Table S1. The accession numbers and taxa information of 18S and ITS rDNA sequences used for analyses in this study (sequences newly obtained in this study are indicated in bold).

Taxa	Strain	18S	ITS	Clade
Adglutina synurophila	S163	OL310960	——	***Moewusinia***
Chlamydomonas bilatus	SAG 7.72	LC322160	——	
Chlamydomonas noctigama	SAG 22.72	AF008239	——	
Chlamydomonas sordida	SAG 18.73	AB290341	MW465904	
Dangeardinia desmidii	UTEX 2733	LC107107	PP826663	
Dangeardinia metastigma	NIES-3702	LC057285	——	
Limnomonas gaiensis	CCAP 11/119	FR865531		
Chlamydomonas chlamydogama	UTEX 103	AY220560	——	
Dysmorphococcus sp.	UTEX 1765	KC196722	——	***Phacotinia***
Phacotus lenticularis	SAG 16.99	AY009897	——	
Phacotus sphaericus	SAG 17.99	AY009898	——	
Pteromonas angulosa	SAG 64-3	AF395438	——	
Pteromonas protracta	CCAP 64/1	MK541804		
Wislouchiella planctonica	UTEX 1030	AF252547	AY009900	
Chlamydomonas klinobasis	CCCryo 050-99	GU117578	——	***Microglena***
Chlamydomonas kuwadae	NIES-968	AB451190	——	
Chlamydomonas sp.	Antarctic 2E9	AB001374	——	
Chlamydomonas sp.	ARC	EF537906	——	
Chlamydomonas sp.	CCMP 233	DQ009753	——	
Chlamydomonas sp.	KUNA040	KY654753	____	
Chlamydomonas sp.	MBIC 10592	AB058371	____	

