

Alabama Department of Conservation and Natural Resources Marine Resources Division Flounder Research and Stocking Program



John Mareska October 22, 2025 To Technical Coordinating Committee



AL DCNR/Marine Resources Division

Southern Flounder Jobs

- Culture & Stocking
 - CPMC
- Cryogenic technology
 - Auburn
- Movements and Habitats
 - USA/DISL



Southern Flounder Stock Enhancement

- Releases:
 - 2022 = 102,341
 - 2023 = 115,352
 - 2024 = 1,145
 - 2025 = 126,491



Cryopreservation using controlled-rate freezer

Cryoprotectant treatments			Motility (%)	STD
DMSO	.	.	10.5	3.5
DMSO	Trehalose 200 mM	.	11.0	4.0
DMSO	Lactose 0.5%	.	11.1	2.5
DMSO	.	Egg yolk	8.3	4.6
DMSO	Trehalose 200 mM	Egg yolk	12.8	2.4
DMSO	Lactose 0.5%	Egg yolk	17.0	4.0
DMSO	Trehalose 400 mM	.	5.2	4.3
DMSO	Lactose 1%	.	6.3	6.1
DMSO	Trehalose 400 mM	Egg yolk	6.2	4.6
DMSO	Lactose 1%	Egg yolk	9.0	.
PG	.	.	9.8	0.3
PG	Trehalose 200 mM	.	8.8	4.5
PG	Lactose 0.5%	.	13.0	3.6
PG	.	Egg yolk	5.3	1.2
PG	Trehalose 200 mM	Egg yolk	13.2	0.3
PG	Lactose 0.5%	Egg yolk	11.0	3.0
PG	Trehalose 400 mM	.	5.0	1.0
PG	Lactose 1%	.	8.2	2.8
PG	Trehalose 400 mM	Egg yolk	5.0	7.1
PG	Lactose 1%	Egg yolk	12.8	1.0
Fresh	.	.	21.0	.

Post-thaw motility ranged from 5 to 17%, which was slightly lower than the fresh control (21%)

