

Table S1. – List of all strains examined in this study, with NCBI Genbank accession numbers.

Clade	Name	Strian	NCBI GenBank Accession
<i>Microcystis</i>	<i>Microcystis aeruginosa</i>	NIES298	CP046058
	<i>Microcystis flosaquae</i>	NRERC215	MK557925
	<i>Microcystis wesenbergii</i>	NRERC212	MK972442
	<i>Microcystis flosaquae</i>	NRERC211	MK589721
	<i>Microcystis wesenbergii</i>	NIES112	U40334
	<i>Microcystis panniformis</i>	2B3	MG984606
	<i>Microcystis aeruginosa</i>	MDEG1	MG979399
	<i>Microcystis aeruginosa</i>	SERB52	KP890774
	<i>Microcystis wesenbergii</i>	SERB24	KM982573
	<i>Microcystis orissica</i>	SERB10	KM982559
	<i>Microcystis stagnalis</i>	SERB21	KM982570
	<i>Microcystis panniformis</i>	SERB3	KM982552
	<i>Microcystis ichthyoblabe</i>		AB012339
	<i>Microcystis aeruginosa</i>	LEGE91343	KF287005
	<i>Microcystis panniformis</i>	G11	MG984608
	<i>Microcystis flosaquae</i>	TAUMAC1510	MN062678
	<i>Microcystis panniformis</i>	FACHB1757	CP011339
	<i>Microcystis panniformis</i>	VN354	AB666074
	<i>Microcystis aeruginosa</i>	PCC7005 SAG1450	KM019996
	<i>Microcystis aeruginosa</i>	CHAB1452	KJ818173
	<i>Microcystis novacekii</i>	TAC65	AB012337
	<i>Microcystis aeruginosa</i>	NIES1123	LC557449
	<i>Microcystis ichthyoblabe</i>	NRERC208	MK972440
	<i>Microcystis smithii</i>	CHAB1459	GQ496079
	<i>Microcystis aeruginosa</i>	LMECYA147	KC311975
	<i>Microcystis aeruginosa</i>	UWOCCMR D	AF139324
	<i>Microcystis ichthyoblabe</i>	NRERC217	MK972443
	<i>Microcystis aeruginosa</i>	SAG17.85	KM019998
	<i>Microcystis flosaquae</i>	CHAB4369	KJ818196
	<i>Microcystis viridis</i>	CHAB534	KJ818182
	<i>Microcystis ichthyoblabe</i>	CHAB181	KJ818188
	<i>Microcystis aeruginosa</i>	PMC256	KF287004
	<i>Microcystis flosaquae</i>	UWOCCC3	AF139329
	<i>Microcystis aeruginosa</i>	NIVACYA123	KF286991
	<i>Microcystis panniformis</i>	CENA121	KP835526
	<i>Microcystis novacekii</i>	CHAB1444	KJ818201
	<i>Microcystis flosaquae</i>	CHAB4385	KJ818197
	<i>Microcystis wesenbergii</i>	NRERC216	MK972444
	<i>Microcystis botrys</i>	CHAB2169	KJ818206
	<i>Microcystis aeruginosa</i>	LMECYA137	LMECYA137
	<i>Microcystis aeruginosa</i>	PCC7806	KF286992

