

# Supplementary Materials

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**Supplementary Table S1.** Strains of the genus *Asterochloris* taxa used in this study and the GenBank accession numbers for their nuclear ITS rDNA, actin, and plastid *rbcL* gene sequences

Species	Strain	Host	GenBank accession No.		
			ITS rDNA	Actin	<i>rbcL</i>
<i>A. antarctica</i> sp. nov.	2015KGS049A	<i>Cladonia</i> sp.	<b>MT036573</b>	<b>MT073207</b>	<b>MT090157</b>
	2015KGS063A	<i>Cladonia</i> sp.	<b>MT036574</b>	<b>MT073208</b>	<b>MT090158</b>
	2015KGS085A	<i>Cladonia</i> sp.	<b>MT036575</b>	<b>MT073209</b>	<b>MT090159</b>
	2016KGIC018A	<i>Cladonia</i> sp.	<b>MT036576</b>	<b>MT073210</b>	<b>MT090160</b>
<i>A. echinata</i>	CAUPH 1012	<i>Lepraria</i> sp.	AM905992	AM906017	KP318700
	LEP 32	<i>Lepraria</i> sp.	FM955666	FM955670	-
	LEP 55	<i>Lepraria caesioalba</i>	FM955667	FM955671	-
<i>A. erici</i>	MN203	<i>Stereocaulon dactylophyllum</i>	AF345442	-	-
	UTEX 910	<i>Cladonia cristatella</i>	AF345439	-	-
<i>A. excentrica</i>	UTEX 911	<i>Cladonia cristatella</i>	AF345440	AM906018	-
	UTEX 1714	<i>Stereocaulon dactylophyllum</i>	AM905993	AM906019	-
	CAUPH 1011	<i>Lepraria</i> cf. <i>caesioalba</i>	AM905995	AM906021	-
<i>A. friedlii</i>	LEP 33	<i>Lepraria caesioalba</i>	AM905996	AM906022	-
	LEP 4	<i>Lepraria</i> cf. <i>caesioalba</i>	AM905994	AM906020	-
	Nelsen 3951	<i>Lepraria lobificans</i>	EU008671	EU008701	-
	Nelsen 3960	<i>Lepraria lobificans</i>	EU008675	EU008704	-
	Nelsen 3965	<i>Lepraria caesioalba</i>	EU008663	EU008696	-
	Nelsen 3966	<i>Lepraria caesioalba</i>	EU008664	EU008697	-
	Nelsen 3970	<i>Lepraria lobificans</i>	EU008677	EU008706	-
	Nelsen 3973	<i>Lepraria lobificans</i>	EU008678	EU008707	-
	Nelsen 3976	<i>Lepraria lobificans</i>	EU008679	EU008708	-
	CAUP H1013	<i>Lepraria rigidula</i>	AM905997	AM906023	KP318697
	OP 877	<i>Lepraria rigidula</i>	FM955668	FM955672	-
<i>A. gaertneri</i>	OP 886	<i>Lepraria incana</i>	FN556037	KP318677	-
	OP 900	<i>Lepraria rigidula</i>	FM955669	FM955673	-
	DIP02	<i>Diploschistes muscorum</i>	AM905998	AM906026	-
	MC12E	<i>Sphaerophorus globosus</i>	<b>MT036563</b>	<b>MT073197</b>	<b>MT090147</b>
<i>A. glomerata</i>	SAG 33.85	<i>Stereocaulon evolutooides</i>	FJ626732	-	JF502541
	UTEX 1712	<i>Cladonia squamosa</i>	AF345406	AM906025	-
	UTEX 895	<i>Stereocaulon evolutooides</i>	AF345382	AM906024	-
	Backor 13	<i>Cladonia arbuscula</i>	AM906000	AM906029	-
	STER 1	<i>Stereocaulon pileatum</i>	AM905999	AM906028	KP318701
<i>A. irregularis</i>	Talbot 153	<i>Stereocaulon botryosum</i>	DQ229880	DQ229889	-
	UTEX2236	<i>Stereocaulon</i> sp.	AF345411	AM906027	-
	CCAP 519/5B	<i>Xanthoria parietina</i>	AM906001	AM906030	-
	Hammer 7090	<i>Cladonia scabriuscula</i>	AF345424	-	-
<i>A. italiana</i>	Hammer 7212	<i>Cladonia capitellata</i>	AF345421	-	-
	MC9A	<i>Cladonia</i> sp.	<b>MT036572</b>	<b>MT073206</b>	<b>MT090156</b>
	UTEX 67	<i>Cladonia</i> sp.	AF345423	DQ229894	-
	CAUP H1010	<i>Lepraria neglecta</i>	AM906002	AM906031	KP318696
	LEP 23	<i>Lepraria caesioalba</i>	AM906003	AM906032	-
<i>A. leprarii</i>	LEP 25	<i>Lepraria caesioalba</i>	AM906004	AM906033	-
	LEP 30	<i>Lepraria neglecta</i>	AM906005	AM906034	-
	CAUP H1014	<i>Lepraria caesioalba</i>	AM906008	AM906037	-
	DIP 1	<i>Diploschistes muscorum</i>	AM906011	AM906040	-
	LEP 1	<i>Lepraria caesioalba</i>	AM906006	AM906035	-
	LEP 2	<i>Lepraria</i> cf. <i>caesioalba</i>	AM906007	AM906036	-
	LEP 27	<i>Lepraria caesioalba</i>	AM906009	AM906038	-
	LEP 28	<i>Lepraria alpina</i>	AM906010	AM906039	-
	Nelsen 3950	<i>Lepraria lobificans</i>	EU008670	DQ229892	-
	OP 866	<i>Lepraria borealis</i>	FN556044	KP318679	-