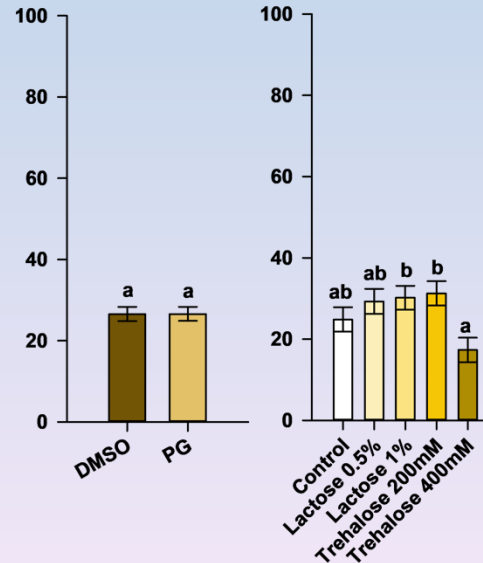
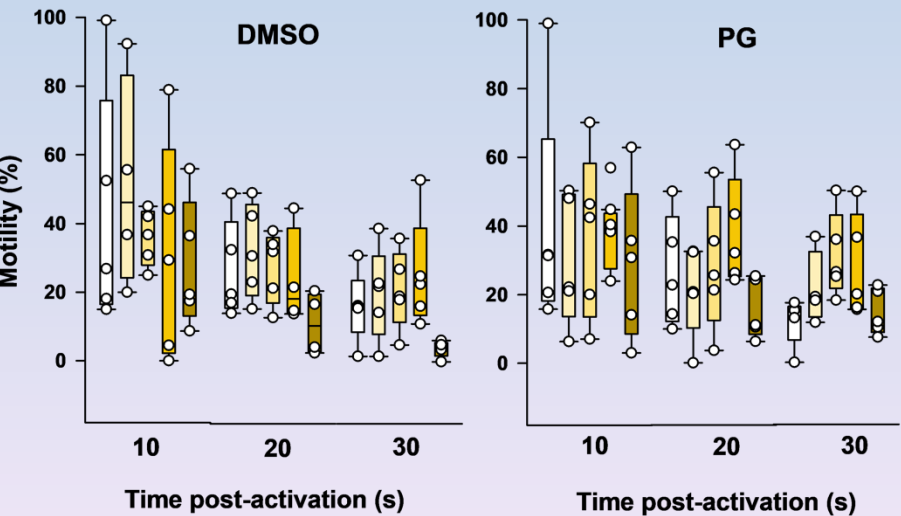
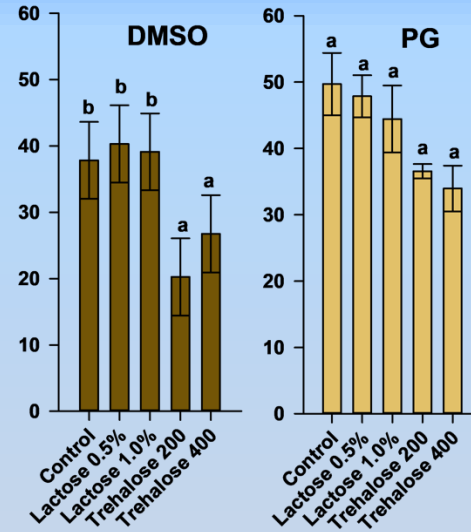
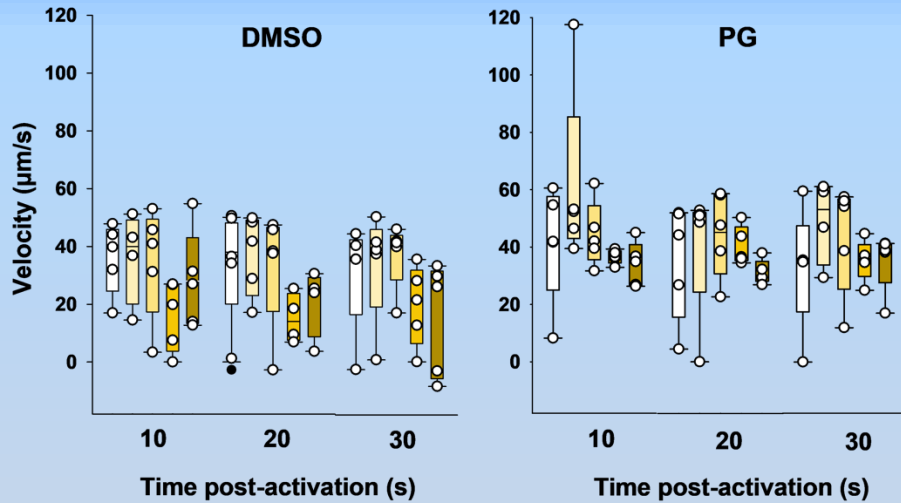
Top two treatments were