	<i>Microcystis aeruginosa</i>	PCC7820	U40339
	<i>Microcystis wesenbergii</i>	VN451	AB666079
	<i>Microcystis ichthyoblabe</i>	TAC48	AB012338
	<i>Sphaerocavum brasiliense</i>	CCIBt3179	KY460551
	<i>Sphaerocavum brasiliense</i>	CCIBt3316	KY460550
	<i>Microcystis novacekii</i>	MCYSCH01	EU541973
	<i>Microcystis panniformis</i>	MCYSOB06	EU541974
	<i>Microcystis aeruginosa</i>	KSUWH1	KT807476
	<i>Microcystis aeruginosa</i>	MCYSLB02	EU541971
	<i>Microcystis novacekii</i>	BA005	KX423683
	<i>Microcystis botrys</i>	TAMB1	MT039004
	<i>Microcystis viridis</i>	BKPCS60	MW383698
	<i>Microcystis viridis</i>	NIES102	AP019314
	<i>Microcystis viridis</i>	NIES102	DQ648027
	<i>Microcystis viridis</i>	TAUMAC1810	MN062681
	<i>Microcystis bengalensis</i>	VN486	AB666082
	<i>Microcystis flosaquae</i>	NRERC207	MK972439
	<i>Microcystis aeruginosa</i>	NRERC214	MK972445
	<i>Microcystis pseudofilamentosa</i>	VN511	AB666084
	<i>Microcystis wesenbergii</i>	NIES107	DQ648028
	<i>Microcystis aeruginosa</i>	NIES90	DQ648026
	<i>Microcystis viridis</i>	NIES1058	DQ648029
	<i>Microcystis aeruginosa</i>	BACA0148	MT176750
	<i>Microcystis viridis</i>	NIES102	U40332
	<i>Microcystis wesenbergii</i>	NIES107	U40333
<i>Cyanoarbor violascens</i>	<i>Cyanoarbor violascens</i>	C1	KU318400
	<i>Cyanoarbor violascens</i>	Z5	KU318399
	<i>Cyanoarbor violascens</i>	C5	KU318402
	<i>Cyanoarbor violascens</i>	C2	KU318401
<i>Chalicogloea 1</i>	<i>Chalicogloea cavernicola</i>	CCALA975	JQ967037
	<i>Chalicogloea cavernicola</i>		NR177668
	<i>Chalicogloea</i> sp.	BACA0589	OM732250
<i>Chalicogloea 2</i>	<i>Chalicogloea</i> sp.	M64187	OP323106
	<i>Chalicogloea</i> sp.	M64187	OP323101
	<i>Chalicogloea</i> sp.	M64187	OP323092
<i>Gloeotheca</i>	<i>Gloeotheca tepidariorum</i>	PCC6909	MF781034
	<i>Gloeotheca tepidariorum</i>	CCALA1112	MF780994
	<i>Gloeotheca membranacea</i>	PCC6501	MF781056
	<i>Gloeotheca samoensis</i>	SERB20	KM982569
	<i>Gloeotheca aequatorialis</i>	SAG36.87	MF781064
	<i>Gloeotheca bryophila</i>	HA4964KK2	MH481819
<i>Radiocystis</i>	<i>Radiocystis</i> sp.	JJ303	AM710389
	<i>Radiocystis geminata</i>	TAUMAC1214	OL310656
<i>Woronichinia</i>	<i>Woronichinia</i> sp.	T5	JN172622

	<i>Woronichinia naegeliana</i>	0LE35S01	AJ781043
<i>Snowella</i>	<i>Snowella</i> sp.	CHAB6606	MN796298
	<i>Snowella litoralis</i>	1LT47S05	AJ781041
	<i>Snowella rosea</i>		AJ781042
<i>Merismopedi</i>	<i>Merismopedia punctata</i>	BACA0609	OM732253
	<i>Merismopedia glauca</i>	CCAP1448.3	HF678499
<i>Synechocystis</i>	<i>Synechocystis</i> sp.	PCC6803	AY224195
	<i>Synechocystis</i> sp.	PCC6714	AB041937
<i>Aphanothece</i>	<i>Aphanothece sacrum</i>		AB116658
	<i>Aphanothece sacrum</i>	FPU3	LC229081
	<i>Aphanothece microscopica</i>	CCY153	FR873836
<i>Neochroococcus gongqingensis</i>	<i>Neochroococcus gongqingensis</i>	CHAB4018	MT011391
	<i>Neochroococcus gongqingensis</i>	CHAB4018	MT011392
<i>Inacoccus carmineus</i>	<i>Inacoccus carmineus</i>	CCIBt3475	MF072349
	<i>Inacoccus carmineus</i>	CCIBt3411	MF072347
<i>Chroococcus</i>	<i>Chroococcus turgidus</i>	CCIBt3508	MF072352
	<i>Chroococcus turgidus</i>	KANI0	MW040530
	<i>Chroococcus turgidus</i>	AICB61	KJ746515
	<i>Chroococcus minutus</i>	CCALA55	GQ375047
	<i>Chroococcus subviolaceus</i>	CCIBt3549	MF072353
<i>Pleurocapsa</i>	<i>Pleurocapsa minor</i>	SAG4.99	AJ344564
	<i>Pleurocapsa fuliginosa</i>	HA4302MV1	JN385285
<i>Cryptococcum</i>	<i>Cryptococcum brasiliense</i>	CCIBt3410	MF072345
	<i>Cryptococcum komarkovae</i>	CCALA54	MF072346
<i>Geminocystis</i>	<i>Geminocystis herdmanii</i>	PCC6308	AB039001
	<i>Geminocystis</i> sp.	CHAB6541	MH094654
<i>Cyanobacterium</i>	<i>Cyanobacterium aponinum</i>	HG3	KY172946
	<i>Cyanobacterium aponinum</i>	PCC10605	NR102443
	<i>Cyanobacterium stanieri</i>	PCC7202	AM258981
<i>Anagnostidinema</i>	<i>Anagnostidinema carotinosum</i>	JR21	KT315945
	<i>Anagnostidinema pseudacutissimum</i>	CCALA150	KT315940
	<i>Anagnostidinema pseudacutissimum</i>	JR16	KT315936
<i>Wilmottia</i>	<i>Wilmottia murrayi</i>	FBCCA402	MN473878
	<i>Wilmottia murrayi</i>	FBCCA401	MN473877
	<i>Wilmottia murrayi</i>	KGI28	HQ873481
	<i>Wilmottia stricta</i>	16PC	KY288986
	<i>Wilmottia stricta</i>	31PC	KY288996
	<i>Wilmottia koreana</i>	FBCCA812	MN473879
<i>Cephalothrix</i>	<i>Cephalothrix lacustris</i>	CCIBt3261	NR137272
	<i>Cephalothrix komarekiana</i>	SAG75.79	KJ994517
<i>Ramsaria</i>	<i>Ramsaria avicenna</i>	SMS12C	MF348315

