

Table S1. Percent similarity of strains assigned to *Leptolyngbya* and *Plectolyngbya*, with sister taxa *Tapinothrix*, *Romeria*, and a *Leptolyngbya* species outside of *Leptolyngbya sensu stricto*. Values <94.5 generally indicate different genera, while values <98.7 are typically considered different species. The three clades in *Leptolyngbya sensu stricto* identified as nodes in the phylogenetic analysis are indicated by different colored shading.

	<i>Romeria</i> sp LEGE 06013	<i>Tapinothrix clintonii</i> GSE-PSE06-07G	<i>Plectolyngbya terrestris</i> FBCC-A1479	<i>Plectolyngbya salina</i> FBCC-A1477	<i>Plectolyngbya koreana</i> FBCC-A1478	<i>Plectolyngbya</i> sp. ZNP2-VF1	<i>Plectolyngbya</i> sp. WJT66-NPBG17	<i>Plectolyngbya hodgsonii</i> ANT.LPR2.2	<i>Leptolyngbya tildenae</i> YNP77-MA3	<i>Leptolyngbya vaporiphila</i> YNP69B-MA2	<i>Leptolyngbya</i> sp. WS3-2-JRJ1	<i>Leptolyngbya</i> sp. SEV4-3-c2	<i>Leptolyngbya</i> sp. SEV5-1-c5	<i>Leptolyngbya</i> sp SEV5-3-c28	<i>Leptolyngbya</i> sp. WS5-3-AS8	<i>Leptolyngbya angustata</i> UTCC473	<i>Leptolyngbya corticola</i> EF429299	<i>Leptolyngbya tenerrima</i> UTCC77	<i>Leptolyngbya boryana</i> PCC 6306	
<i>Leptolyngbya boryana</i> PCC 6306																				
<i>Leptolyngbya tenerrima</i> UTCC77																		99.6		
<i>Leptolyngbya corticola</i> EF429299																		99.1		
<i>Leptolyngbya angustata</i> UTCC473																		99.5	99.5	
<i>Leptolyngbya</i> sp. WS5-3-AS8																		96.4	96.5	
<i>Leptolyngbya</i> sp SEV5-3-c28																		94.9	95.0	
<i>Leptolyngbya</i> sp. SEV5-1-c5																		95.4	95.5	
<i>Leptolyngbya</i> sp. SEV4-3-c2																		96.4	96.5	
<i>Leptolyngbya</i> sp. WS3-2-JRJ1																		96.8	96.9	
<i>Leptolyngbya vaporiphila</i> YNP69B-MA2																		96.2	96.3	
<i>Leptolyngbya tildenae</i> YNP77-MA3																		95.7	95.8	
<i>Plectolyngbya hodgsonii</i> ANT.LPR2.2																		95.3	95.4	
<i>Plectolyngbya</i> sp. WJT66-NPBG17																		95.8	95.9	
<i>Plectolyngbya</i> sp. ZNP2-VF1																		95.9	96.0	
<i>Plectolyngbya koreana</i> FBCC-A1478																		96.1	96.2	
<i>Plectolyngbya salina</i> FBCC-A1477																		95.4	95.5	
<i>Plectolyngbya terrestris</i> FBCC-A1479																		96.2	96.3	
<i>Tapinothrix clintonii</i> GSE-PSE06-07G																		93.4	93.5	
<i>Romeria</i> sp LEGE 06013																		91.9	92.0	
<i>Leptolyngbya</i> sp. HA4303-MV7																		91.2	91.3	