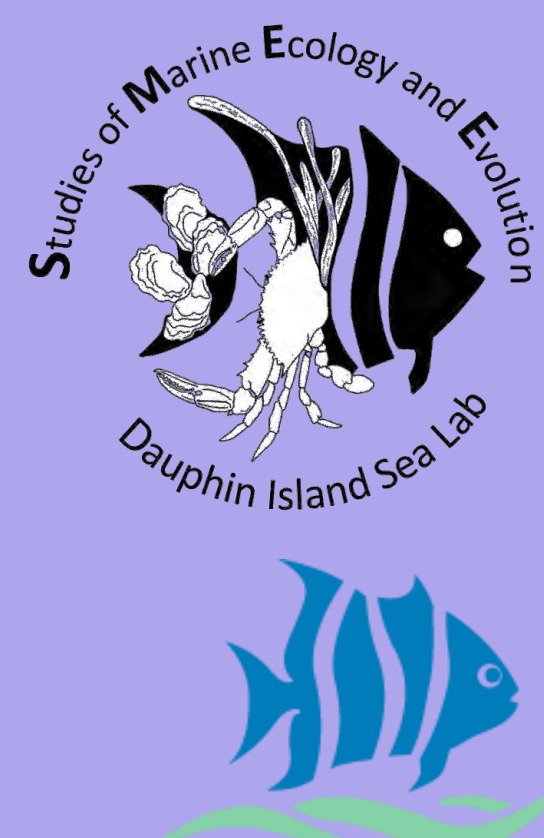
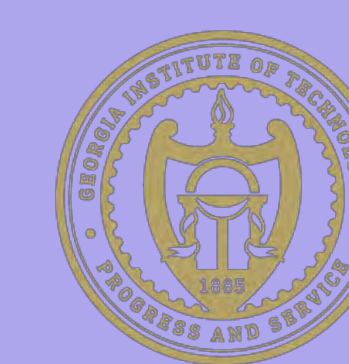




Urine Trouble! Chemicals driving fear responses in mud crabs

Kelly Lesnik^{1,2}, Benjamin Belgrad², Marisa Cepeda³, Julia Kubanek³, Marc Weissburg³, Sarah Roney³, Benton Jacob³, Delbert L. Smee²

USA UNIVERSITY OF SOUTH ALABAMA



Georgia Institute of Technology

¹ University of South Alabama, ² Dauphin Island Sea Lab, ³ Georgia Institute of Technology

INTRODUCTION

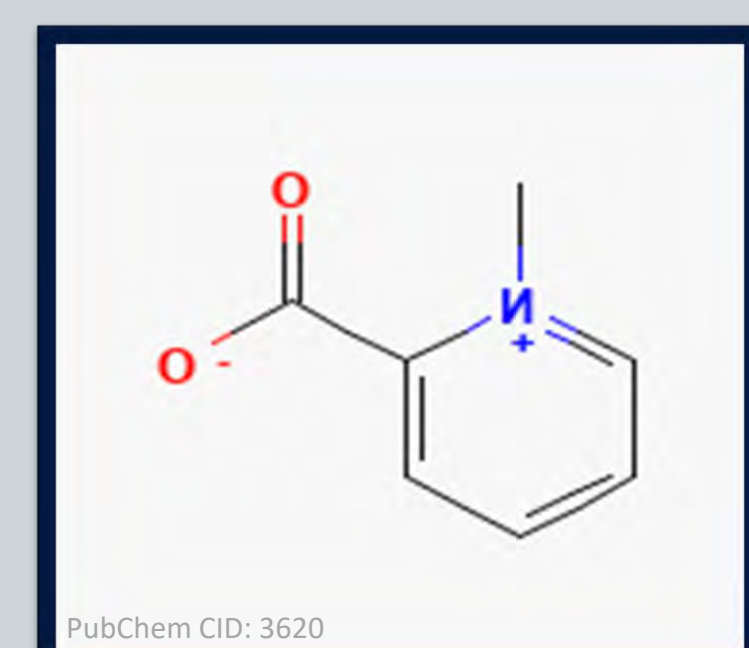
Homarine and Trigonelline are compounds found in blue crab (*Callinectes sapidus*) urine^[1] known to induce defenses in various prey species