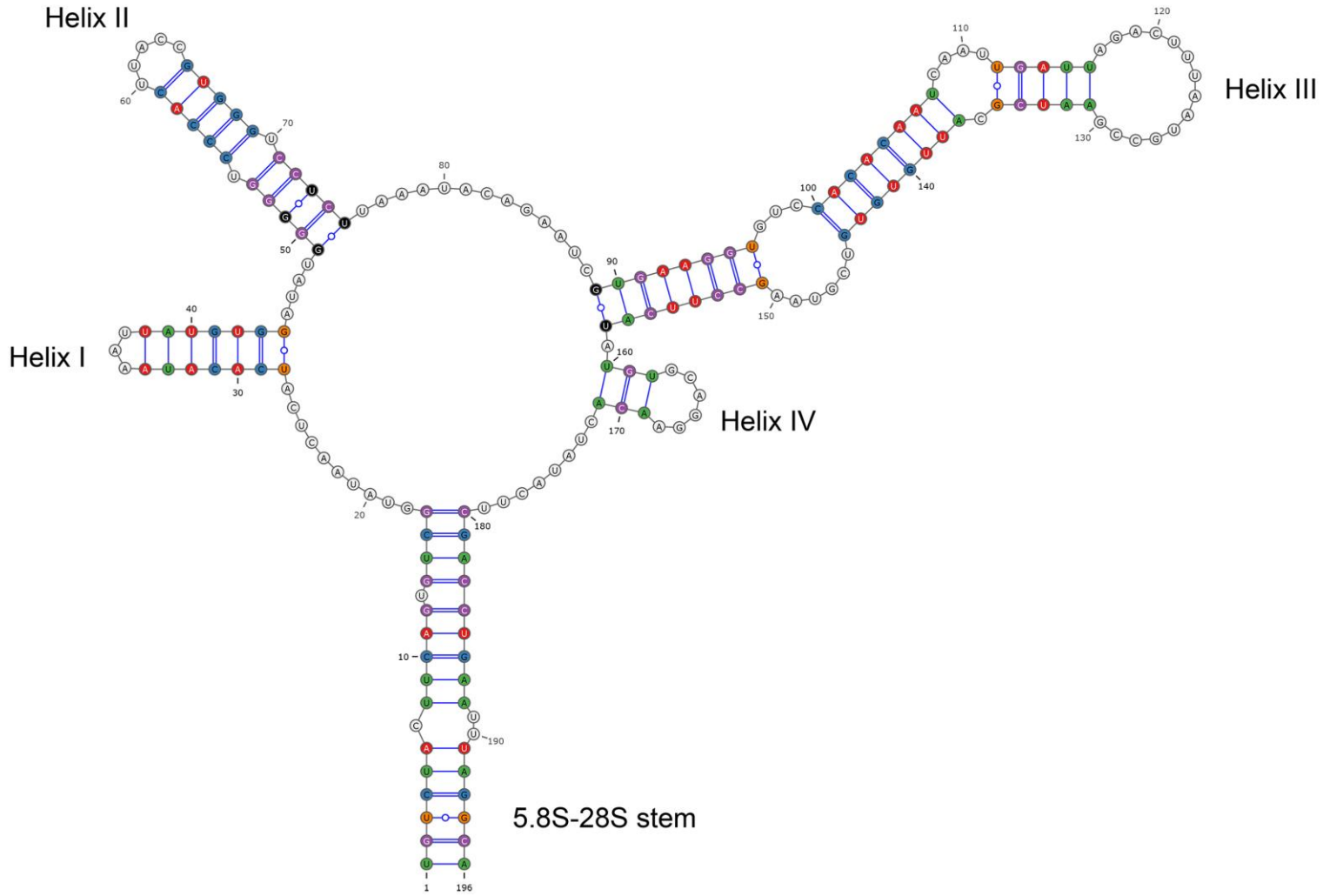
Microglena antarctica	ICE-L	AY731082	AY731085	
Microglena antarctica	ICE-W	AY731083	AY731084	
Microglena antarctica	IMA076A	ON185622	OM791388	
Microglena basinucleata	SAG 67.72	FR854374		
Microglena braunii	SAG 50.86	FR854375		
Microglena charkoviensis	ACKU 267-03	FR854376		
Microglena charkoviensis	ACKU 274-03	FR854377		
Microglena coccifera	SAG 54.91	FR854378		
Microglena coccifera	SAG 55.91	FR854379		
Microglena globulifera	CCAC 0015	FR854380		
Microglena globulifera	CCAC 0017	FR854381		
Microglena indica	SAG 46.96	FR854382		
Microglena lobata	SAG 31.72	FR854383		
Microglena longirubra	SAG 5.92	FR854384		
Microglena media	NIES-2743	AB694003	AB872922 (ITS2)	
Microglena media	SAG 16.90	FR854389		
Microglena monadina	SAG 55.72	FR854385		
Microglena opisthopyren	SAG 54.90	FR854387		
Microglena opisthopyren	SAG 8.87	FR854386		
Microglena opisthopyren	SAG 31.86	AB694006		
Microglena opisthopyren	CCAP 11/46	FR865587		
Microglena opisthopyren	NIES-2744	AB694004	AB872921 (ITS2)	
Microglena redcarensis	SAG 18.89	LC214871	LC214872	
Microglena reginae	SAG 17.89	FR854388		
Microglena sp.	CCCryo 002b-	AF514398	____	

	99			
Microglena sp.	CCCryo 038-99	AF514404	____	
Microglena sp.	SAG 10.87	AB694005	____	
Microglena uva-maris	SAG 19.89	FR854390		
Microglena weihensis	**FACHB-3854**	**PX278839**	**PX396282**	
Microglena apyrenoides	**FACHB-3856**	**PX278841**	**PX396284**	
Microglena wushuiensis	**FACHB-3857**	**PX278842**	**PX396285**	
Tetracystis pampae	SAG 96.80	KM020018		
Tetracystis vinatzeri	SAG 22.95	KM020017		
Characiosiphon rivularis	UTEX LB 1763	AF395437	____	***Caudivolvoxa***
Chlorosarcinopsis arenicola	UTEX 1697	AB218701	____	
Stephanosphaera pluvialis	UTEX 771	LC066328	____	
Chlorogonium euchlorum	UTEX 2010	AB278607	____	
Polytoma uvella	UTEX 19	U22940	____	
Dunaliella salina	CCAP 19/18	EF473745	____	

Table S2. Best-fit evolutionary models selected for 18S rDNA and concatenated datasets.