(i) DMSO + 0.5% lactose + egg yolk

(ii) Propylene glycol + trehalose 200 mM + egg yolk



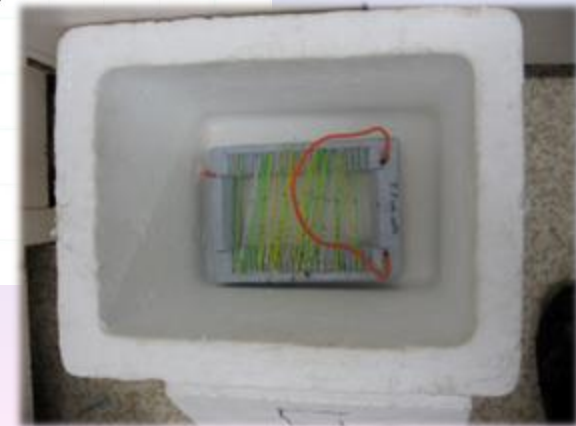
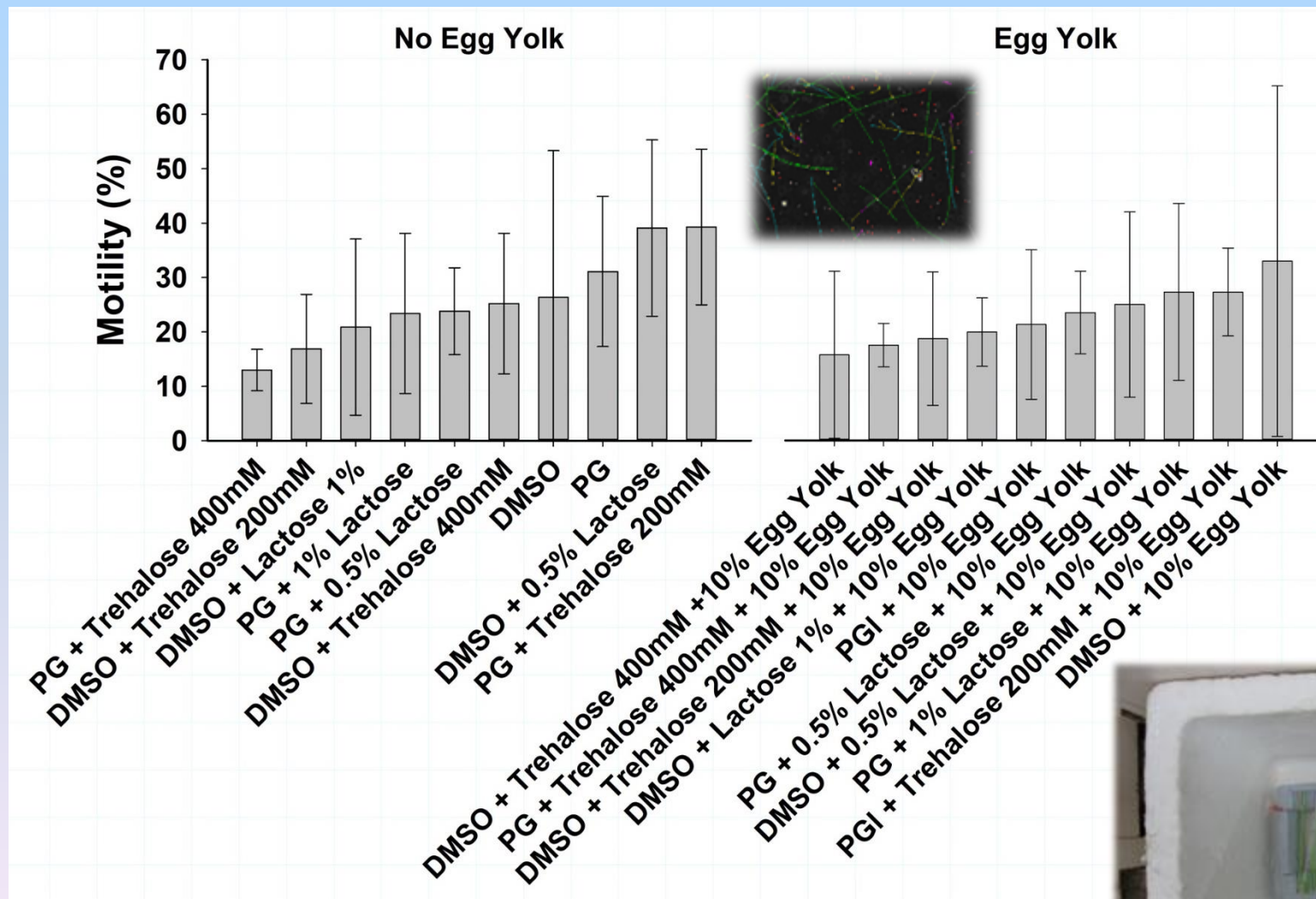
Cryopreservation using controlled-rate freezer



