

The Effect of Salinity on DNA Methylation and Early Development in the Urchin *Lytechinus variegatus*



Jesse Margolies
 Jesse.Margolies@gmail.com
 Arizona State University
 Dr. Juliet Wong
 Dr. Jose Eirin-Lopez

BACKGROUND

One of the many impacts global climate change has caused and will continue to cause is an increase in the frequency and severity of storms. These storms bring heavy rain that can drastically change the salinity of coastal waters very quickly. The goal of this study is to examine how these changes in ocean salinity impact the model organism *Lytechinus variegatus* at the adult level and during early development. Understanding how climate change affects coastal species enables us to better predict and address the climate crisis.

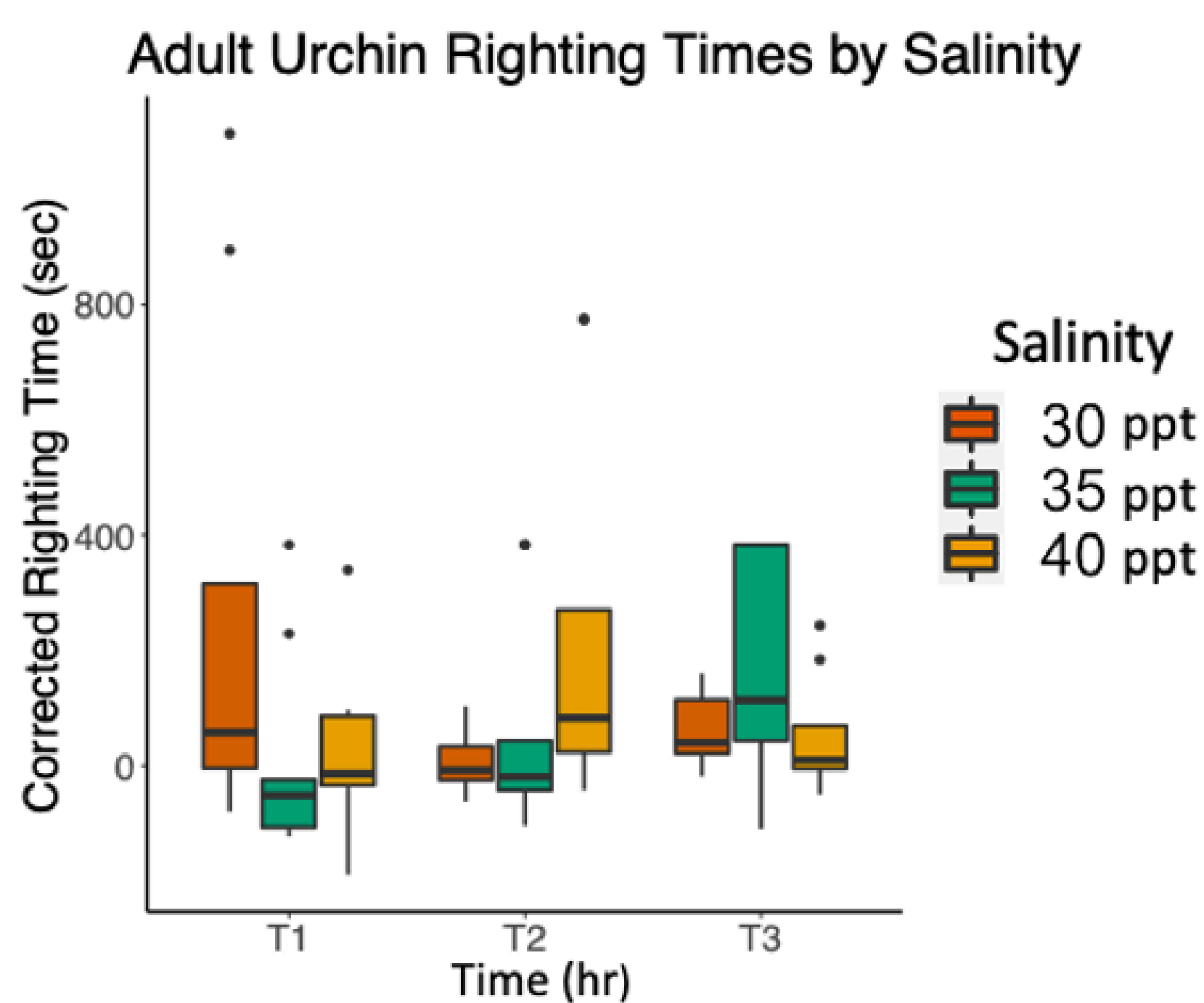
METHODS: Adults

1. Placed urchins in different salinities (30,35,40ppt)
2. Every hour, conducted "righting trials"
3. Recorded righting times
4. Collected tube feet for DNA methylation analysis