Black-fingered mud crabs (*Panopeus herbstii*) can detect and recognize these cues^[2] causing them to reduce foraging to avoid detection

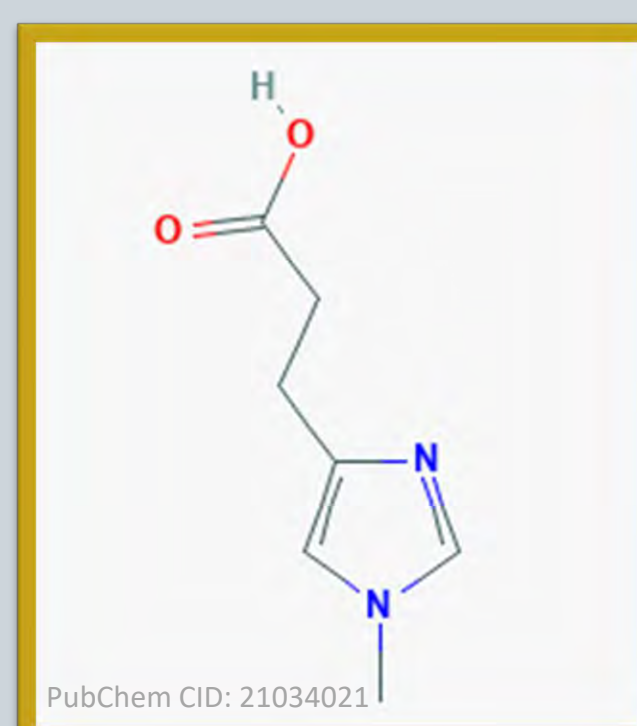
Homarine, Trigonelline, and 3-(1-methyl-1H-imidazol-4-yl) propanoic acid (compound #4) induce defenses in oysters^[3]

OBJECTIVE:

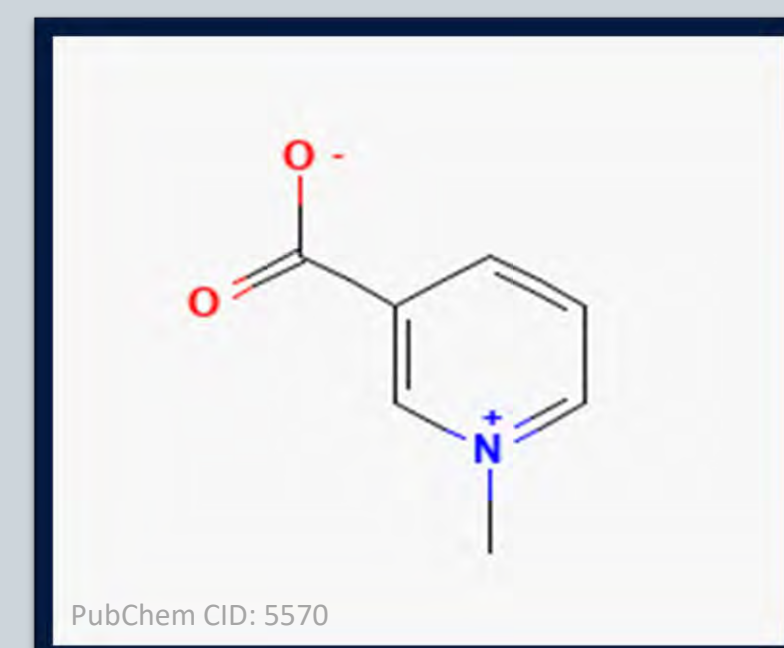
Do *P. herbstii* exhibit induced defense responses (reduced feeding) when exposed to C#4?