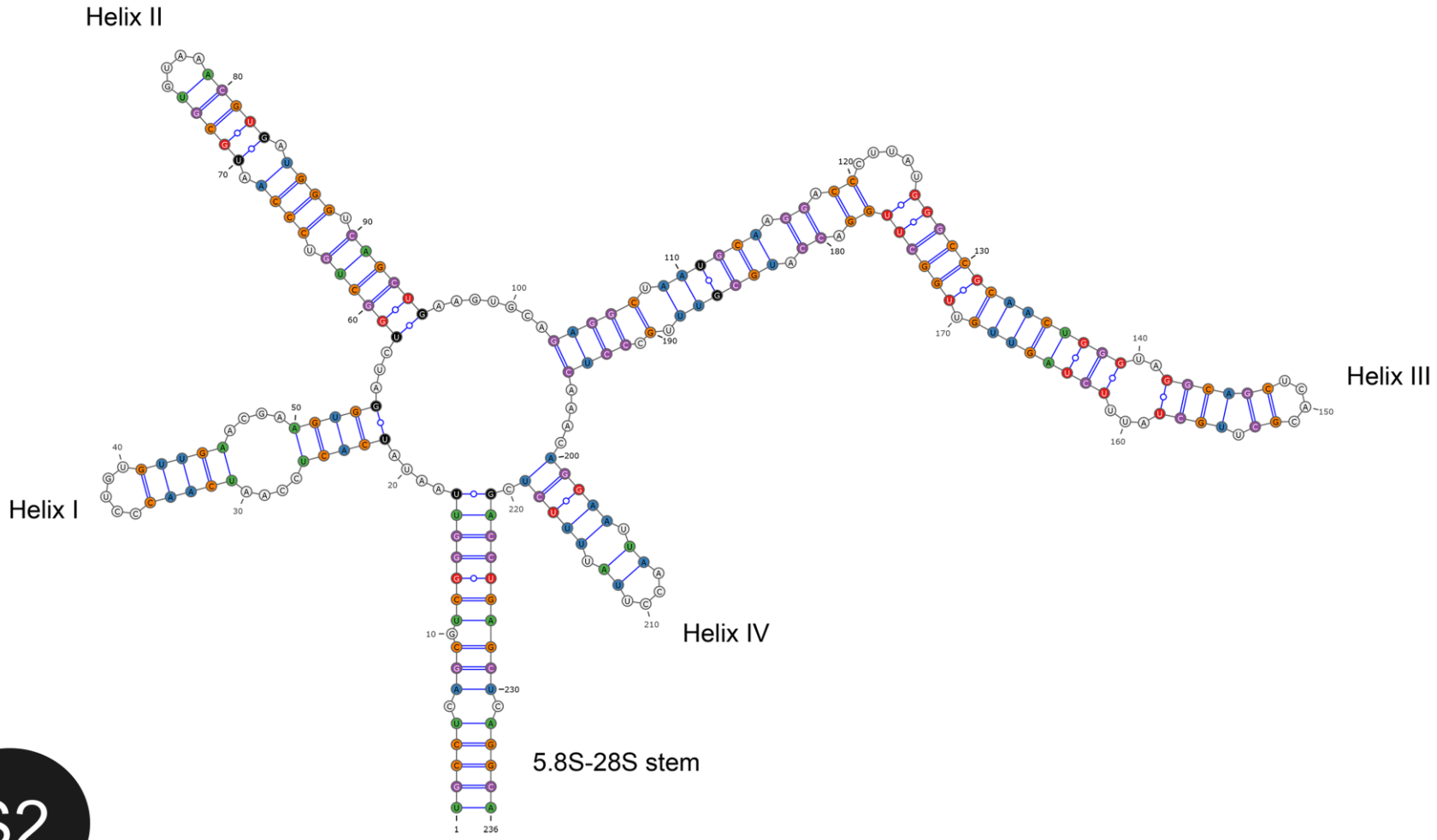
Dataset		ML	BI
18S		TN+F+I+G4	GTR+F+I+G4
18S+ITS	18S	TN+F+I+G4	HKY+I+G4
	ITS-1	GTR+G4	GTR+G4
	5.8S	TN+F+I+G4	SYM+I+G4
	ITS-2	GTR+G4	GTR+G4

