquilegia_caerulea_3
A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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Chlamydomonas_reinhardtii_4
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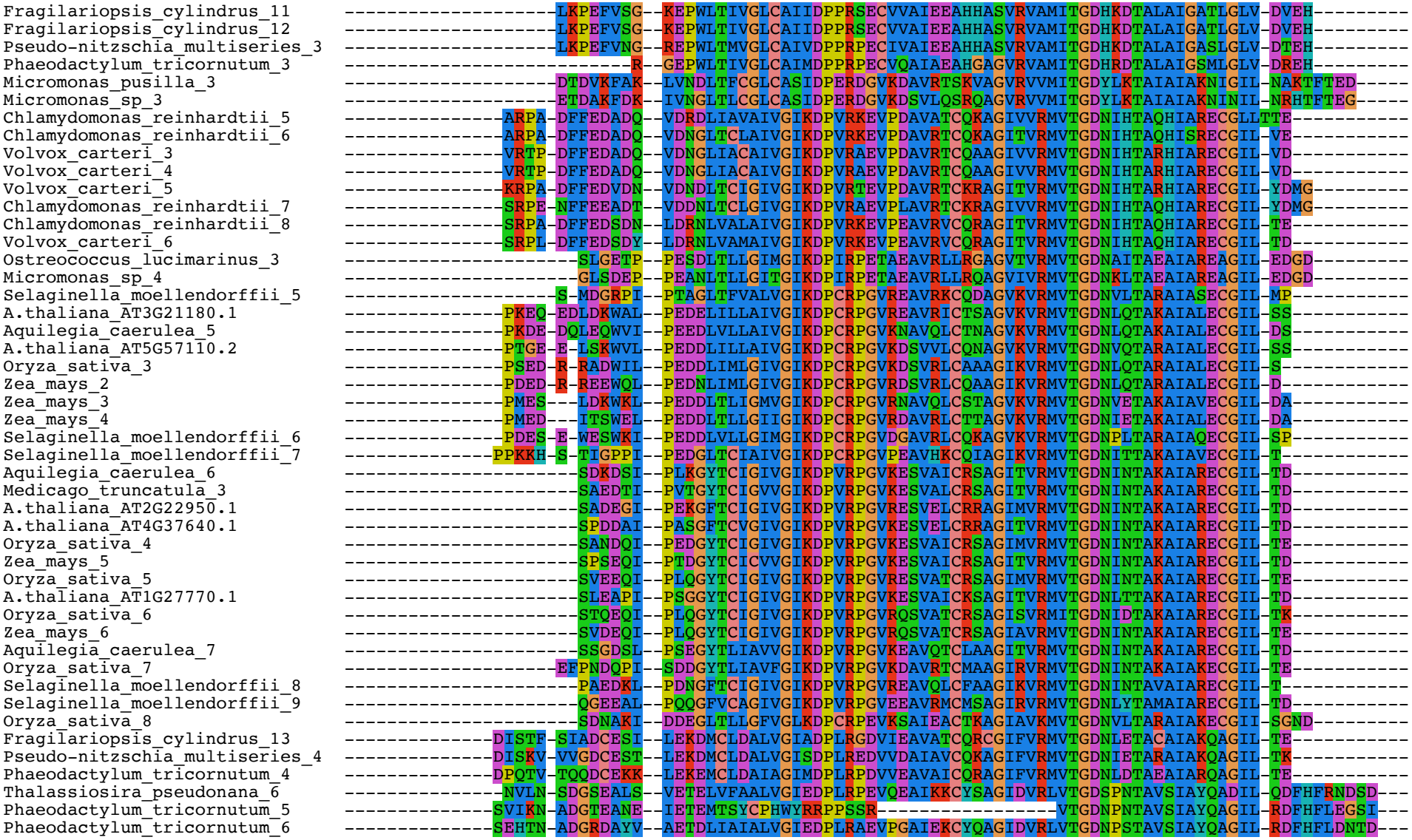
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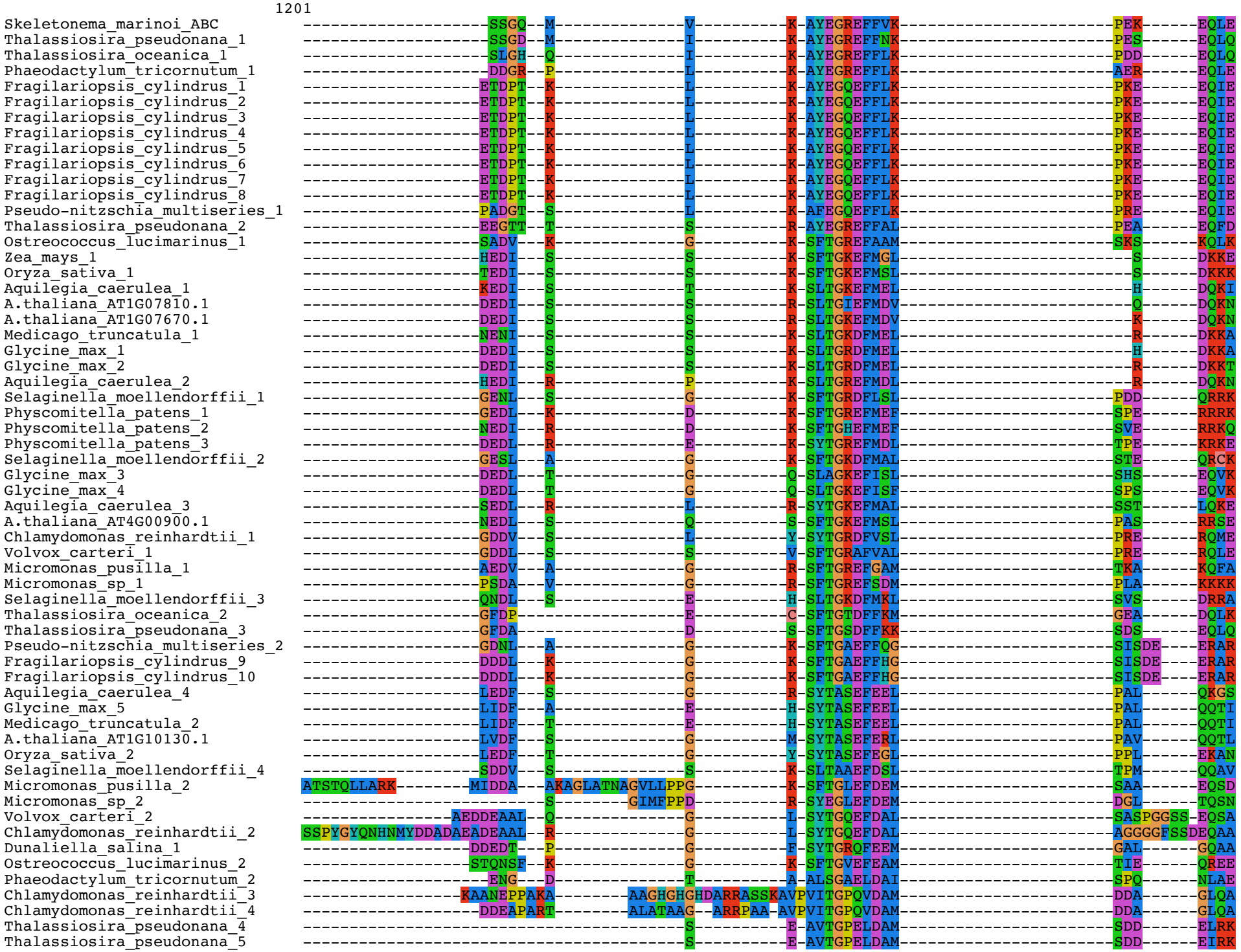
Fragilariopsis_cylindrus_12
Pseudo-nitzschia_multiseries_3
Phaeodactylum_tricornutum_3
Micromonas_pusilla_3
Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
A.thaliana_AT3G21180.1
Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
Zea_mays_2
Zea_mays_3
Zea_mays_4
Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
Zea_mays_5
Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
Phaeodactylum_tricornutum_4
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6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Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
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Glycine_max_2
Aquilegia_caerulea_2
Selaginella_moellendorffii_1
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Selaginella_moellendorffii_2
Glycine_max_3
Glycine_max_4
Aquilegia_caerulea_3
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Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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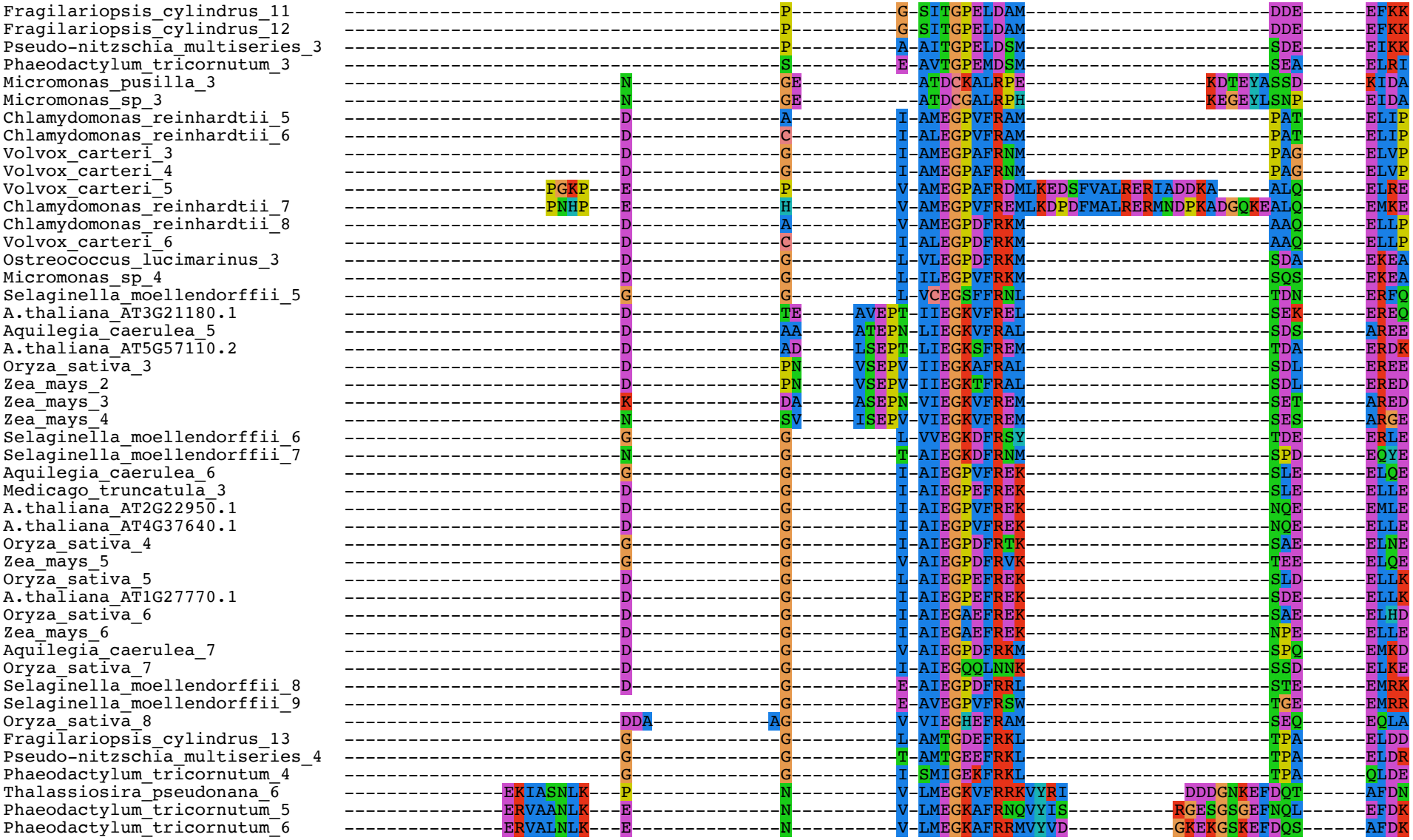
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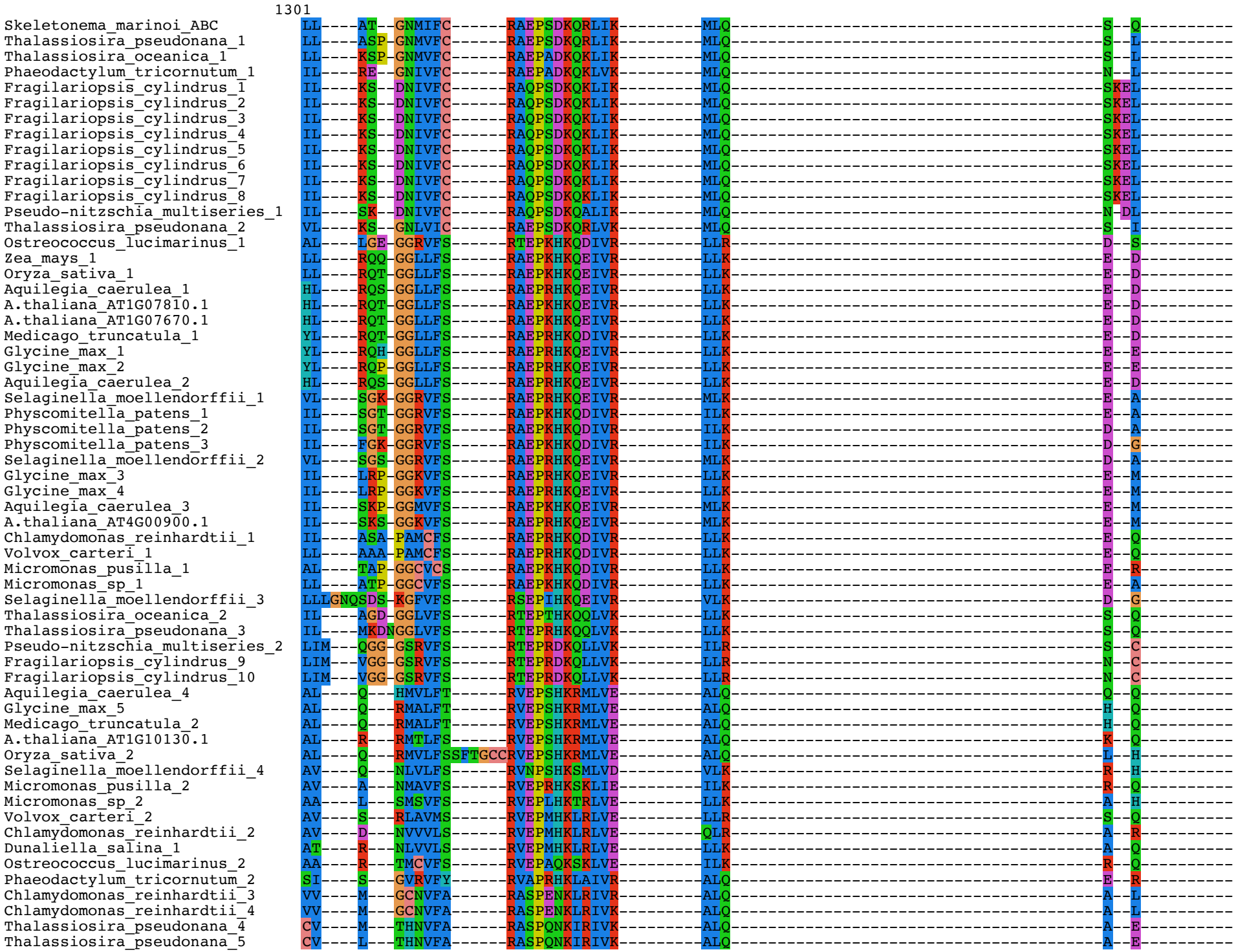
Pseudo-nitzschia_multiseries_3
Phaeodactylum_tricornutum_3
Micromonas_pusilla_3
Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
A.thaliana_AT3G21180.1
Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
Zea_mays_2
Zea_mays_3
Zea_mays_4
Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
Zea_mays_5
Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
Phaeodactylum_tricornutum_4
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6


1301
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Phaeodactylum_tricornutum_1
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Fragilariopsis_cylindrus_2
Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
Glycine_max_1
Glycine_max_2
Aquilegia_caerulea_2
Selaginella_moellendorffii_1
Physcomitella_patens_1
Physcomitella_patens_2
Physcomitella_patens_3
Selaginella_moellendorffii_2
Glycine_max_3
Glycine_max_4
Aquilegia_caerulea_3
A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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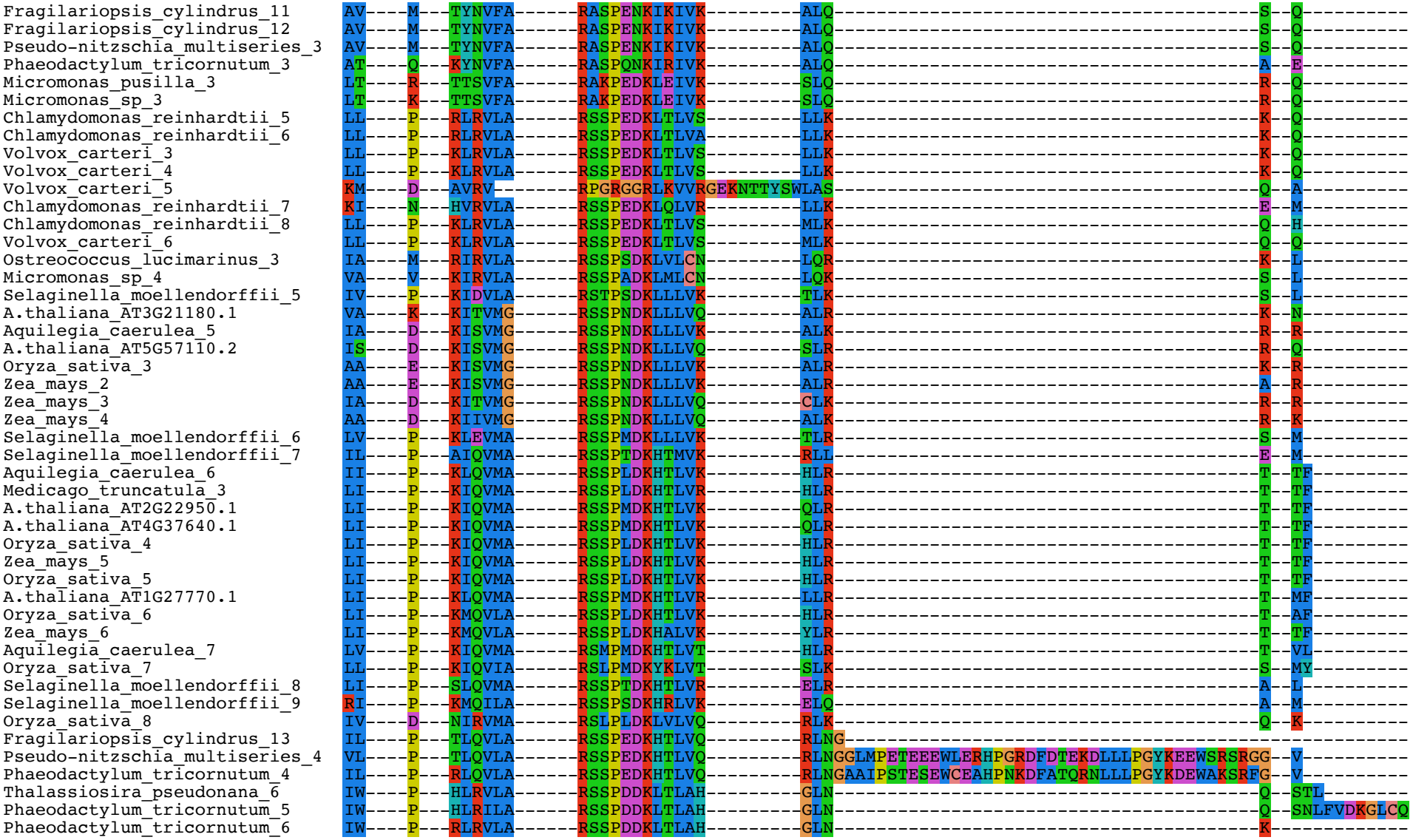
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Fragilariopsis_cylindrus_12
Pseudo-nitzschia_multiseries_3
Phaeodactylum_tricornutum_3
Micromonas_pusilla_3
Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
A.thaliana_AT3G21180.1
Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
Zea_mays_2
Zea_mays_3
Zea_mays_4
Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
Zea_mays_5
Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
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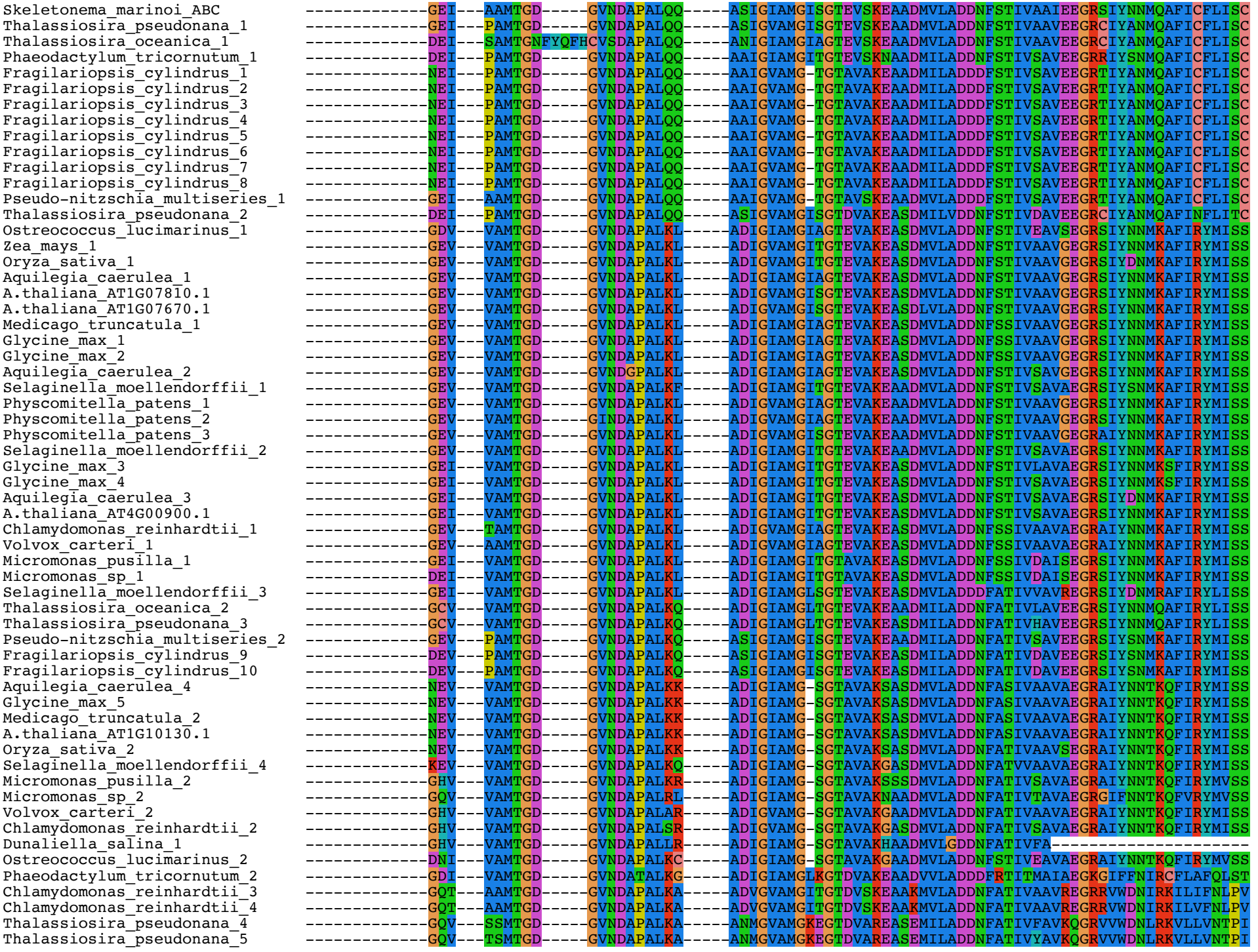
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Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
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A.thaliana_AT1G07670.1
Medicago_truncatula_1
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Glycine_max_2
Aquilegia_caerulea_2
Selaginella_moellendorffii_1
Physcomitella_patens_1
Physcomitella_patens_2
Physcomitella_patens_3
Selaginella_moellendorffii_2
Glycine_max_3
Glycine_max_4
Aquilegia_caerulea_3
A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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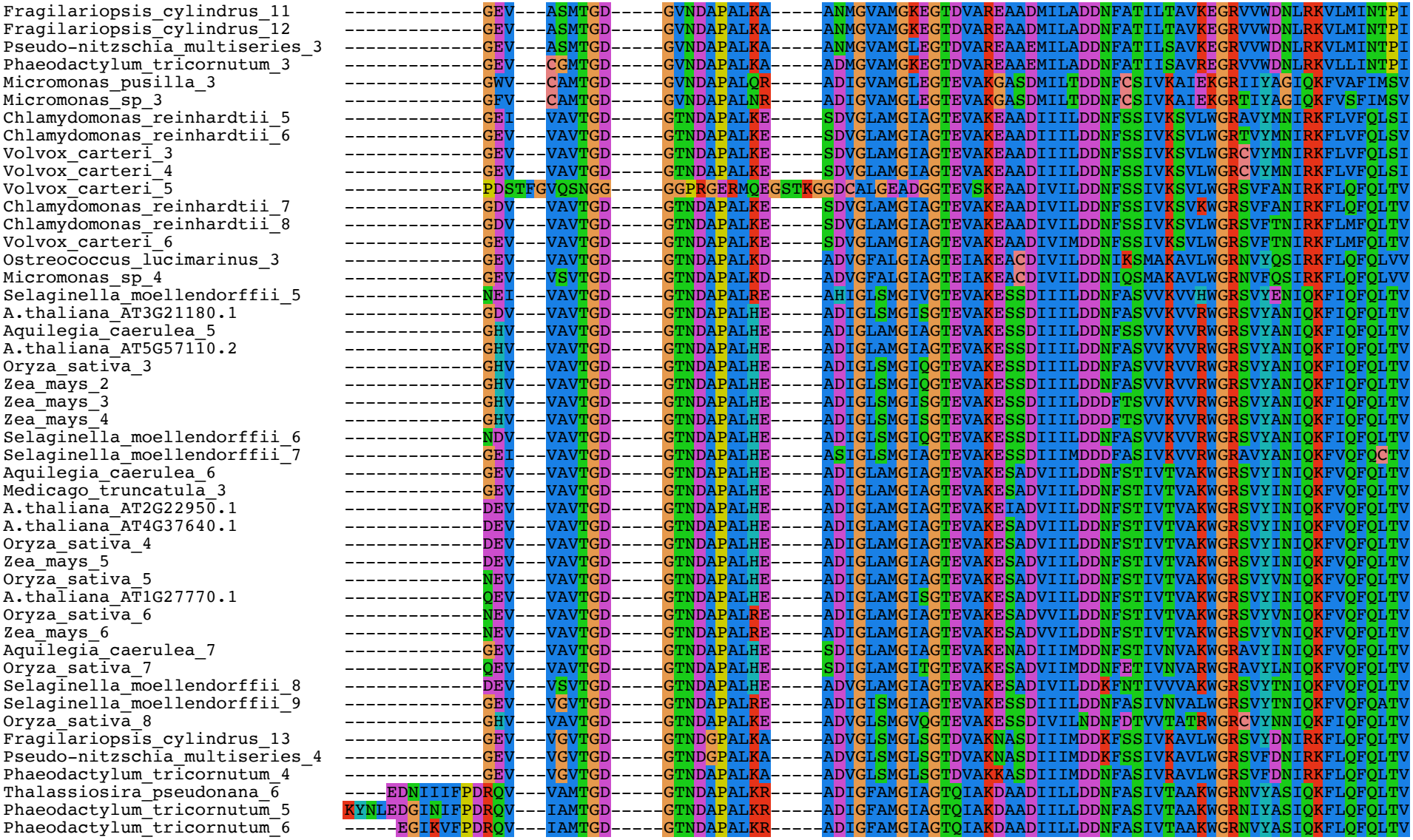
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Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
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Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
Zea_mays_2
Zea_mays_3
Zea_mays_4
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Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
Zea_mays_5
Oryza_sativa_5
A.thaliana_AT1G27770.1
