

1 Table S2. Information on airborne strains.  
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Strain	Phylum-Class <sup>A</sup>	Order-Species <sup>A</sup>	Amplicons <sup>B</sup>	Medium <sup>C</sup>	Revival <sup>D</sup>	Accession Number <sup>E</sup>
S1F4-04	Unknown algae	-	not amplified	F2 25%	NA	NA
S1F4-23	Unknown algae	-	not amplified	F2 25%	NA	NA
S1MWC-04	Chlorophyta-Trebouxiophyceae	<i>Prasiolales-Stichococcus bacillaris</i>	ITS(727)	MWC	NA	MK005063
S1MWC-08	Chlorophyta-Trebouxiophyceae	-	ITS(609),18S(620)	MWC	NA	MK005064, MK005120
S1MWC-09	Chlorophyta-Trebouxiophyceae	<i>Prasiolales</i>	ITS(734)	MWC	NA	MK005065
S1MWC-10	Chlorophyta-Trebouxiophyceae	<i>Trebouxiales-Trebouxia sp</i>	18S(346)	MWC	NA	MK005121
S2CENT-36	Chlorophyta-Trebouxiophyceae	<i>Trebouxiales-Trebouxia sp</i>	ITS(847)	MWC	yes	MK005066
S2CENT-37	Chlorophyta-Chlorophyceae	<i>Sphaeropleales-Neocystis mucosa</i>	ITS(207)	MWC	NA	MK005067
S2CENT-38	Chlorophyta-Chlorophyceae	<i>Sphaeropleales-Neocystis mucosa</i>	ITS(682)	MWC	NA	MK005068
S2CENT-44	Chlorophyta-Trebouxiophyceae	<i>Prasiolales-Desmococcus olivaceus</i>	ITS(735)	MWC	NA	MK005069
S2CENT-45	Chlorophyta-Trebouxiophyceae	<i>Trebouxiales-Trebouxia sp</i>	ITS(797)	MWC	yes	MK005070
S2CENT-56	Chlorophyta-Chlorophyceae	<i>Sphaeropleales-Neocystis sp</i>	ITS(660)	MWC	NA	MK005071
S2CENT-57	Unknown algae	-	not amplified	MWC	NA	NA
S2CENT-59	Chlorophyta-Chlorophyceae	<i>Sphaeropleales-Neocystis sp</i>	ITS(671)	MWC	NA	MK005072
S2CENT-61	Unknown algae	-	not amplified	MWC	NA	NA
S2CENT-62	Unknown algae	-	not amplified	MWC	NA	NA
S2F4-01	Unknown algae	-	not amplified	F2 25%	yes	NA

<sup>A</sup> The taxonomy is presented at the Phylum-Class-Order-Species level when available.

<sup>B</sup> As genetic markers we used partial 23S plastid gene, 18S and/or ITS rDNA genes and the amplicon length is indicated in brackets [bp]. Not amplified indicates that none of the genetic markers could be amplified despite an efficient DNA extraction.

<sup>C</sup> The culture medium was either artificial rain water (ARW), freshwater (MWC) or brackish-water (F2 25%).

<sup>D</sup> The capacity of revival was assessed over 31 weeks after freezing.

<sup>E</sup> NA stands for not available data.

## Ice nucleation active microalgae

S2F4-03	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Stichococcus sp</i>	ITS(627)	F2 25%	yes	MK005073
S2F4-12	Unknown algae	-	23S(332)	F2 25%	yes	MK005104
S2F4-15	Unknown algae	-	not amplified	F2 25%	NA	NA
S2F4-16	Stramenopiles- Xanthophyceae	<i>Tribonematale s-Tribonema affine</i>	23S(409)	F2 25%	NA	MK005105
S2F4-19	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Desmococcus spinocystis</i>	ITS(570)	F2 25%	NA	MK005074
S2F4-21	Unknown algae	-	not amplified	F2 25%	NA	NA
S2F4-24	Stramenopiles- Xanthophyceae	<i>Tribonematale s-Tribonema affine</i>	23S(402)	F2 25%	NA	MK005106
S2F4-25	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Desmococcus olivaceus</i>	ITS(760)	F2 25%	yes	MK005075
S2MWC-02	Chlorophyta- Trebouxiophyceae	<i>Chlorellales- Apatococcus sp</i>	ITS(752)	MWC	yes	MK005076
S2MWC-05	Chlorophyta- Trebouxiophyceae	<i>Chlorellales- Pseudochlorell a sp</i>	ITS(634)	MWC	NA	MK005077
S2MWC-06	Chlorophyta- Trebouxiophyceae	<i>Chlorellales- Pseudochlorell a sp</i>	ITS(633)	MWC	NA	MK005078
S2MWC-07	Unknown algae	-	not amplified	MWC	NA	NA
S2MWC-09	Chlorophyta- Trebouxiophyceae	<i>Prasiolales</i>	ITS(684)	MWC	NA	MK005079
S2MWC-11	Chlorophyta- Trebouxiophyceae	-	ITS(620),18S (603)	MWC	yes	MK005080, MK005122
S2MWC-12	Chlorophyta- Trebouxiophyceae	<i>Prasiolales</i>	ITS(562),18S (394)	MWC	NA	MK005081, MK005123
S2MWC-13	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Desmococcus olivaceus</i>	ITS(756)	MWC	NA	MK005082
S2MWC-15	Chlorophyta- Trebouxiophyceae	-	ITS(633),18S (618)	MWC	yes	MK005083, MK005124
S2MWC-16	Chlorophyta- Trebouxiophyceae	-	18S(421)	MWC	yes	MK005125
S2RA-18	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Stichococcus bacillaris</i>	ITS(422)	ARW	yes	MK005084
S2RA-21	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Stichococcus sp</i>	ITS(688)	ARW	NA	MK005085