**Supplementary Table S1.** Continued

Species	Strain	Host	GenBank accession No.		
			ITS rDNA	Actin	<i>rbcL</i>
<i>A. magna</i>	LEP 48	<i>Lepraria</i> sp.	FN556046	-	-
	PA3	<i>Cladonia</i> sp.	KP318675	-	-
	Tuerk51501	<i>Psora decipiens</i>	KF907669	-	-
	UTEX 902	<i>Pilophorus acicularis</i>	AM906012	AM906041	-
<i>A. mediterranea</i>	C1	<i>Cladonia convoluta</i> – <i>C. foliacea</i> complex	KP257366	KP257333	-
	C14	<i>Cladonia convoluta</i> – <i>C. foliacea</i> complex	KP257379	KP257346	-
	C15	<i>Cladonia convoluta</i> – <i>C. foliacea</i> complex	KP257380	KP257347	-
	C17	<i>Cladonia convoluta</i> – <i>C. foliacea</i> complex	KP257382	KP257349	-
	C19	<i>Cladonia convoluta</i> – <i>C. foliacea</i> complex	KP257384	KP257335	-
	C2	<i>Cladonia convoluta</i> – <i>C. foliacea</i> complex	KP257367	KP257334	-
	C20	<i>Cladonia convoluta</i> – <i>C. foliacea</i> complex	KP257385	KP257352	-
	C29	<i>Cladonia rangiformis</i>	KP257394	KP257361	-
	C31	<i>Cladonia cervicornis</i> s. str.	KP257396	KP257363	-
	C32	<i>Cladonia cervicornis</i> s. str.	KP257397	KP257364	-
	C5	<i>Cladonia convoluta</i> – <i>C. foliacea</i> complex	KP257370	KP257337	-
	C23	<i>Cladonia convoluta</i> – <i>C. foliacea</i> complex	KP257388	KP257355	-
	<i>A. phycobiontica</i>	LEP 7	<i>Lepraria neglecta</i>	AM906013	AM906044
LEP 9		<i>Lepraria neglecta</i>	AM900491	AM906043	-
OP 858		<i>Lepraria</i> sp.	FN556025	KP318680	-
SAG 26.81		<i>Anzina carneonivea</i>	AM900490	AM906042	JF502538
<i>A. pseudoirregularis</i> sp. nov.	2015KGIC033B	<i>Cladonia</i> sp.	<b>MT036564</b>	<b>MT073198</b>	<b>MT090148</b>
	2015KGS006A	Unidentified	<b>MT036566</b>	<b>MT073200</b>	<b>MT090150</b>
	2015KGS010C	<i>Cladonia gracilis</i>	<b>MT036565</b>	<b>MT073199</b>	<b>MT090149</b>
	2015KGS064C	<i>Cladonia</i> sp.	<b>MT036567</b>	<b>MT073201</b>	<b>MT090151</b>
	2016KGIC019A	<i>Cladonia</i> sp.	<b>MT036568</b>	<b>MT073202</b>	<b>MT090152</b>
<i>A. sejongensis</i>	KGIC009B	<i>Cladonia pyxidata</i>	KX051238	KX051242	<b>MT135226</b>
	KGS007A	<i>Cladonia pyxidata</i>	KX051235	KX051239	<b>MT135227</b>