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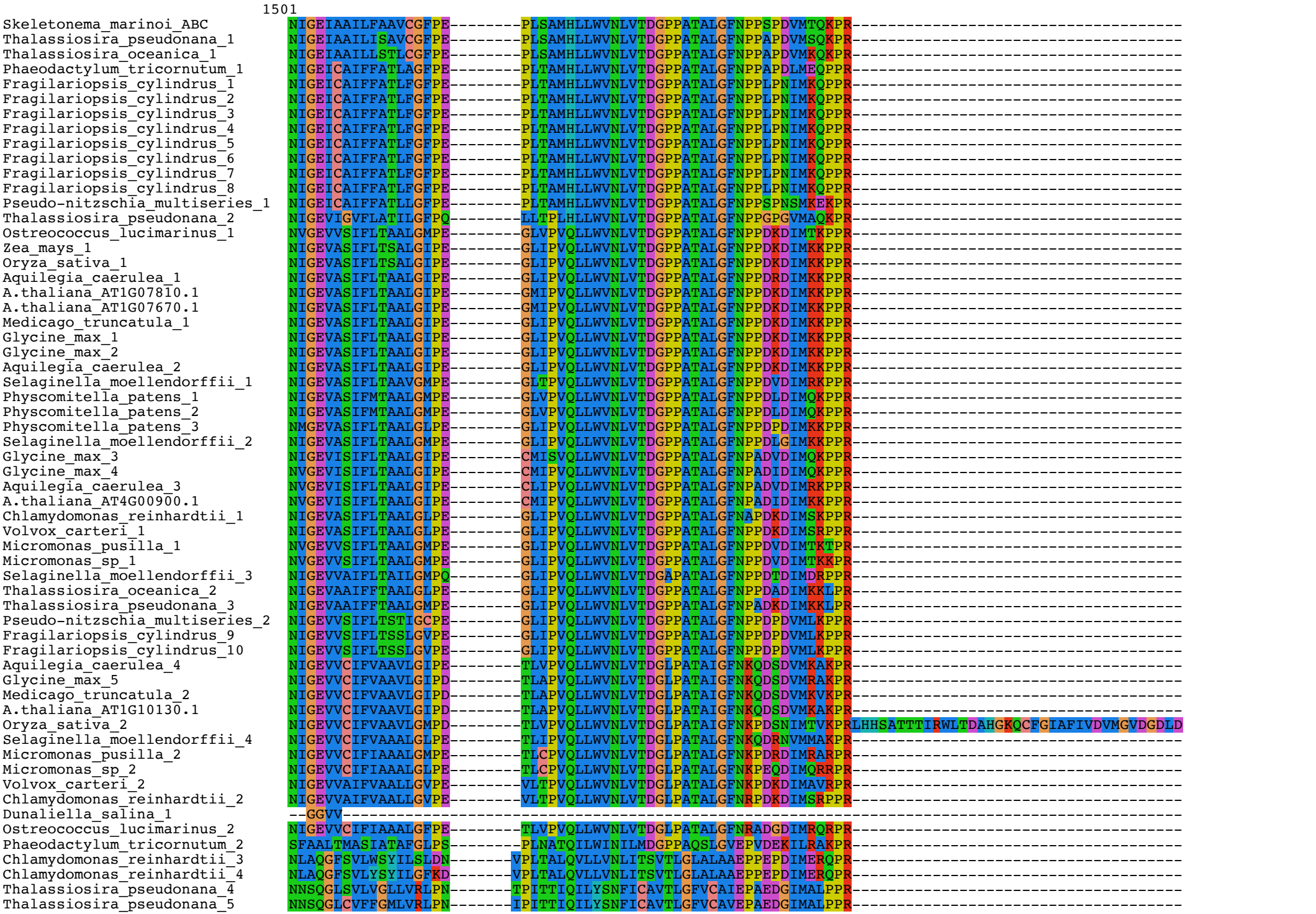
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
Phaeodactylum_tricornutum_4
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6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Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
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A.thaliana_AT1G07670.1
Medicago_truncatula_1
Glycine_max_1
Glycine_max_2
Aquilegia_caerulea_2
Selaginella_moellendorffii_1
Physcomitella_patens_1
Physcomitella_patens_2
Physcomitella_patens_3
Selaginella_moellendorffii_2
Glycine_max_3
Glycine_max_4
Aquilegia_caerulea_3
A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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Chlamydomonas_reinhardtii_4
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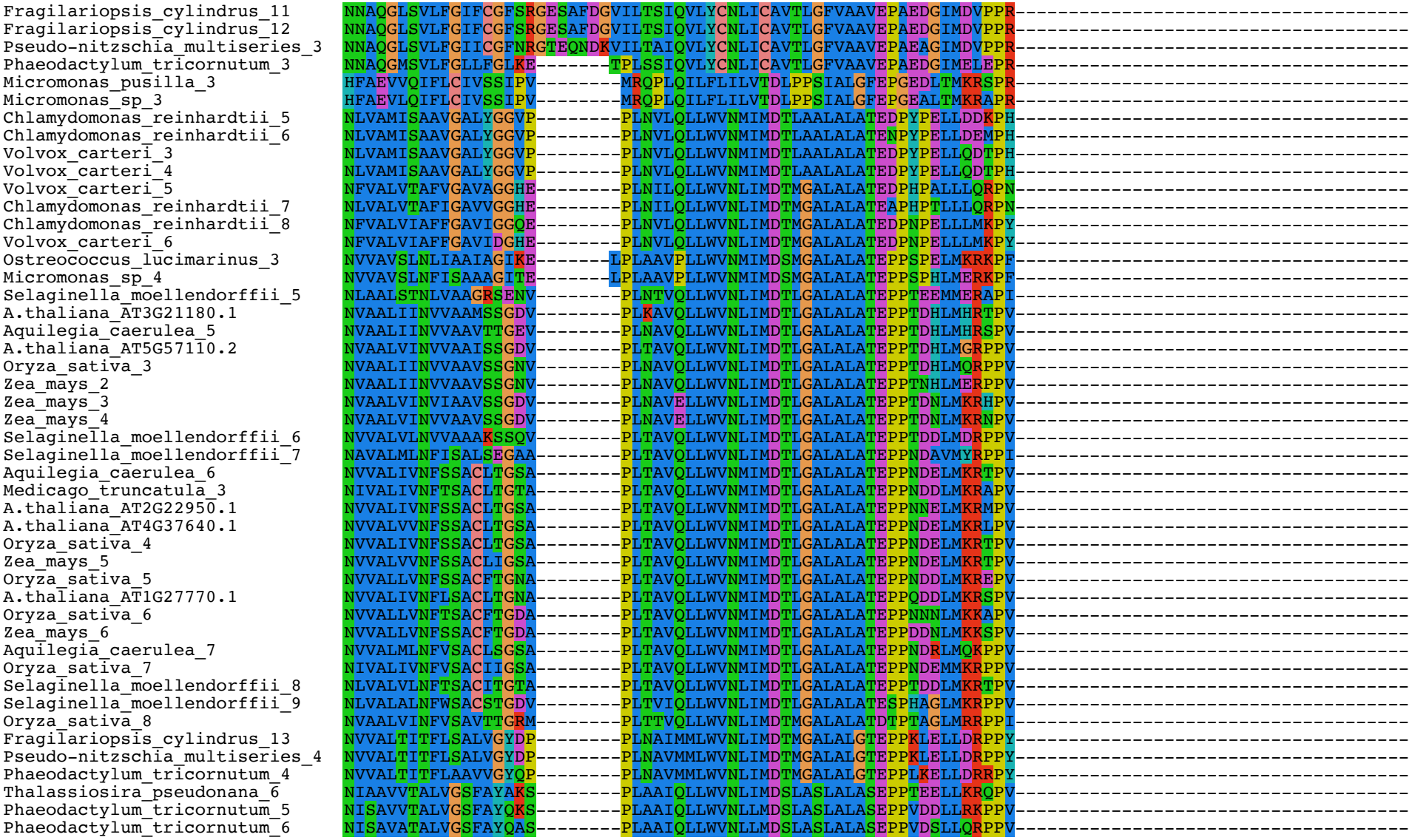
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Fragilariopsis_cylindrus_12
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Phaeodactylum_tricornutum_3
Micromonas_pusilla_3
Micromonas_sp_3
Chlamydomonas_reinhardtii_5
Chlamydomonas_reinhardtii_6
Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
Chlamydomonas_reinhardtii_8
Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
A.thaliana_AT3G21180.1
Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
Zea_mays_2
Zea_mays_3
Zea_mays_4
Selaginella_moellendorffii_6
Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
A.thaliana_AT2G22950.1
A.thaliana_AT4G37640.1
Oryza_sativa_4
Zea_mays_5
Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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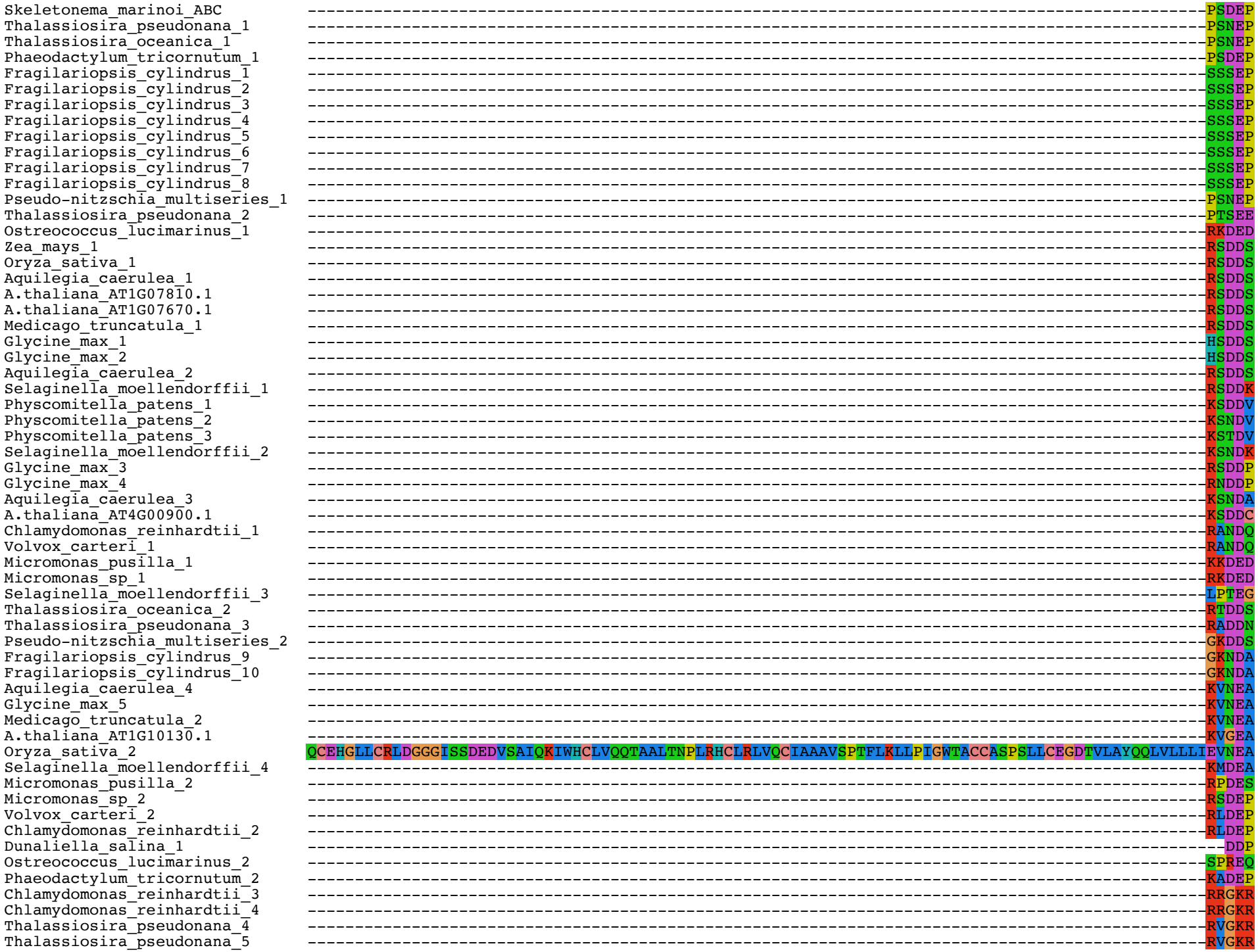
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6


1601
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Fragilariopsis_cylindrus_2
Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
Glycine_max_1
Glycine_max_2
Aquilegia_caerulea_2
Selaginella_moellendorffii_1
Physcomitella_patens_1
Physcomitella_patens_2
Physcomitella_patens_3
Selaginella_moellendorffii_2
Glycine_max_3