S2RA-30	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Desmococcus olivaceus</i>	ITS(756)	ARW	yes	MK005086
S2RM-15	Chlorophyta- Trebouxiophyceae	<i>Trebouxiales- Trebouxia decolorans</i>	ITS(695)	MWC	yes	MK005087
S2RM-16	Chlorophyta- Trebouxiophyceae	<i>Trebouxiales- Trebouxia decolorans</i>	ITS(508),23S (386),18S(15 41)	MWC	yes	MK005088, MK005107, MK005126
S2RM-18	Chlorophyta- Trebouxiophyceae	<i>Trebouxiales- Trebouxia decolorans</i>	23S(410)	MWC	yes	MK005108
S2RM-20	Chlorophyta- Trebouxiophyceae	-	23S(407)	MWC	yes	MK005109
S2RM-21	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Desmococcus olivaceus</i>	ITS(762)	MWC	yes	MK005089
S2RM-23	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Desmococcus olivaceus</i>	ITS(634)	MWC	yes	MK005090
S2RM-26	Chlorophyta- Trebouxiophyceae	<i>Prasiolales</i>	ITS(660)	MWC	yes	MK005091
S2RM-28	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Desmococcus olivaceus</i>	ITS(763)	MWC	yes	MK005092
S3F4-32	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Desmococcus olivaceus</i>	ITS(675)	F2 25%	NA	MK005093
S3F4-36	Unknown algae	-	not amplified	F2 25%	NA	NA
S3F4-37	Unknown algae	-	not amplified	F2 25%	NA	NA
S3F4-39	Unknown algae	-	not amplified	F2 25%	NA	NA
S3F4-46	Chlorophyta- Trebouxiophyceae	<i>Trebouxiales- Trebouxia sp</i>	ITS(723)	F2 25%	yes	MK005094
S3F4-50	Unknown algae	-	not amplified	F2 25%	NA	NA
S3F4-61	Chlorophyta- Trebouxiophyceae	<i>Chlorellales- Apatococcus sp</i>	23S(405)	F2 25%	NA	MK005110
S3F4-64	Unknown algae	-	not amplified	F2 25%	yes	NA
S3F4-66	Chlorophyta- Trebouxiophyceae	<i>Prasiolales- Desmococcus olivaceus</i>	ITS(762)	F2 25%	yes	MK005095
S3MWC-21	Chlorophyta- Chlorophyceae	<i>Chlamydomon ales- Tetracystis vin atzeri</i>	ITS(608)	MWC	yes	MK005096
S3MWC-29	Chlorophyta- Chlorophyceae	<i>Chlamydomon ales-</i>	ITS(609)	MWC	yes	MK005097

## Ice nucleation active microalgae

		<i>Tetracystis vin atzeri</i>				
S3R-01	Chlorophyta-Trebouxiophyceae	<i>Trebouxiophyceae ordo incertae sedis-Coccomyxa sp</i>	ITS(68)	ARW	yes	MK005098
S3R-02	Unknown algae	-	not amplified	ARW	yes	NA
S3R-11	Chlorophyta-Trebouxiophyceae	<i>Prasiolales-Desmococcus olivaceus</i>	ITS(496)	ARW	NA	MK005099
S4MWC-01	Unknown algae	-	not amplified	MWC	NA	
S4MWC-02	Stramenopiles-Xanthophyceae	-	23S(409)	MWC	NA	MK005111
S4MWC-07	Unknown algae	-	not amplified	MWC	NA	
S4MWC-10	Stramenopiles-Xanthophyceae	-	23S(409)	MWC	NA	MK005112
S4MWC-13	Chlorophyta-Trebouxiophyceae	<i>Trebouxiales-Trebouxia sp</i>	ITS(662)	MWC	yes	MK005100
S4MWC-17	Chlorophyta-Trebouxiophyceae	<i>Trebouxiales-Trebouxia impressa</i>	ITS(124)	MWC	yes	MK005101
S4MWC-18	Stramenopiles-Xanthophyceae	-	23S(409)	MWC	NA	MK005113
S4MWC-25	Chlorophyta-Trebouxiophyceae	<i>Trebouxiales-Trebouxia sp</i>	ITS(664)	MWC	yes	MK005102
S4MWC-45	Stramenopiles-Xanthophyceae	-	23S(322)	MWC	yes	MK005114
S4MWC-47	Stramenopiles-Xanthophyceae	-	23S(311)	MWC	yes	MK005115
S4MWC-51	Chlorophyta-Trebouxiophyceae	<i>Trebouxiophyceae ordo incertae sedis-Chloroidium sp</i>	ITS(578)	MWC	NA	MK005103
S5CAR-W-04	Stramenopiles-Xanthophyceae	<i>Tribonematales-Tribonema sp</i>	23S(409)	ARW	NA	MK005116
S5CAR-W-05	Stramenopiles-Xanthophyceae	<i>Tribonematales-Tribonema sp</i>	23S(409)	ARW	NA	MK005117
S5CAR-W-06	Stramenopiles-Xanthophyceae	<i>Tribonematales-Tribonema sp</i>	23S(409)	ARW	NA	MK005118
S5MWC-02	Unknown algae	-	not amplified	MWC	yes	NA
S5MWC	Unknown algae	-	not amplified	MWC	NA	NA

-22	S5MWC	Unknown algae	-	not amplified	MWC	yes	NA
-23	S5MWC	Stramenopiles-	-	23S(409)	MWC	yes	MK005119
-52		Xanthophyceae					
-56	S5MWC	Unknown algae	-	not amplified	MWC	yes	NA
-58	S5MWC	Unknown algae	-	not amplified	MWC	yes	NA
-65	S5MWC	Unknown algae	-	not amplified	MWC	yes	NA

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