Microglena wushuiensis
FACHB-3857



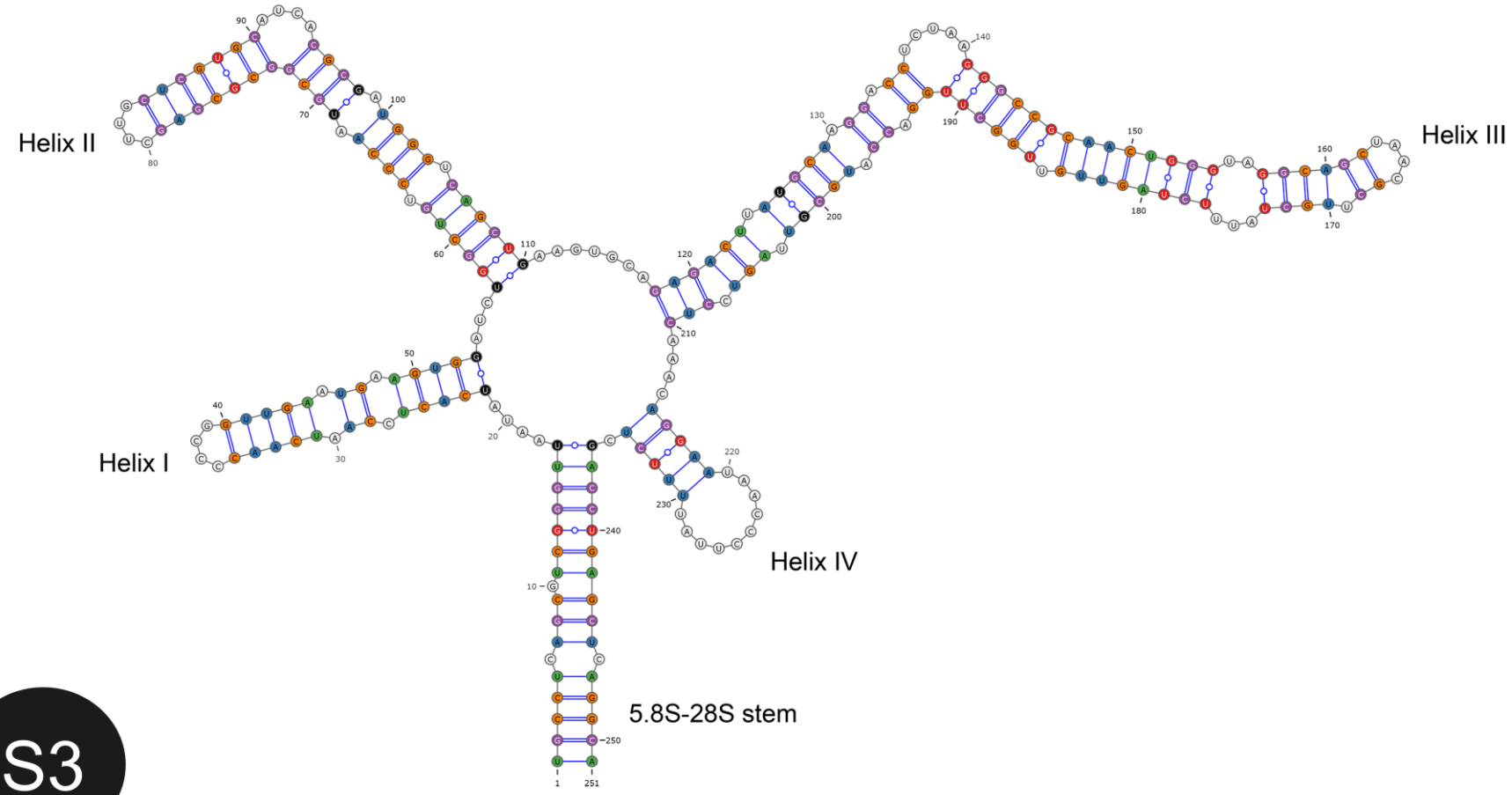
S1

Microglena weihensis
FACHB-3854



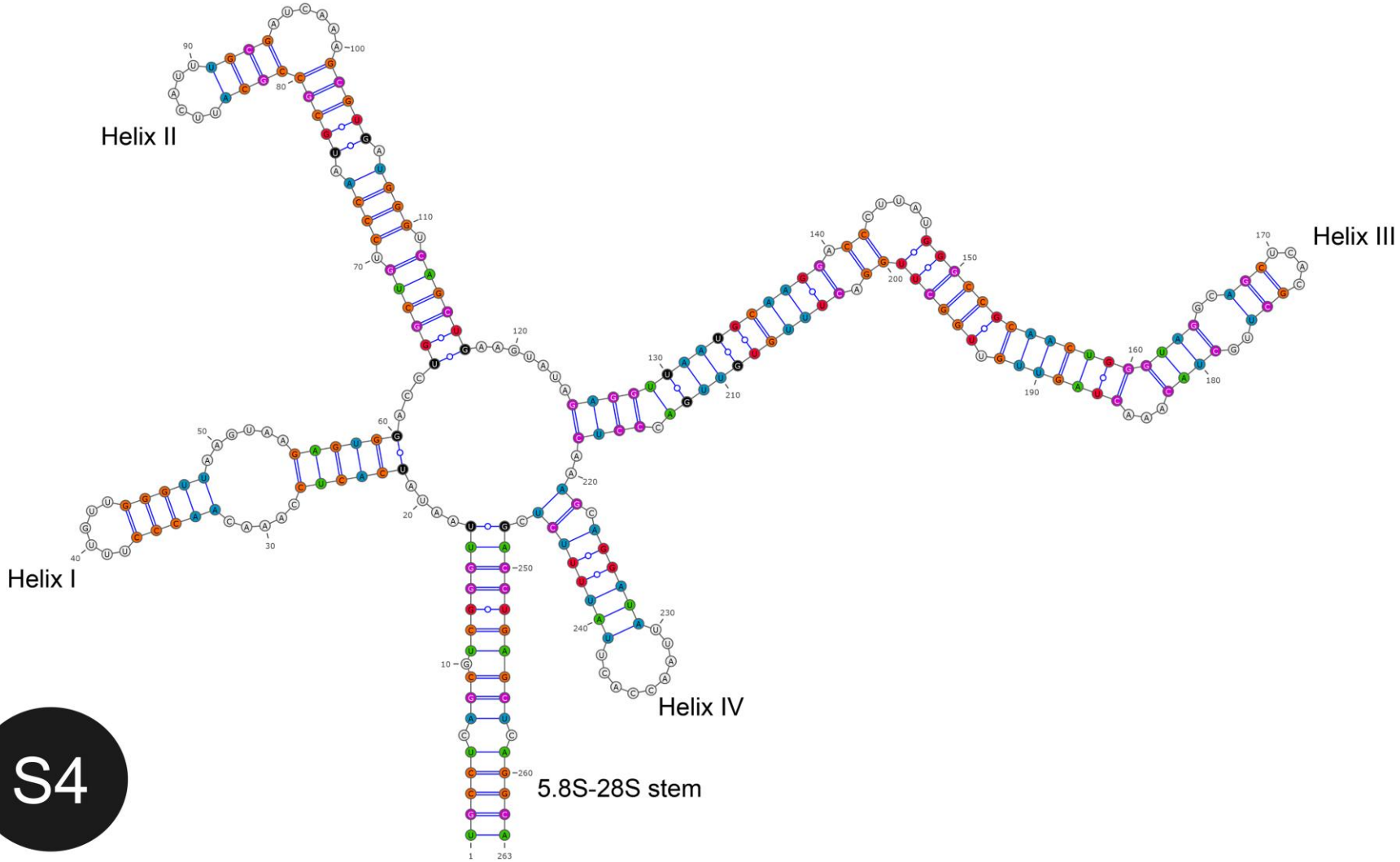
S2

Microglena apyrenoides
FACHB-3856



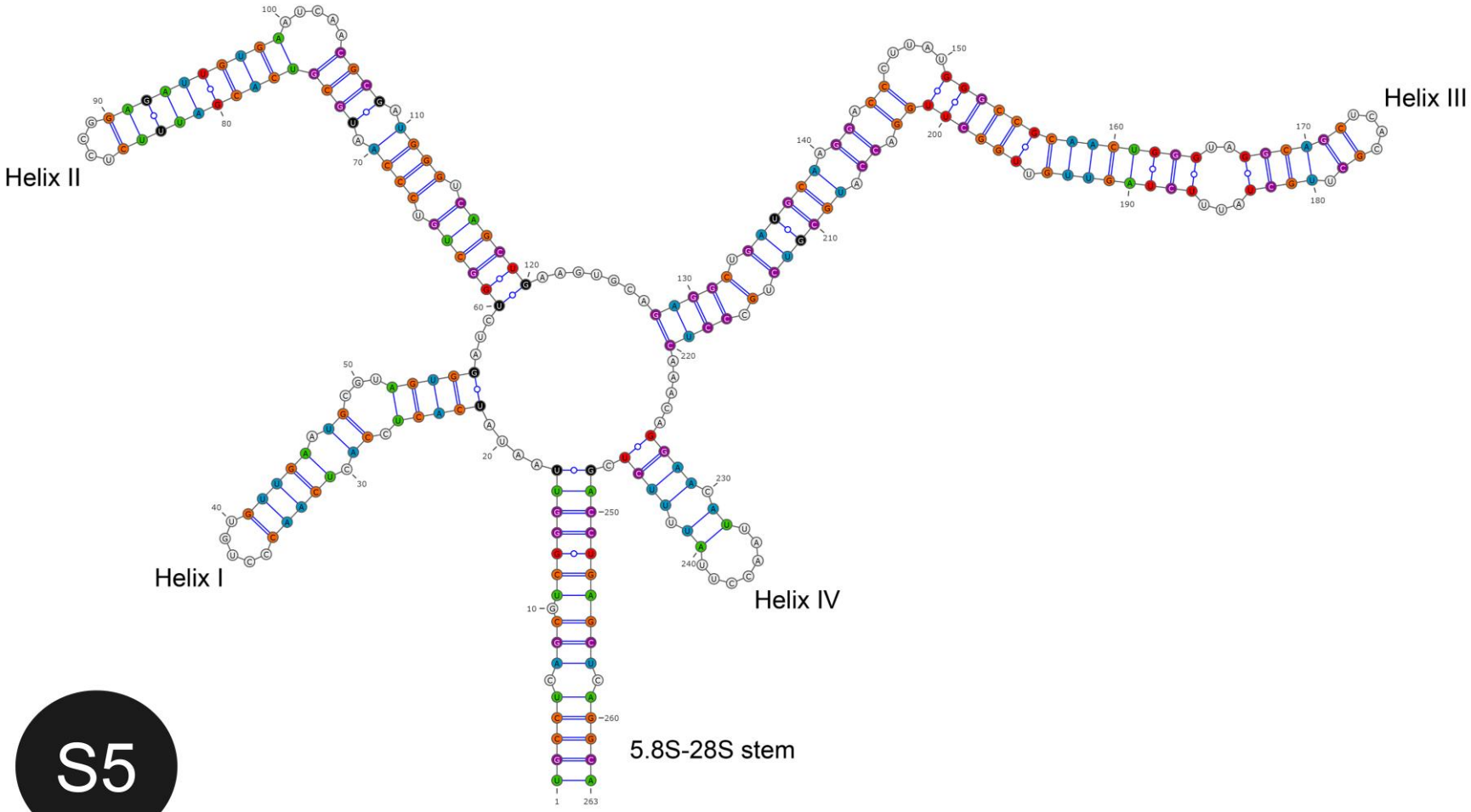
S3

Tetracystis pampae
SAG 96.80



S4

Tetracystis vinatzeri
SAG 22.95



S5

Figures S1-S5. ITS-2 rRNA secondary structures of three new species and two *Tetracystis* species. **(S1)** *Microglena wushuiensis* FACHB-3857. **(S2)** *Microglena weihensis* FACHB-3854. **(S3)** *Microglena apyrenoides* FACHB-3856. **(S4)** *Tetracystis pampae* SAG 96.80. **(S5)** *Tetracystis vinatzeri* SAG 22.95.

Appendix S1. The 18S rDNA dataset used in this study.

Appendix S2. The concatenated 18S and ITS rDNA dataset used in this study.