Homarine



Compound #4

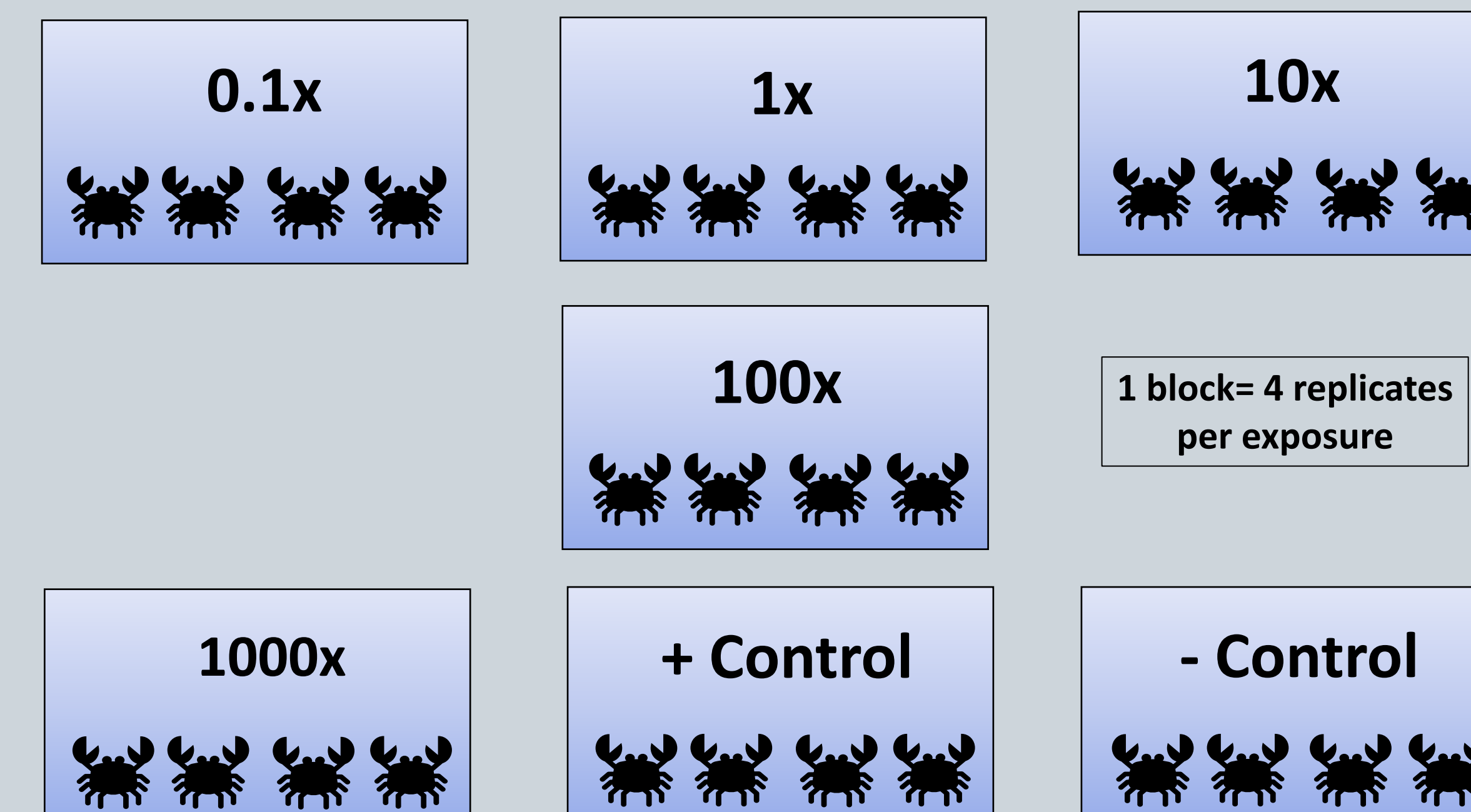


Trigonelline

METHODS

- 4 crabs in each tank
- Add pre-weighed (3.9-4.1 g) raw shrimp to each tank
- Expose MC to concentrations of C#4: 0.1x, 1x, 10x, 100x, 1000x
- Positive control: Predator water
- Negative control: sea water
- After 4 hours, collect and re-weigh shrimp
- Feeding as proxy for foraging