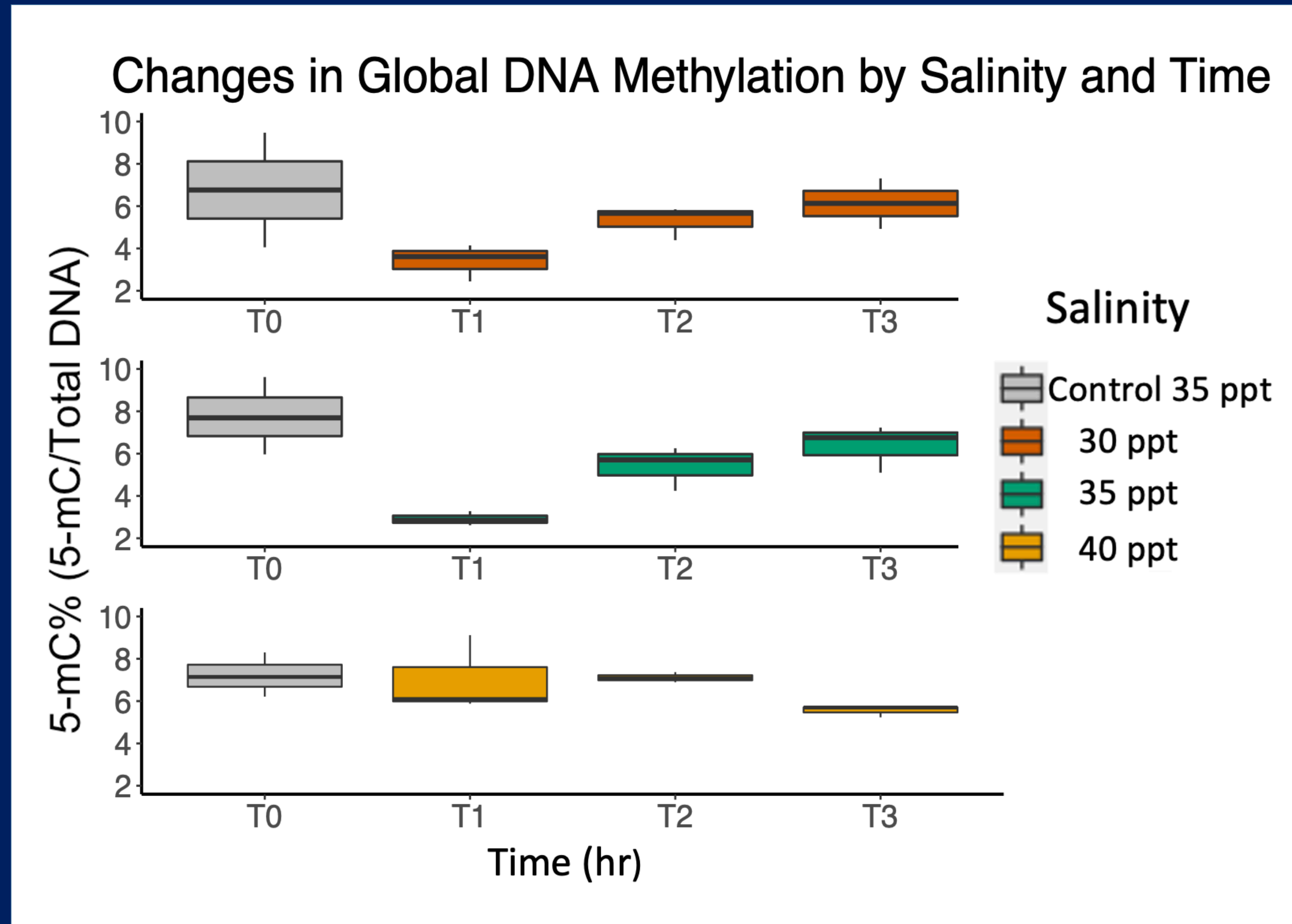
METHODS: Early Development

1. Spawned urchins and fertilized eggs
2. Raised larvae in different salinities (25,30,35ppt)
3. Estimated survivorship during early development
4. Measured larval body size
5. Introduced 2-day-old larvae to a wide range of salinities for ~ 4hrs
6. Estimated survivorship