Glycine_max_4
Aquilegia_caerulea_3
A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
Chlamydomonas_reinhardtii_3
Chlamydomonas_reinhardtii_4
Thalassiosira_pseudonana_4
Thalassiosira_pseudonana_5


Fragilariopsis_cylindrus_11 ----------RVGKR
Fragilariopsis_cylindrus_12 ----------RVGKR
Pseudo-nitzschia_multiseries_3 ----------RVGKR
Phaeodactylum_tricornutum_3 ----------RVGKR
Micromonas_pusilla_3 ----------PKTQP
Micromonas_sp_3 ----------PKTQP
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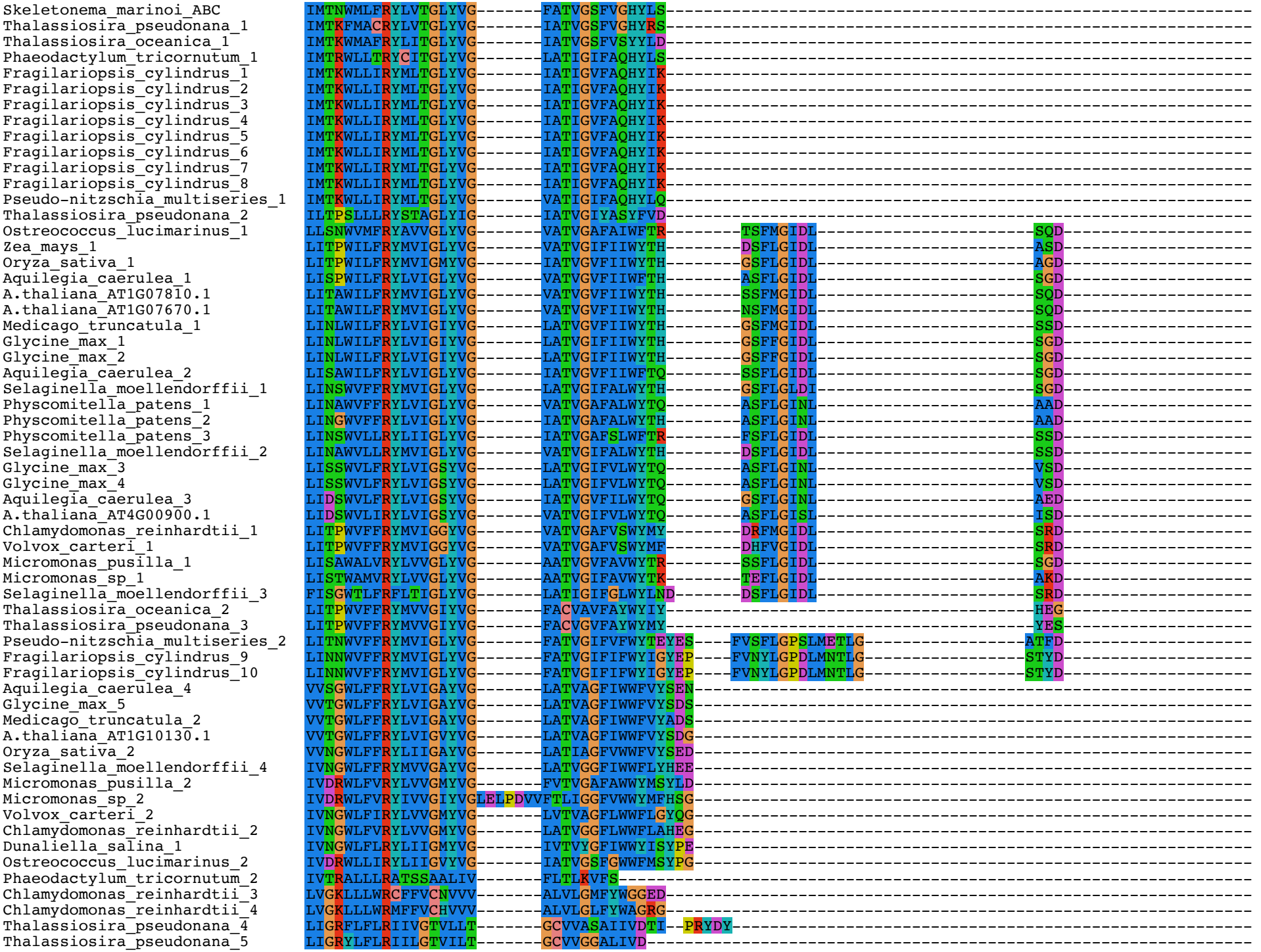
Chlamydomonas_reinhardtii_6 ----------GRSEP
Volvox_carteri_3 ----------GRTEP
Volvox_carteri_4 ----------GRTEP
Volvox_carteri_5 ----------GRTEH
Chlamydomonas_reinhardtii_7 ----------GRTEQ
Chlamydomonas_reinhardtii_8 ----------GRNEN
Volvox_carteri_6 ----------GRNEN
Ostreococcus_lucimarinus_3 ----------GRTAP
Micromonas_sp_4 ----------GRSAP
Selaginella_moellendorffii_5 ----------GLSEP
A.thaliana_AT3G21180.1 ----------GRREP
Aquilegia_caerulea_5 ----------GRREP
A.thaliana_AT5G57110.2 ----------GRKEP
Oryza_sativa_3 ----------GRREP
Zea_mays_2 ----------GRREP
Zea_mays_3 ----------GRREP
Zea_mays_4 ----------GRREP
Selaginella_moellendorffii_6 ----------GRREP
Selaginella_moellendorffii_7 ----------SKEAP
Aquilegia_caerulea_6 ----------GRKGN
Medicago_truncatula_3 ----------GRKGN
A.thaliana_AT2G22950.1 ----------GRRGN
A.thaliana_AT4G37640.1 ----------GRRGN
Oryza_sativa_4 ----------GRKGN
Zea_mays_5 ----------GRKGN
Oryza_sativa_5 ----------GRTGK
A.thaliana_AT1G27770.1 ----------GRKGN
Oryza_sativa_6 ----------GRKGK
Zea_mays_6 ----------GRTGR
Aquilegia_caerulea_7 ----------GKSVN
Oryza_sativa_7 ----------RRGDN
Selaginella_moellendorffii_8 ----------GRKGS
Selaginella_moellendorffii_9 ----------RRKEN
Oryza_sativa_8 ----------GRAAP
Fragilariopsis_cylindrus_13 ----------KRNSS
Pseudo-nitzschia_multiseries_4 ----------TRNSS
Phaeodactylum_tricornutum_4 ----------RRDSS
Thalassiosira_pseudonana_6 ----------NRSKS
Phaeodactylum_tricornutum_5 ----------NRTES