	<i>Ramsaria avicenna</i>	SMS12C	MF348316
	<i>Ramsaria avicenna</i>	SMS12C	MF348317
<i>Coleofasciculus</i>	<i>Coleofasciculus chthonoplastes</i>	SAG2209	EF654055
	<i>Coleofasciculus chthonoplastes</i>	WW12	EF654060
<i>Pycnacronema</i>	<i>Pycnacronema edaphica</i>	CATCA7	MT311244
	<i>Pycnacronema conicum</i>	7PC	MF581656
	<i>Pycnacronema caatingensis</i>	CATCC2	MT311243
	<i>Pycnacronema arboriculum</i>	41PC	MF581657
	<i>Pycnacronema savannensis</i>	49PC	MF581663
	<i>Pycnacronema marmoreum</i>	42PC	MF581658
	<i>Pycnacronema rubrum</i>	43PC	MF581659
	<i>Pycnacronema brasiliensis</i>	45PC	MF581661
<i>Gracilinea arenicola</i>	<i>Gracilinea arenicola</i>	CATCB9	MT311246
	<i>Gracilinea arenicola</i>	CATCC10	MT311245
<i>Jacksonvillea apiculata</i>	<i>Jacksonvillea apiculata</i>	UPOC77b	KX236194
	<i>Jacksonvillea apiculata</i>	UPOC77b	KX236196
	<i>Jacksonvillea apiculata</i>	UPOC77b	KX236195
<i>Desertifilum</i>	<i>Desertifilum salkalinema</i>	CHAB7200	KR269853
	<i>Desertifilum tharense</i>	UAMCS02	MK424816
<i>Konicacronema caatingensis</i>	<i>Konicacronema caatingensis</i>	CATCB6	MT311249
	<i>Konicacronema caatingensis</i>	CATCB1	MT311248
<i>Crinalium</i>	<i>Crinalium epipsammum</i>	SAG22.89	AB115964
	<i>Crinalium magnum</i>	SAG34.87	AB115965
<i>Cyanothece</i>	<i>Cyanothece aeruginosa</i>	SAG87.79	MF781042
	<i>Cyanothece aeruginosa</i>	SAG87.79	MF781041
	<i>Cyanothece svehlovae</i>	NIVACYA258 1	MF781048
	<i>Cyanothece svehlovae</i>	NIVACYA258 1	MF781043
	<i>Cyanothece svehlovae</i>	NIVACYA258 1	MF781047
<i>Laspinema thermale</i>	<i>Laspinema thermale</i>	HKS5	MF360989
	<i>Laspinema thermale</i>	HKS5	MF360988