Tank Setup



RESULTS

Shrimp consumption across concentrations

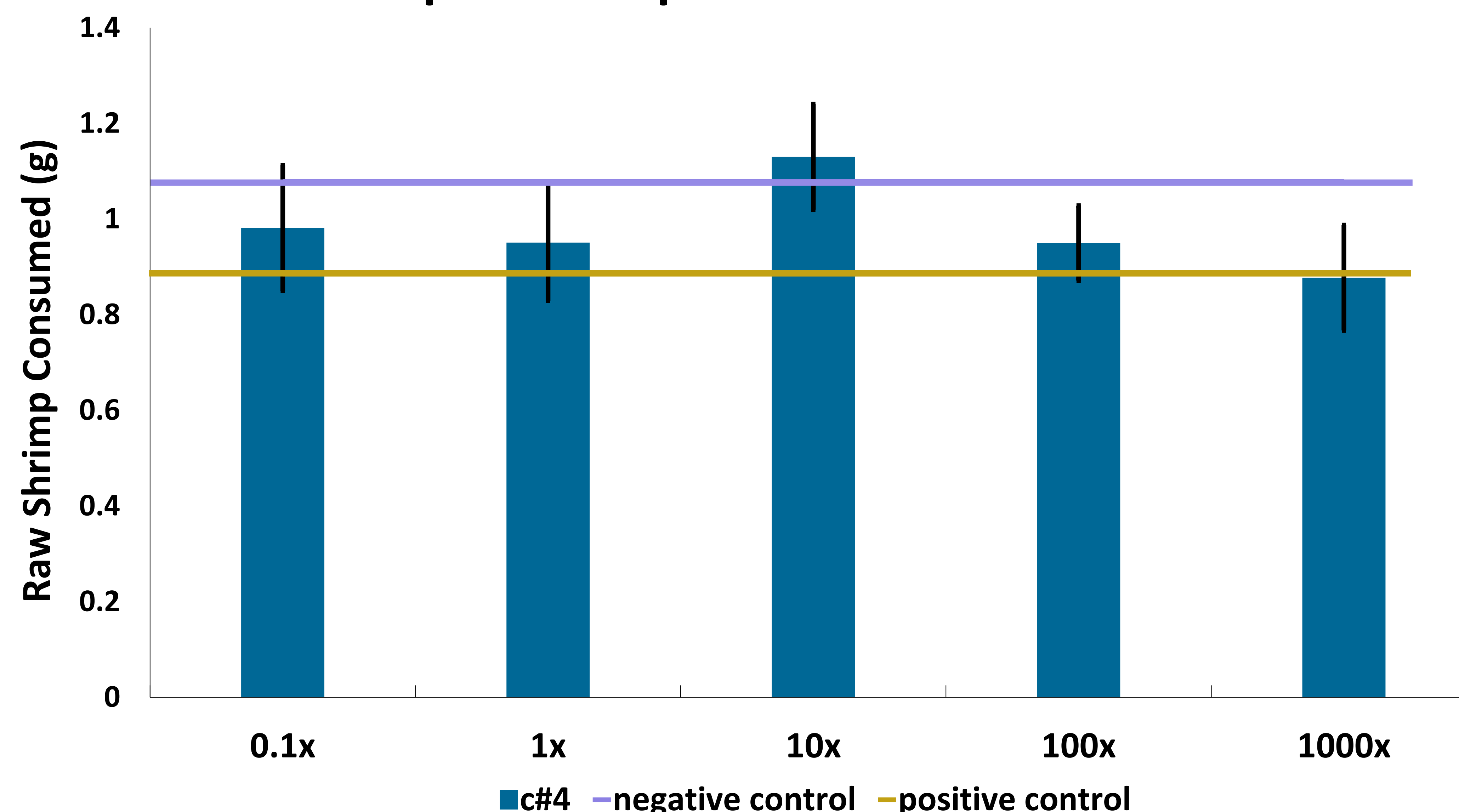


Figure 1. Shrimp Consumption by *P. herbstii* across all 3 blocks (n=84)

CONCLUSIONS

- No significant differences between treatments
- Try bioassays in mesocosm system
- More replicates
- Try with other species found on oyster reefs
- Exposure may not induce

ACKNOWLEDGEMENTS

This work was funded by NSF RaMP grant #2318922 and made possible through Dauphin Island Sea Lab.

Special thanks to Jessica Lunt, Randi Cannon, Jess Hilliker, and collaborators at Georgia Tech for mentoring, providing useful feedback, and supporting me throughout these experiments.



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- [1] Poulin, R. X., S. Lavoie, K. Siegel, D. A. Gaul, M. J. Weissburg, and J. Kubanek. 2018. Chemical encoding of risk perception and predator detection among estuarine invertebrates. *Proceedings of the National Academy of Sciences* 115:662–667.
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