

Table S2. Percent dissimilarity of the 16S-23S ITS region in strains assigned to *Leptolyngbya* and *Plectolyngbya*, with sister taxon *Tapinothrix*. Values >7.0 are considered strong evidence for recognition of separate species, while values <3.0 indicate same species. Strains considered to be the same species share colored shading. Note the discontinuity with *Tapinothrix clintonii*, which in all cases exceeded 25% dissimilarity with *Leptolyngbya*/*Plectolyngbya* sequences. Species described in this paper are in bold red font.

	<i>Leptolyngbya</i> sp. SEV4-3-6g	<i>Leptolyngbya</i> sp. SEV4-3-6c	<i>Leptolyngbya</i> sp. SEV5-3-c28	<i>L. vaporiphila</i> YNP69B-MA2	<i>Plectolyngbya</i> sp. HA4277-MV3	<i>P. koreana</i> FBCC A1478	<i>P. terrestris</i> FBCC A147	<i>P. salina</i> FBCC A1477	<i>P. hodgsonii</i> ANT.L52B.4	<i>P. hodgsonii</i> ANT.LPR2.3	<i>P. hodgsonii</i> ANT.LPR2	<i>Leptolyngbya</i> sp. WJT66-NPBG17	<i>Leptolyngbya tildenae</i> YNP77-MA3	<i>Leptolyngbya</i> sp. WS3-2-JR1	<i>L. boryana</i> BACA0330	<i>L. boryana</i> PCC6306	<i>Leptolyngbya</i> sp. PCC73110	<i>Leptolyngbya</i> sp. CXA016.5	<i>L. tenerrima</i> UTCC77	<i>L. corticola</i> CCALA085	<i>T. clintonii</i> GSE PSE06
<i>T. clintonii</i> GSE PSE06																					
<i>L. corticola</i> CCALA085	25.9																				
<i>L. tenerrima</i> UTCC77	26.2	6.0																			
<i>Leptolyngbya</i> sp. CXA016.5	25.8	5.2	2.5																		
<i>Leptolyngbya</i> sp. PCC73110	26.1	6.0	2.3	1.3																	
<i>L. boryana</i> PCC6306	26.1	7.8	3.5	4.2	4.2																
<i>L. boryana</i> BACA0330	26.4	5.6	4.0	2.3	3.2	5.7															
<i>Leptolyngbya</i> sp. WS3-2-JR1	30.3	17.2	18.3	17.1	16.9	18.0	16.3														
<i>Leptolyngbya tildenae</i> YNP77-MA3	29.3	13.8	12.7	12.5	12.7	14.1	13.0	17.1													
<i>Leptolyngbya</i> sp. WJT66-NPBG17	29.6	12.4	12.0	10.4	9.5	14.2	11.2	16.3	8.8												
<i>P. hodgsonii</i> ANT.LPR2	28.9	18.7	19.5	18.6	17.5	21.9	18.9	23.2	21.9	17.7											
<i>P. hodgsonii</i> ANT.LPR2.3	29.8	20.4	21.0	21.5	22.0	18.0	21.5	23.8	23.0	21.8	4.2										
<i>P. hodgsonii</i> ANT.L52B.4	30.0	20.7	21.2	21.8	22.2	18.2	21.8	24.0	23.2	22.1	4.4	0.2									
<i>P. salina</i> FBCC A1477	25.7	19.5	18.7	18.8	19.0	16.7	19.9	20.6	15.5	15.2	16.6	14.0	14.2								
<i>P. terrestris</i> FBCC A147	29.0	19.4	18.1	17.5	18.5	16.8	18.3	17.2	17.4	16.8	23.8	21.9	22.1	17.7							
<i>P. koreana</i> FBCC A1478	28.4	18.3	18.6	17.8	17.8	17.3	18.6	17.5	17.5	17.7	20.7	19.9	20.1	15.7	11.2						
<i>Plectolyngbya</i> sp. HA4277-MV3	29.0	16.1	16.6	16.4	16.1	17.7	17.1	21.6	14.7	14.5	11.2	12.9	13.1	13.8	19.3	16.0					
<i>L. vaporiphila</i> YNP69B-MA2	29.9	14.1	14.0	13.4	13.5	15.0	14.0	17.9	8.6	10.5	21.9	22.8	23.0	16.5	16.2	17.1	15.0				
<i>Leptolyngbya</i> sp. SEV5-3-c28	25.2	20.3	21.2	19.5	19.7	19.7	19.8	18.8	18.8	18.1	22.3	23.1	23.3	17.9	15.9	14.9	20.1	21.7			
<i>Leptolyngbya</i> sp. SEV4-3-6c	27.8	21.1	21.6	21.5	20.8	22.2	21.1	20.3	20.1	17.7	20.7	21.4	21.6	21.1	20.9	20.4	19.7	17.7	19.0		
<i>Leptolyngbya</i> sp. SEV4-3-6g	28.3	21.5	22.1	22.0	21.3	22.7	21.5	20.7	20.6	18.1	21.1	21.9	22.1	21.5	21.4	20.8	20.1	18.1	19.5	0.4	
<i>Leptolyngbya</i> sp. SEV1-1-C2	27.6	20.5	20.9	20.5	20.0	21.9	20.5	19.3	18.5	16.7	20.2	21.4	21.6	19.6	19.8	19.5	19.1	16.4	18.7	3.8	4.2