Phaeodactylum_tricornutum_6 ----------NRTDS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Fragilariopsis_cylindrus_2
Fragilariopsis_cylindrus_3
Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
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A.thaliana_AT1G07670.1
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A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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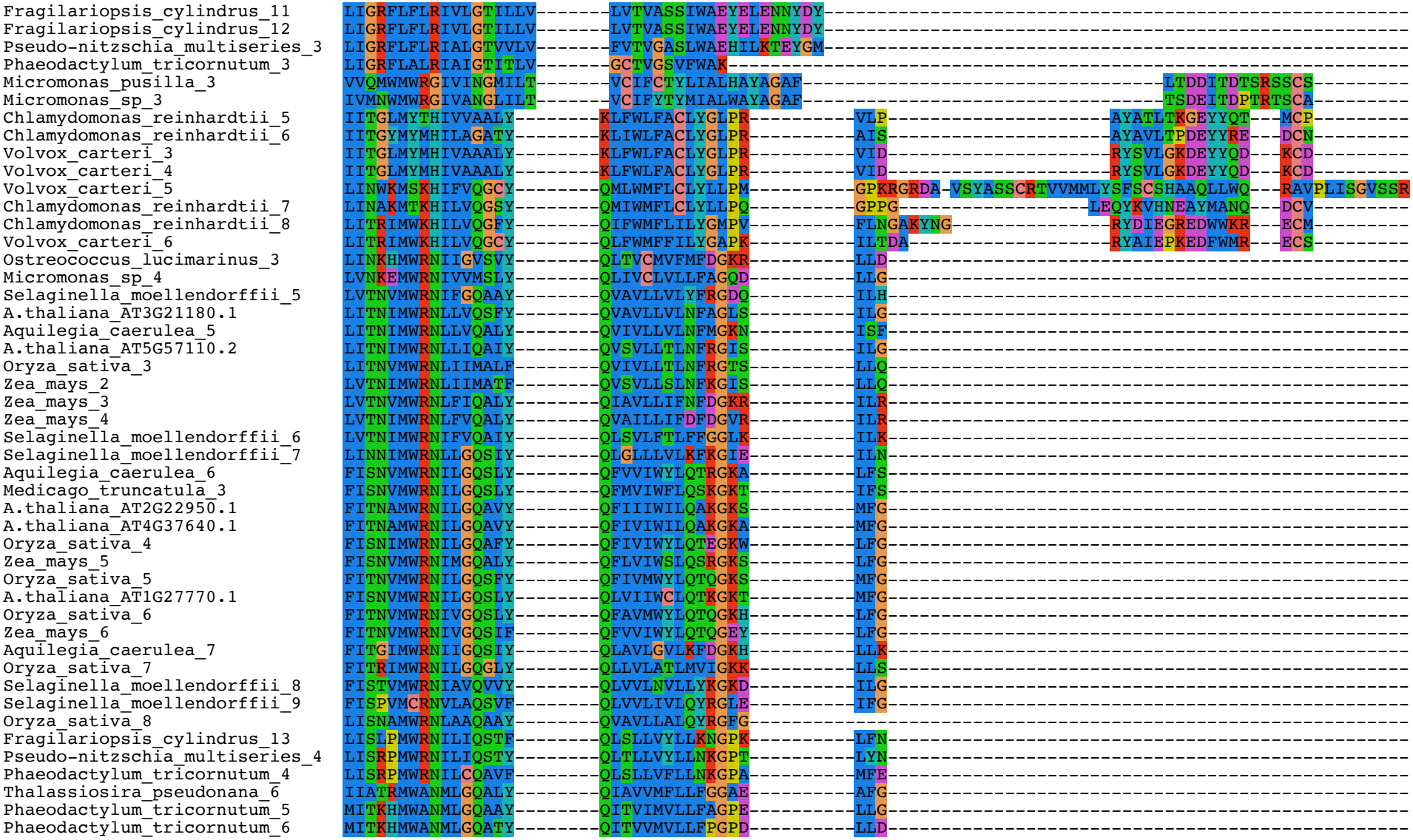
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Phaeodactylum_tricornutum_3
Micromonas_pusilla_3
Micromonas_sp_3
Chlamydomonas_reinhardtii_5
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Volvox_carteri_3
Volvox_carteri_4
Volvox_carteri_5
Chlamydomonas_reinhardtii_7
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Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
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Zea_mays_4
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Medicago_truncatula_3
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A.thaliana_AT4G37640.1
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Zea_mays_5
Oryza_sativa_5
A.thaliana_AT1G27770.1
Oryza_sativa_6
Zea_mays_6
Aquilegia_caerulea_7
Oryza_sativa_7
Selaginella_moellendorffii_8
Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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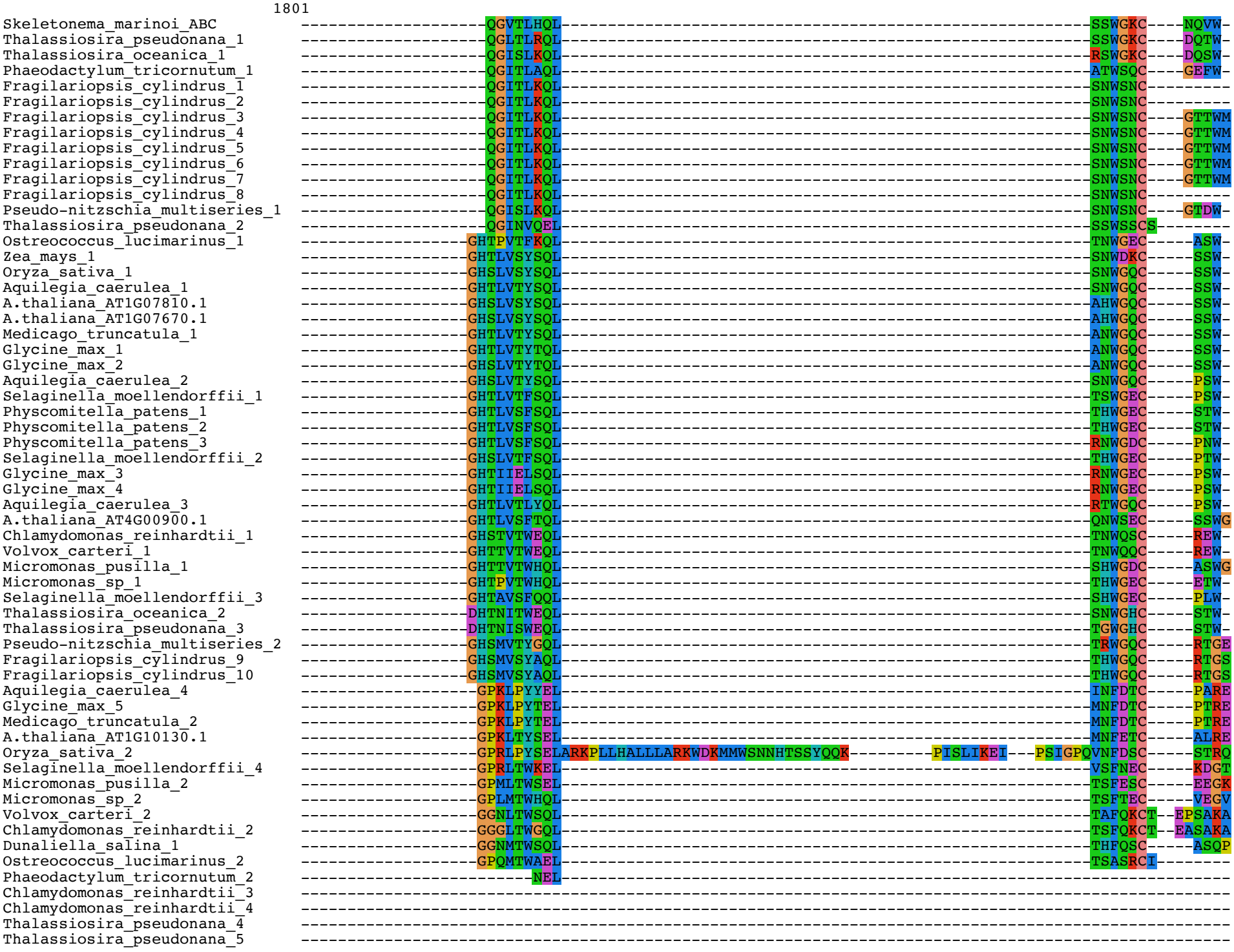
Thalassiosira_pseudonana_6
Phaeodactylum_tricornutum_5
Phaeodactylum_tricornutum_6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Thalassiosira_oceanica_1
Phaeodactylum_tricornutum_1
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Fragilariopsis_cylindrus_4
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Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
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Glycine_max_4
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Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
Thalassiosira_oceanica_2
Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
Fragilariopsis_cylindrus_9
Fragilariopsis_cylindrus_10
