

**Table S1.** Locations and environmental parameters for the MYI and seawater samples. Concentration factor indicates the average fold increase in concentration for constituents partitioned into the brine phase of MYI. Values indicated by a dash are not available, value indicated by nd were not detected.

Sample	Type	Date	Latitude	Longitude	Salinity	T (°C)	Abundance (cells ml <sup>-1</sup> x 10 <sup>4</sup> )	Chlorophyll <i>a</i> (mg m <sup>-3</sup> )	pEPS†	Concentration factor
I13	Ice	8/21/2010	89°27.12' N	129°19.70' W	1.9*	-1.1	1.68	0.025	2.56	12
I14	Ice	8/26/2010	88°42.00' N	69°45.00' W	0.7*	-1.2	8.40	0.055	2.29	35
S15	Water	8/15/2010	88°42.66' N	158°53.42' E	32.57	-1.5	-	-	-	-
S16	Water	8/21/2010	88°27.13' N	129°20.37' W	31.78	-1.5	-	-	-	-
S17	Water	8/26/1010	88°43.74' N	58°27.28' W	30.92	-1.5	18.40	0.037	nd	-

†particulate exopolymers in µg glucose equivalents ml<sup>-1</sup>

\*average value for melted core determined by refractometer, all other salinities determined conductometrically