

Can heat adaptation be transferred across ocean basins?

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Supplementary Tables and Figures

Table S1. Analysis of variance table of the effects of sperm treatment (i.e., fresh versus cryopreserved) and egg donor colony on fertilization rates in *Platygyra daedalea*. Data were log (x +1) transformed to improve normality and homogeneity of variance.

Source	df	SS	MS	F	<i>p</i>	η_p^2	η^2
Sperm treatment	1	154.688	154.688	736.366	< 0.001	0.598	0.885
Egg donor colony	5	52.368	10.474	49.858	< 0.001	0.202	0.722
Sperm treatment x egg donor	5	31.424	6.285	29.918	< 0.001	0.121	0.609
Residuals	96	20.167	0.21				

Table S2a. Analysis of variance table of the effects of cryopreserved sperm source and egg donor colony on fertilization rates in *Platygyra daedalea*. Data were log (x +1) transformed to improve normality and homogeneity of variance.

Source	df	SS	MS	F	<i>p</i>	η_p^2	η^2
Sperm source	4	12.842	3.211	17.343	< 0.001	0.100	0.536
Egg donor colony	5	96.975	19.395	104.769	< 0.001	0.755	0.897
Sperm source x egg donor	20	7.492	0.375	2.023	0.019	0.058	0.403
Residuals	60	11.107	0.185				

Table S2b. Tukey post-hoc contrasts of overall cryopreserved sperm population effects on fertilization rates in *Platygyra daedalea*.

Contrast	<i>t</i>	<i>p</i>
Al Aqah - Nil	2.943	0.036
Al Aqah - Pelorus	-3.831	0.003
Al Aqah - Saadiyat	-0.821	0.923
Al Aqah - Trunk	-4.203	0.001
Nil - Pelorus	-6.774	< 0.001
Nil - Saadiyat	-3.764	0.003
Nil - Trunk	-7.146	< 0.001
Pelorus - Saadiyat	3.010	0.030
Pelorus - Trunk	-0.371	0.996
Saadiyat - Trunk	-3.381	0.011

Table S2c. Tukey post-hoc contrasts of cryopreserved sperm source effects on fertilization rates in *Platygyra daedalea* for each egg donor colony.

Egg donor colony	Contrast	<i>t</i>	<i>p</i>
Pelorus ♀1	Al Aqah - Nil	0.000	1.000
	Al Aqah - Pelorus	-1.042	0.835
	Al Aqah - Saadiyat	0.000	1.000
	Al Aqah - Trunk	-2.631	0.077
	Nil - Pelorus	-1.042	0.835
	Nil - Saadiyat	0.000	1.000
	Nil - Trunk	-2.631	0.077
	Pelorus - Saadiyat	1.042	0.835
	Pelorus - Trunk	-1.588	0.511
	Saadiyat - Trunk	-2.631	0.077
Pelorus ♀2	Al Aqah - Nil	0.700	0.956
	Al Aqah - Pelorus	-2.692	0.067
	Al Aqah - Saadiyat	-0.640	0.968
	Al Aqah - Trunk	-1.649	0.473
	Nil - Pelorus	-3.391	0.010
	Nil - Saadiyat	-1.340	0.668
	Nil - Trunk	-2.348	0.144
	Pelorus - Saadiyat	2.052	0.255
	Pelorus - Trunk	1.043	0.834
	Saadiyat - Trunk	-1.009	0.850
Pelorus ♀3	Al Aqah - Nil	0.000	1.000
	Al Aqah - Pelorus	-2.114	0.228
	Al Aqah - Saadiyat	-1.042	0.835
	Al Aqah - Trunk	-0.723	0.950
	Nil - Pelorus	-2.114	0.228
	Nil - Saadiyat	-1.042	0.835
	Nil - Trunk	-0.723	0.950
	Pelorus - Saadiyat	1.072	0.820
	Pelorus - Trunk	1.391	0.636
	Saadiyat - Trunk	0.319	0.998
Pelorus ♀4	Al Aqah - Nil	2.959	0.034
	Al Aqah - Pelorus	-0.634	0.969
	Al Aqah - Saadiyat	-0.613	0.972
	Al Aqah - Trunk	-1.576	0.519
	Nil - Pelorus	-3.593	0.006
	Nil - Saadiyat	-3.572	0.006
	Nil - Trunk	-4.535	< 0.001
	Pelorus - Saadiyat	0.020	1.000
	Pelorus - Trunk	-0.942	0.879
	Saadiyat - Trunk	-0.962	0.871
Trunk ♀5	Al Aqah - Nil	0.423	0.993
	Al Aqah - Pelorus	-3.945	0.002
	Al Aqah - Saadiyat	-2.843	0.046
	Al Aqah - Trunk	-3.367	0.011
	Nil - Pelorus	-4.368	< 0.001
	Nil - Saadiyat	-3.266	0.015
	Nil - Trunk	-3.790	0.003
	Pelorus - Saadiyat	1.101	0.805
	Pelorus - Trunk	0.578	0.978
	Saadiyat - Trunk	-0.524	0.985
Trunk ♀6	Al Aqah - Nil	3.127	0.022
	Al Aqah - Pelorus	1.042	0.835
	Al Aqah - Saadiyat	3.127	0.022
	Al Aqah - Trunk	-0.349	0.997

	Nil - Pelorus	-2.085	0.240
	Nil - Saadiyat	0.000	1.000
	Nil - Trunk	-3.476	0.008
	Pelorus - Saadiyat	2.085	0.240
	Pelorus - Trunk	-1.391	0.636
	Saadiyat - Trunk	-3.476	0.008

Table S3a. Analysis of variance table of the effects of sperm source and temperature on survival rates in *Platygyra daedalea*. Time was included as a random factor and data were x^2 transformed to improve normality and homogeneity of variance.