RESULTS



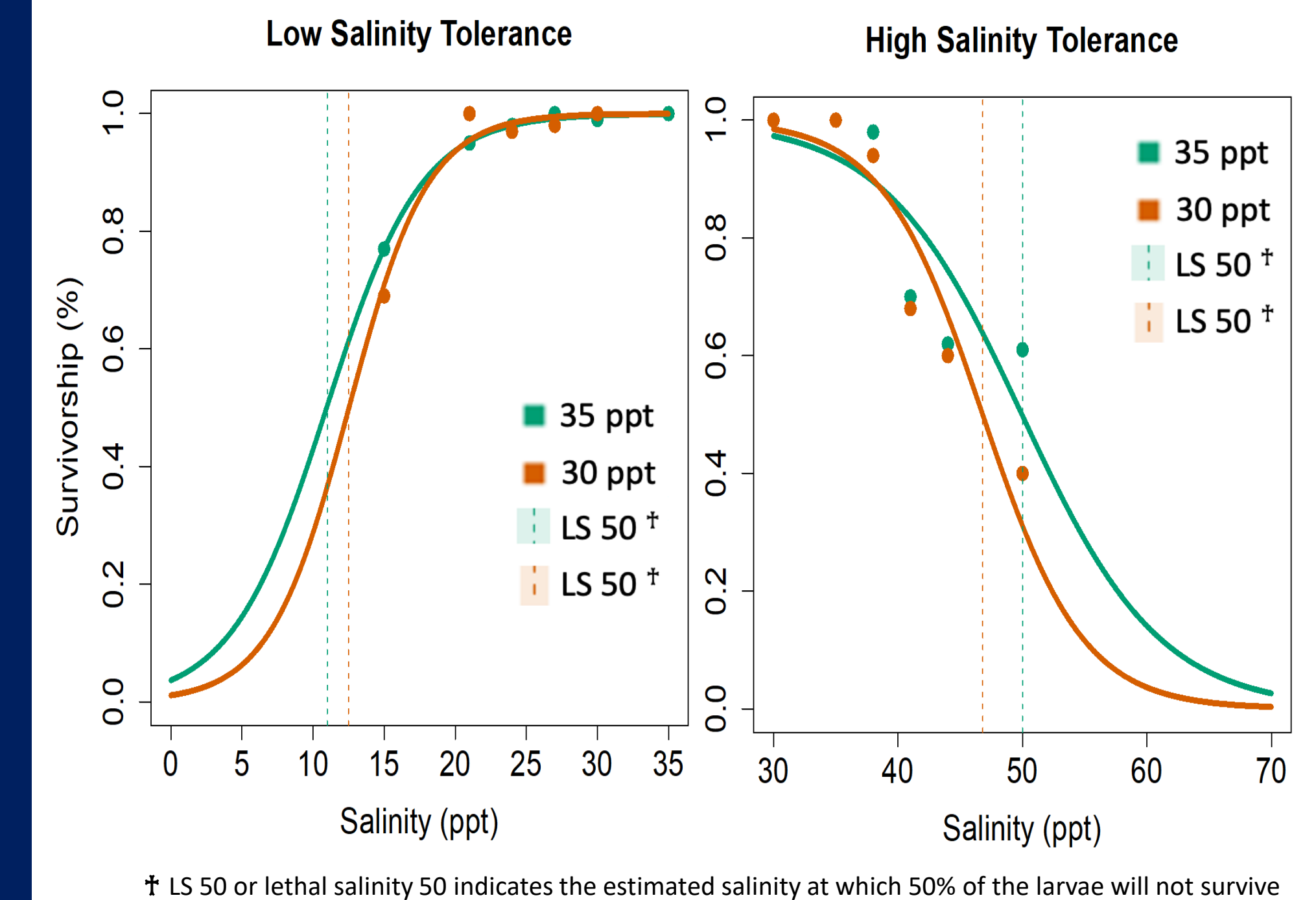
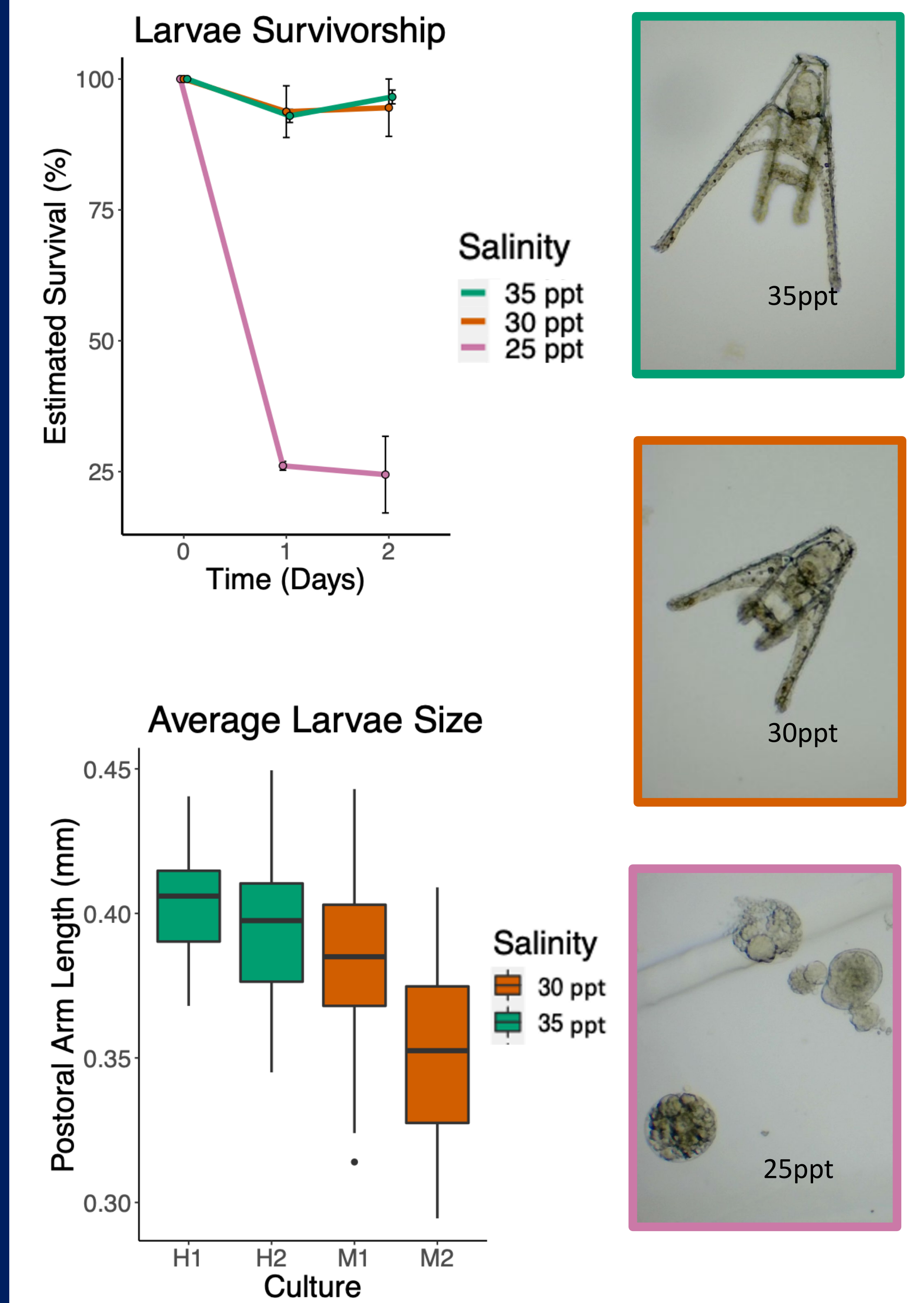
Salinity impacts early development and global DNA methylation in the urchin *Lytechinus variegatus*.



FIU Coastal Ecosystems REU Site



RESULTS



† LS 50 or lethal salinity 50 indicates the estimated salinity at which 50% of the larvae will not survive

<http://environment.fiu.edu>



This material is based upon work supported by the National Science Foundation under Grant No. HRD-1852123. This NSF Grant was awarded to Florida International University as part of the Research Experiences for Undergraduates (REU) Site Program. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.