Aquilegia_caerulea_4
Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
Selaginella_moellendorffii_4
Micromonas_pusilla_2
Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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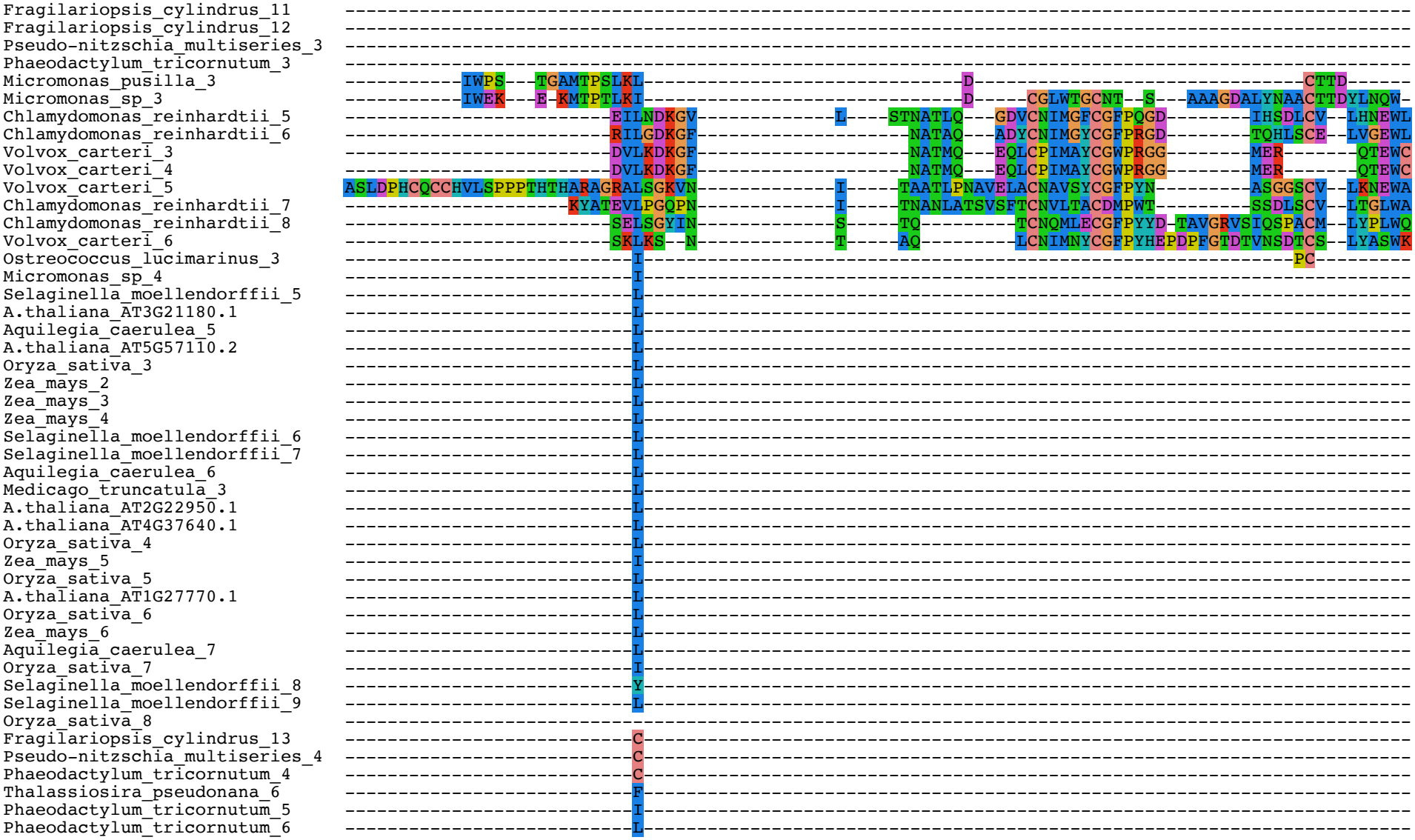
Chlamydomonas_reinhardtii_4
Thalassiosira_pseudonana_4
Thalassiosira_pseudonana_5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Phaeodactylum_tricornutum_3
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Micromonas_sp_3
Chlamydomonas_reinhardtii_5
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Volvox_carteri_5
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Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
A.thaliana_AT3G21180.1
Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
Oryza_sativa_3
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Medicago_truncatula_3
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A.thaliana_AT4G37640.1
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Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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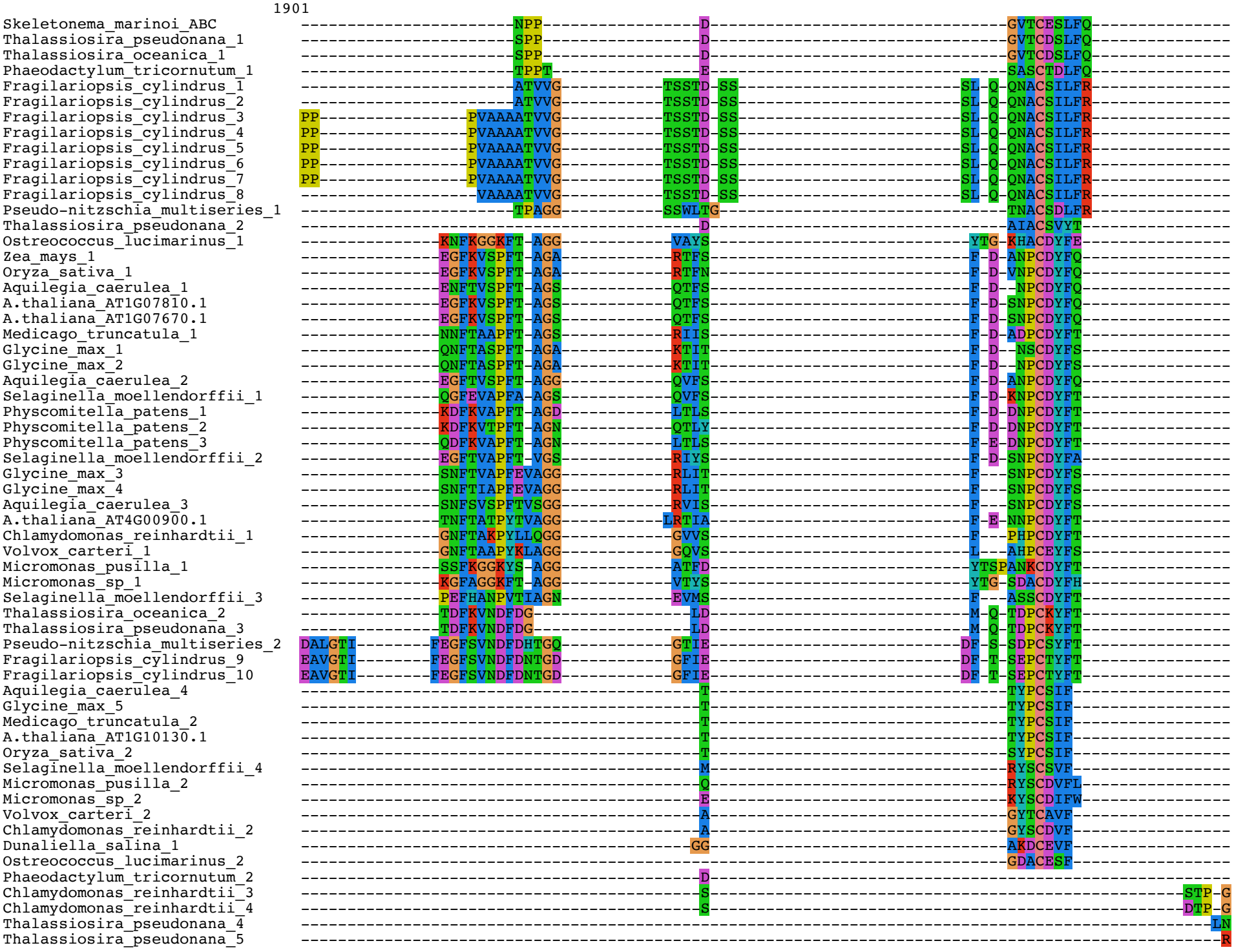
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Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
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A.thaliana_AT1G07670.1
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Aquilegia_caerulea_3
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Volvox_carteri_1
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Thalassiosira_pseudonana_3
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Glycine_max_5
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Oryza_sativa_2
Selaginella_moellendorffii_4
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Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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Chlamydomonas_reinhardtii_4
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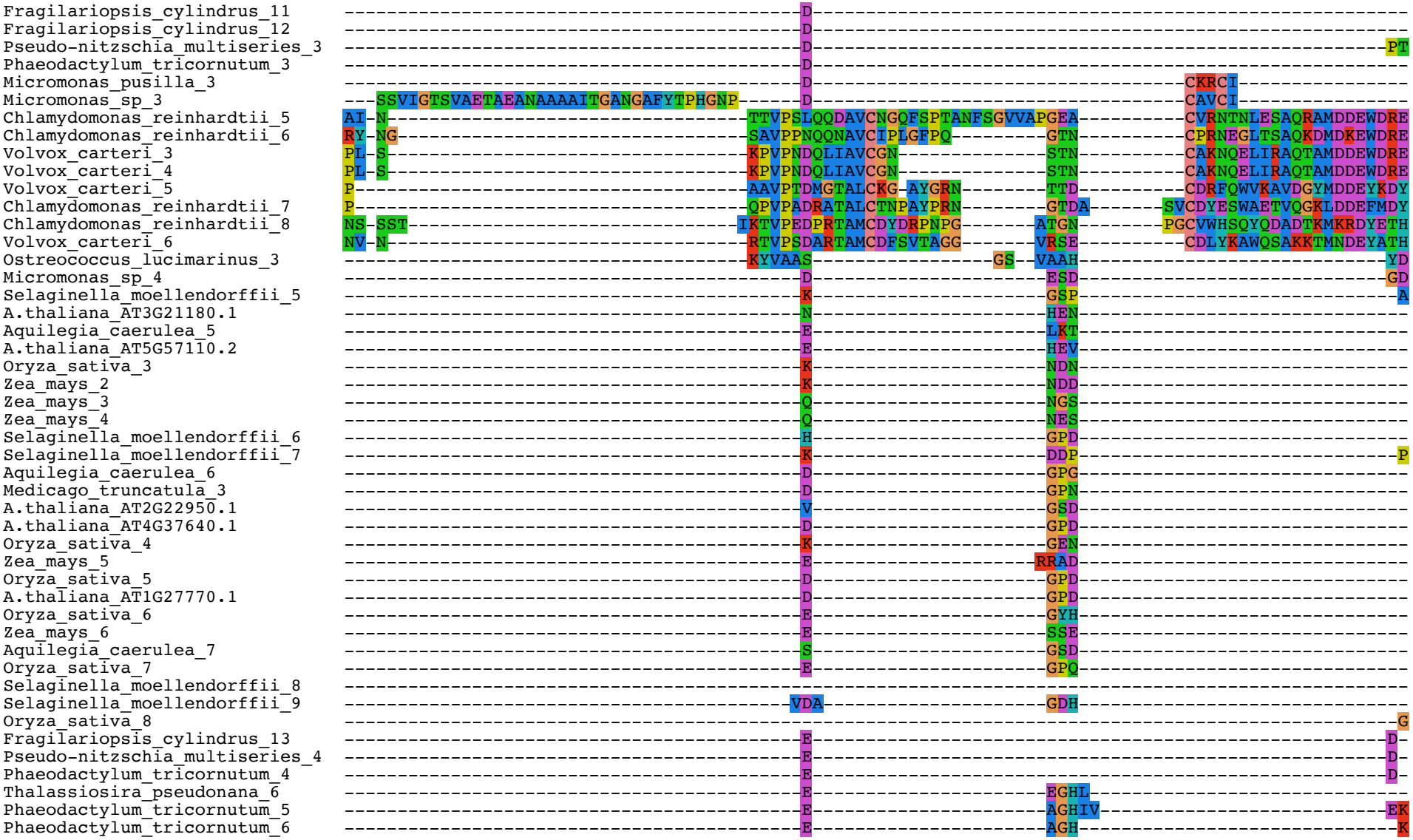
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Micromonas_sp_3