Source	df	SS	MS	F	p	η_p^2	η^2
Sperm source	2,80	5.1E+07	2.5E+07	10.725	< 0.001	0.117	0.211
Temperature	1,80	1.4E+08	1.4E+08	60.443	< 0.001	0.33	0.43
Sperm source x temperature	2,80	5.1E+07	2.5E+07	10.656	< 0.001	0.116	0.21
Residuals	90	1.9E+08	2.1E+06				

Table S3b. Tukey post-hoc contrasts of sperm source effects on survival rates in *Platygyra daedalea* for each experimental temperature.

Temperature	Contrast	t	p
27°C	Pelorus cryopreserved – Pelorus fresh	-2.901	0.013
	Pelorus cryopreserved – Saadiyat cryopreserved	-3.648	0.001
	Pelorus fresh – Saadiyat cryopreserved	-0.746	0.737
33°C	Pelorus cryopreserved – Pelorus fresh	-3.491	0.002
	Pelorus cryopreserved – Saadiyat cryopreserved	1.689	0.216
	Pelorus fresh – Saadiyat cryopreserved	5.179	< 0.001

Table S4a. Analysis of variance table of the effects of DMSO sperm treatment and temperature on survival rates in *Platygyra daedalea*.

Source	df	SS	MS	F	p	η_p^2	η^2
DMSO	1	5.6E+03	5.6E+03	32.031	< 0.001	0.566	0.727
Temperature	1	1.8E+03	1.8E+03	10.473	0.007	0.185	0.466
DMSO x temperature	1	3.7E+02	3.7E+02	2.097	0.173	0.037	0.149
Residuals	12	2.1E+03	1.7E+02				

Table S4b. Tukey post-hoc contrasts of sperm DMSO treatment effects on survival rates in *Platygyra daedalea* for each experimental temperature.

Temperature	Contrast	t	p
27°C	No DMSO – DMSO added	2.978	0.012
33°C	No DMSO – DMSO added	5.026	< 0.001

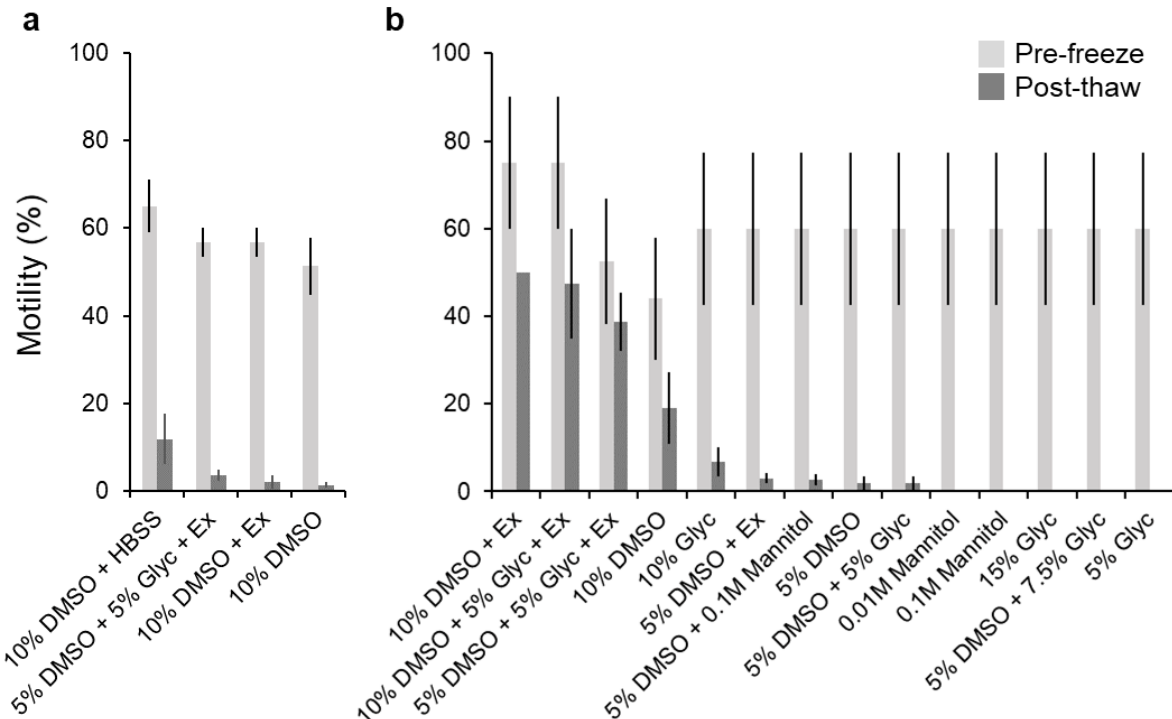


Figure S1. Pre-freeze and post-thaw motility of *Platygyra daedalea* (a) and *Acropora downingi* (b) sperm frozen with different cryoprotectants. Forward motility (mean % \pm standard error) was evaluated in 1:10 dilutions of samples across spawning nights in between 2012 and 2014 ($n = 3-8$ and 2-5 spawning nights for *P. daedalea* and *A. downingi* per cryoprotectant treatment). Cryoprotectants used were dimethyl sulfoxide (DMSO), mannitol, glycerol (Glyc), commercial dual-sugar extender (Ex; Exodus 120PL; 50% final concentration), and Hanks' Balanced Salt Solution (HBSS; 2.8mM glucose final concentration).