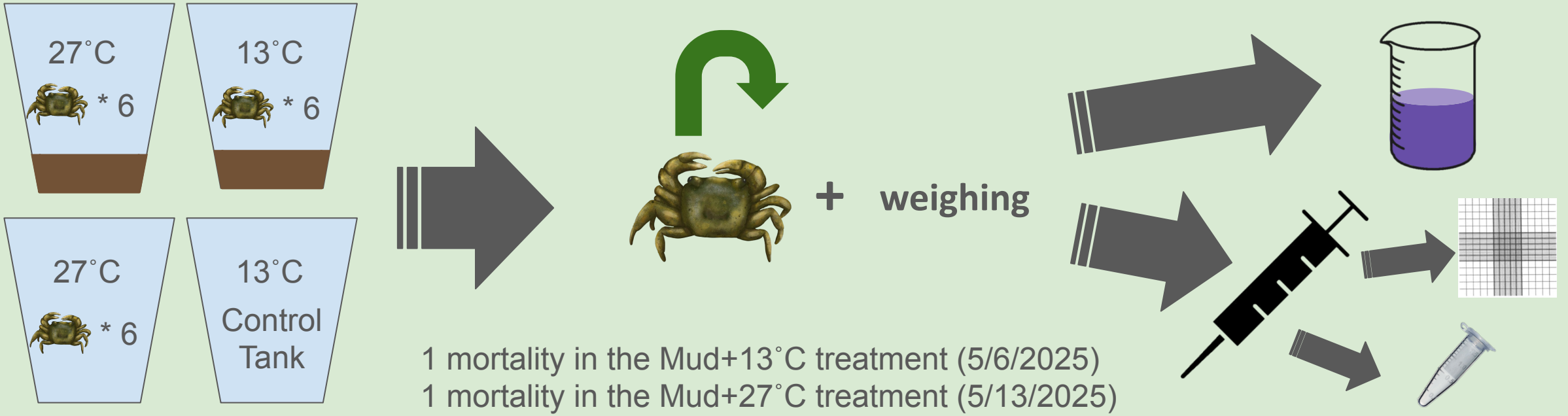
Impacts of temperature on immune response in *Hemigrapsus oregonensis*

Research Question: How does temperature affect immune response in *H. oregonensis*? (measured through haemocyte concentration and stress assays)
Alternative Hypothesis: Higher temperatures will result in increased stress levels and decreased haemocyte concentrations in *Hemigrapsus oregonensis* when exposed to pathogens.