Chlamydomonas_reinhardtii_5
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Volvox_carteri_3
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Volvox_carteri_5
Chlamydomonas_reinhardtii_7
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Volvox_carteri_6
Ostreococcus_lucimarinus_3
Micromonas_sp_4
Selaginella_moellendorffii_5
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A.thaliana_AT5G57110.2
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Zea_mays_4
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Selaginella_moellendorffii_7
Aquilegia_caerulea_6
Medicago_truncatula_3
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A.thaliana_AT4G37640.1
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Selaginella_moellendorffii_9
Oryza_sativa_8
Fragilariopsis_cylindrus_13
Pseudo-nitzschia_multiseries_4
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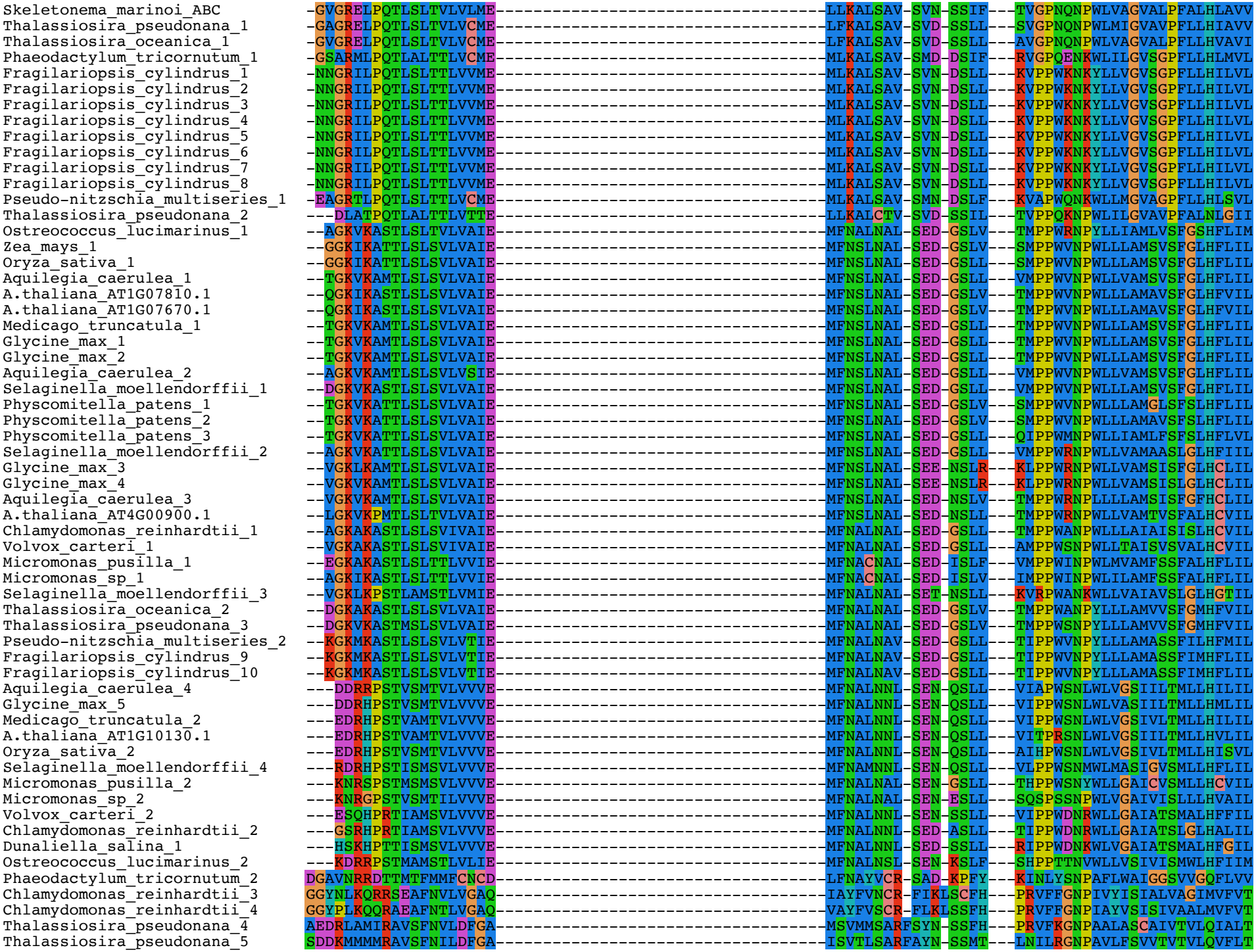
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Fragilariopsis_cylindrus_5
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Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
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Pseudo-nitzschia_multiseries_2
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Glycine_max_5
Medicago_truncatula_2
A.thaliana_AT1G10130.1
Oryza_sativa_2
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Micromonas_sp_2
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Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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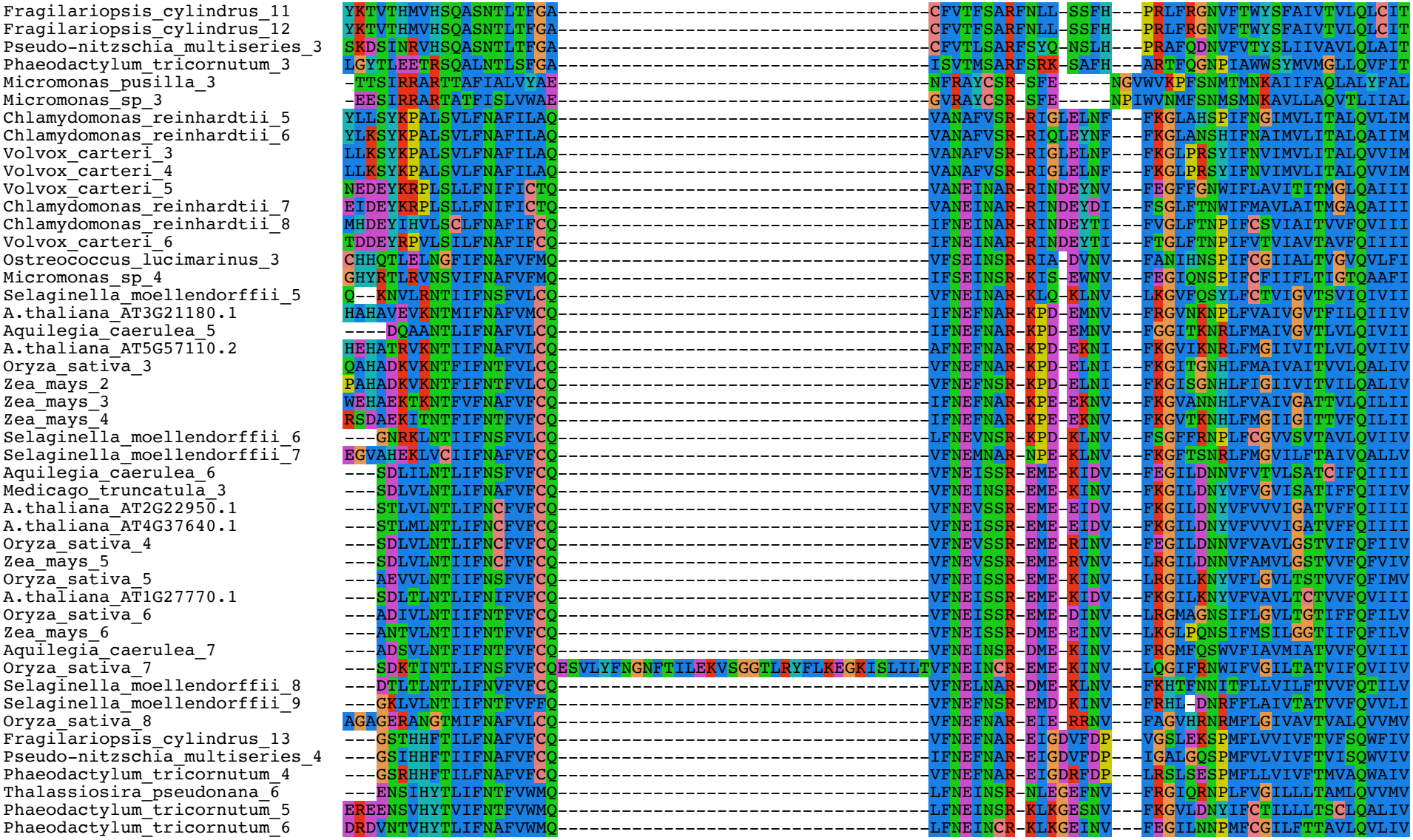
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Micromonas_sp_3
Chlamydomonas_reinhardtii_5
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Volvox_carteri_4
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Micromonas_sp_4
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Aquilegia_caerulea_5
A.thaliana_AT5G57110.2
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Aquilegia_caerulea_6