	KGS064B	<i>Cladonia pyxidata</i>	KX051236	KX051240	<b>MT135228</b>
	KGS080A	<i>Sphaerophorus globosus</i>	KX051237	KX051241	<b>MT135229</b>
<i>A. stereocaulonicola</i> sp. nov.	2015KGIC037A	<i>Stereocaulon alpium</i>	<b>MT036569</b>	<b>MT073203</b>	<b>MT090153</b>
	2015KGIC037B	<i>Stereocaulon alpium</i>	<b>MT036571</b>	<b>MT073205</b>	<b>MT090155</b>
	2015KGIC037D	<i>Stereocaulon alpium</i>	<b>MT036570</b>	<b>MT073204</b>	<b>MT090154</b>
<i>A. woessiae</i>	LEP 10	<i>Lepraria borealis</i>	AM900492	AM906045	-
	LEP 15	<i>Lepraria caesioalba</i>	AM906014	AM906047	-
	LEP 34	<i>Lepraria borealis</i>	AM906015	AM906048	-
	LEP 36	<i>Lepraria nylanderiana</i>	AM900493	AM906046	-
	MACB : 90622	<i>Cladonia foliacea</i>	FM205726	FM253695	-
	Nelsen 2166a	<i>Lepraria</i> sp.	EU008687	EU008714	-
	Nelsen 3637b	<i>Lepraria nigrocincta</i>	EU008681	EU008710	-
	OP 888	<i>Lepraria crassissima</i>	FN556033	KP318678	-
	Talbot KIS 187	<i>Stereocaulon saxatile</i>	DQ229886	DQ229897	-
	Nelsen 2181b	<i>Stereocaulon</i> sp.	DQ229884	DQ229896	-
<i>Asterochloris</i> sp.	Nelsen 2211a	<i>Lepraria</i> sp.	EU008684	EU008711	-
	Nelsen 2233f	<i>Pilophorus</i> cf. <i>cereolus</i>	DQ229883	DQ229895	-
	Nelsen 2585	<i>Lepraria</i> sp.	EU008690	EU008715	-
	OP 870	<i>Lepraria</i> sp.	FN556043	FN556052	-
	OP 872	<i>Lepraria caesioalba</i>	FN556041	FN556050	-
	OP 873	<i>Lepraria caesioalba</i>	FN556042	FN556051	-
	OP860	<i>Lepraria alpina</i>	FN556035	FN556048	-
	Peksa 495 / DIP 3	<i>Diploschistes muscorum</i>	KP318676	KP318681	-
	Peksa 787	<i>Cladonia rei</i>	FM945380	FM955675	-
	Peksa 796	<i>Cladonia fimbriata</i>	FM945358	FM955674	-
	Peksa 815	<i>Cladonia fimbriata</i>	FM945359	FM955676	-
	Peksa 855	<i>Lepraria rigidula</i>	FN556031	FN556047	-
	Peksa 921	<i>Cladonia rei</i>	FM945378	FM955677	-
	Talbot 101	<i>Stereocaulon paschale</i>	DQ229887	DQ229891	-
	Talbot 281	<i>Stereocaulon vesuvianum</i>	DQ229885	DQ229888	-
	Talbot 400	<i>Stereocaulon tomentosum</i>	DQ229882	DQ229893	-
	IH20	<i>Cladonia scabriuscula</i>	HE803038	KP318682	-

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