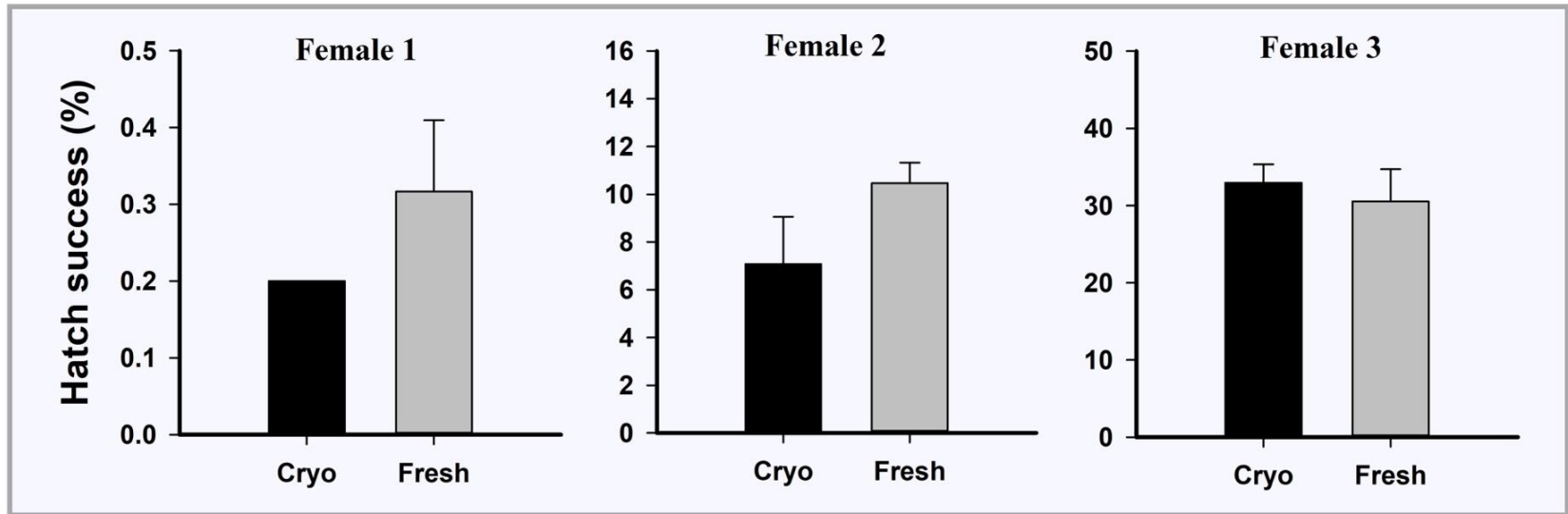
Sperm cryopreserved with varying cryoprotectants. Average values $\pm$ standard errors are represented. Letters indicate a significant difference between treatments.



Cryopreservation using raft technique



Comparing fresh and cryopreserved sperm



Movements and Habitats Summarized

- Habitats
 - Southern Flounder utilize areas of low salinity in Upper Mobile Bay and rivers
 - Extensive riverine use Sept – mid-November
 - High system fidelity; return to rivers from which they egress
- Environmental drivers
 - Warmer winter temperatures and high salinity associated with poor recruitment
 - Improve ability to estimate years of poor recruitment



Movements and Habitats Summarized

- Movement data
 - November migration associated photo period or decrease in water temperature
 - A portion of inshore flounder migrate to lower bay and some offshore to spawn.
 - Egress through the mouth of Mobile Bay
 - A portion of the population will remain offshore after spawning
 - Awaiting otolith microchemistry results as an indicator of offshore/inshore movements
 - No difference in size of migratory vs non-migratory Southern Flounder



Movements and Habitats Summarized

- Overwinter
 - Riverine
 - Lower Mobile Bay
 - Post spawning flounder may utilize nearshore habitats
- Ingress
 - March – May Resident flounder returning to upper bay and river locations
 - June – August Migrating flounder return to estuary