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A.thaliana_AT4G37640.1
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Fragilariopsis_cylindrus_13
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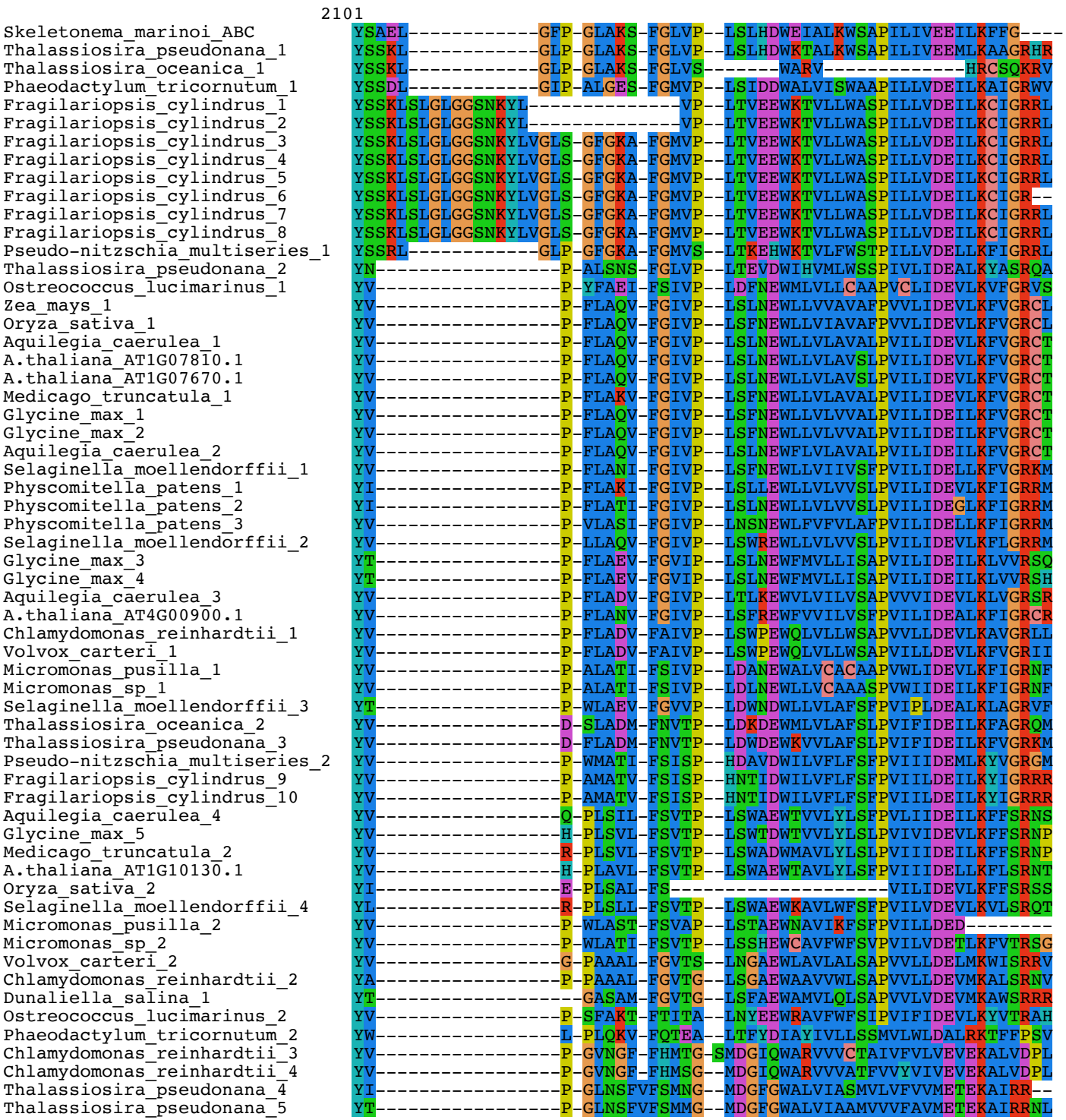
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Fragilariopsis_cylindrus_2
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Fragilariopsis_cylindrus_4
Fragilariopsis_cylindrus_5
Fragilariopsis_cylindrus_6
Fragilariopsis_cylindrus_7
Fragilariopsis_cylindrus_8
Pseudo-nitzschia_multiseries_1
Thalassiosira_pseudonana_2
Ostreococcus_lucimarinus_1
Zea_mays_1
Oryza_sativa_1
Aquilegia_caerulea_1
A.thaliana_AT1G07810.1
A.thaliana_AT1G07670.1
Medicago_truncatula_1
Glycine_max_1
Glycine_max_2
Aquilegia_caerulea_2
Selaginella_moellendorffii_1
Physcomitella_patens_1
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Physcomitella_patens_3
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Glycine_max_3
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Aquilegia_caerulea_3
A.thaliana_AT4G00900.1
Chlamydomonas_reinhardtii_1
Volvox_carteri_1
Micromonas_pusilla_1
Micromonas_sp_1
Selaginella_moellendorffii_3
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Thalassiosira_pseudonana_3
Pseudo-nitzschia_multiseries_2
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Glycine_max_5
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Micromonas_sp_2
Volvox_carteri_2
Chlamydomonas_reinhardtii_2
Dunaliella_salina_1
Ostreococcus_lucimarinus_2
Phaeodactylum_tricornutum_2
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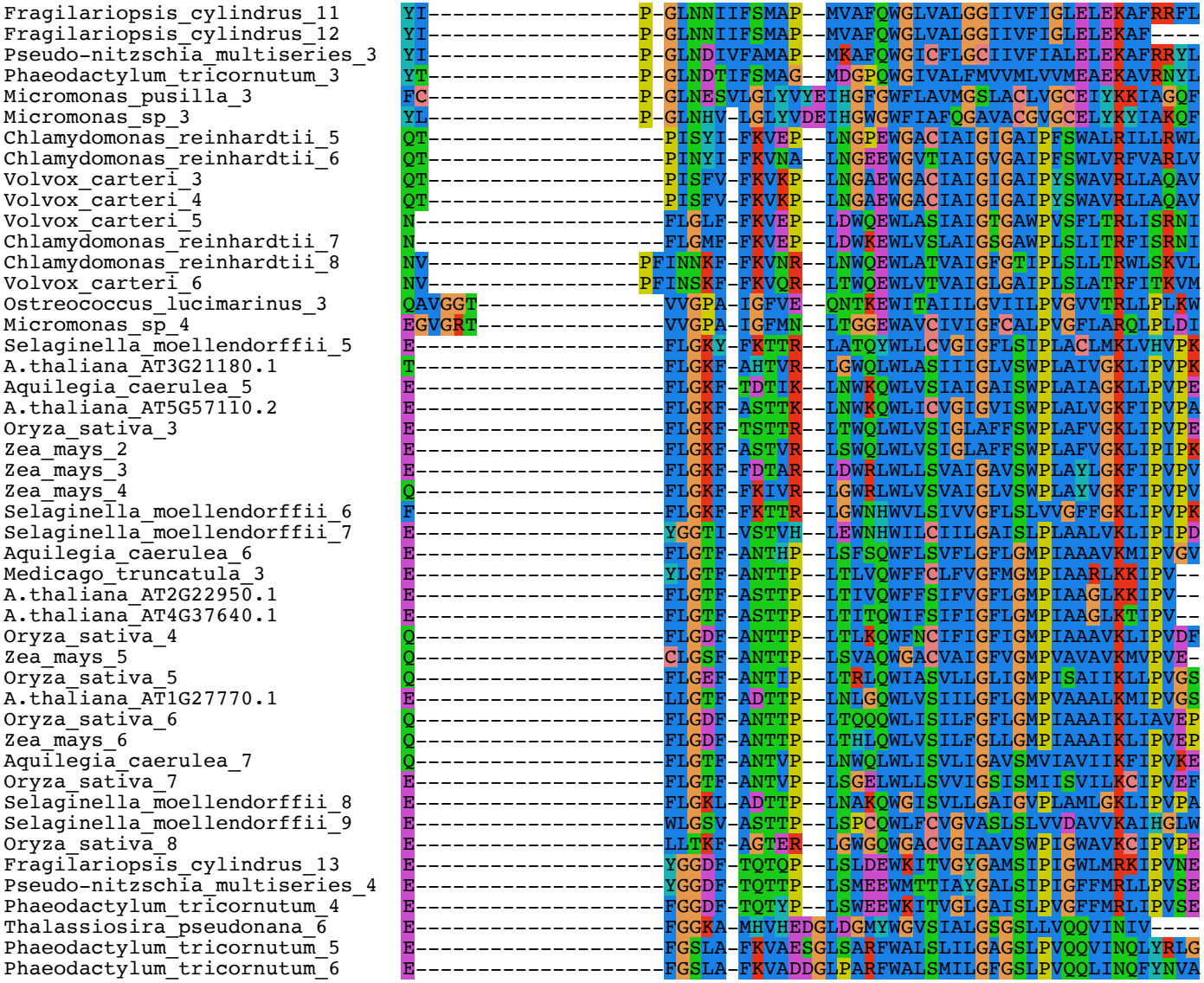

Supplementary figure 8.

Alignment of the ABC-transporter domains used in the phylogenetic analysis presented in supplementary figure 7. The length of the alignment has been adjusted to the length of the domain identified in *S. marinoi*. Numbers above the sequences indicate the positions in the alignment and the background color of the letters indicates size, shape, solubility, and ionization properties of the different amino acids.