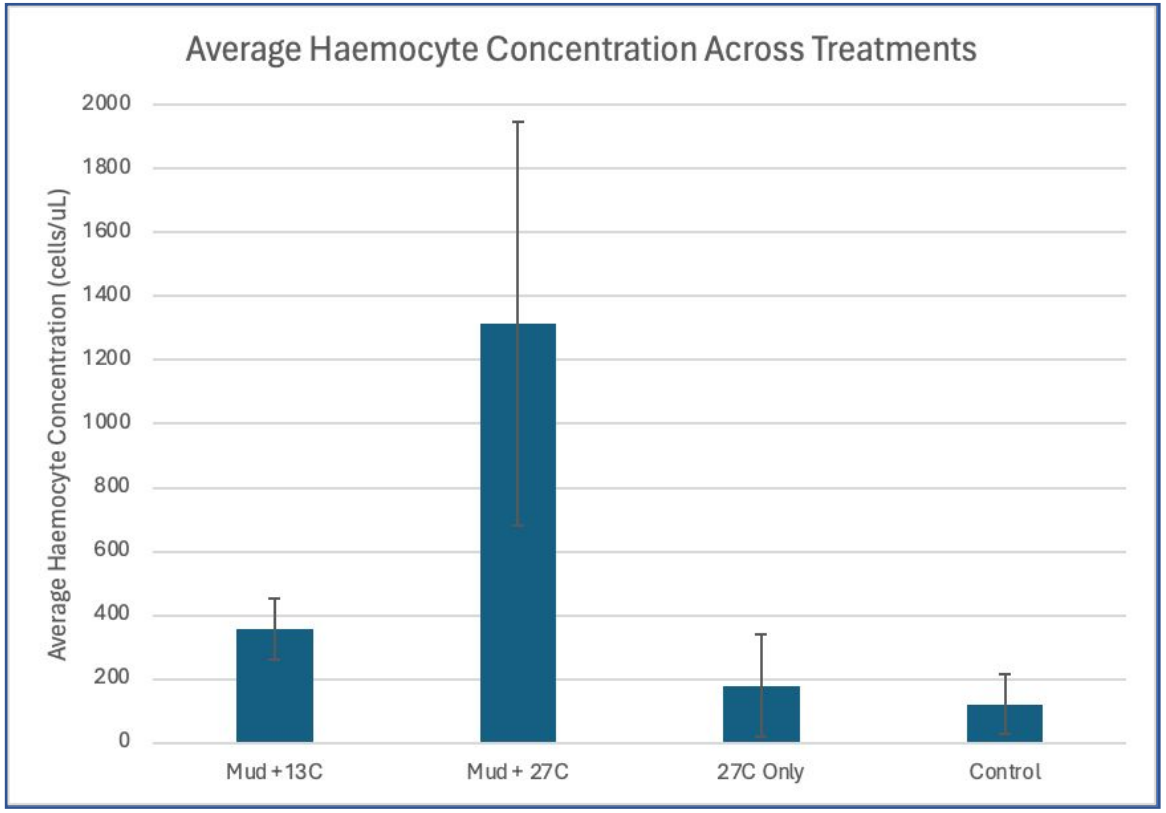


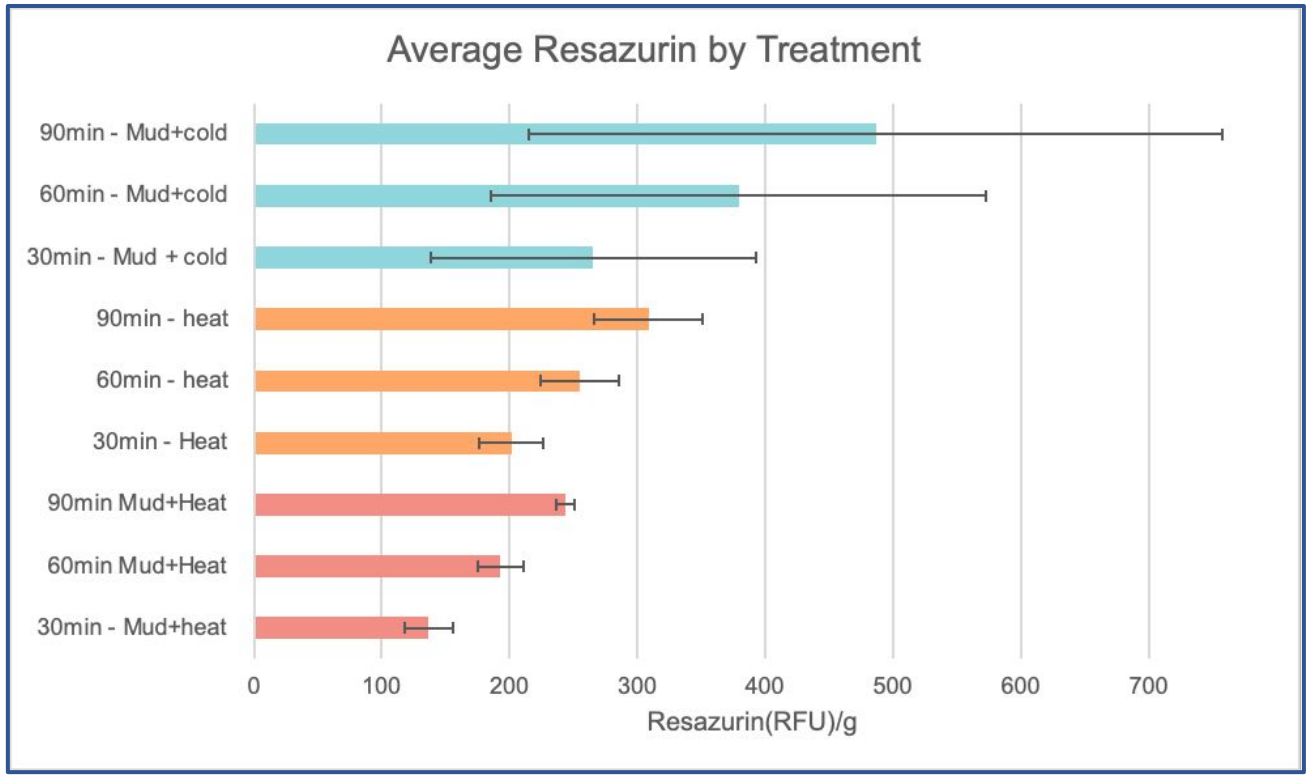
1 mortality in the Mud+13˚C treatment (5/6/2025)
1 mortality in the Mud+27˚C treatment (5/13/2025)

Methods:

We placed 6 crabs in three different treatments: Mud + 27˚C, Mud + 13˚C, and 27˚C, with oyster-shells. We performed righting time, Resazurin assay, haemolymph glucose, triglyceride, BCA protein, and lactate. Haemocyte concentrations were counted with a hemocytometer.

Preliminary Results for Week One:





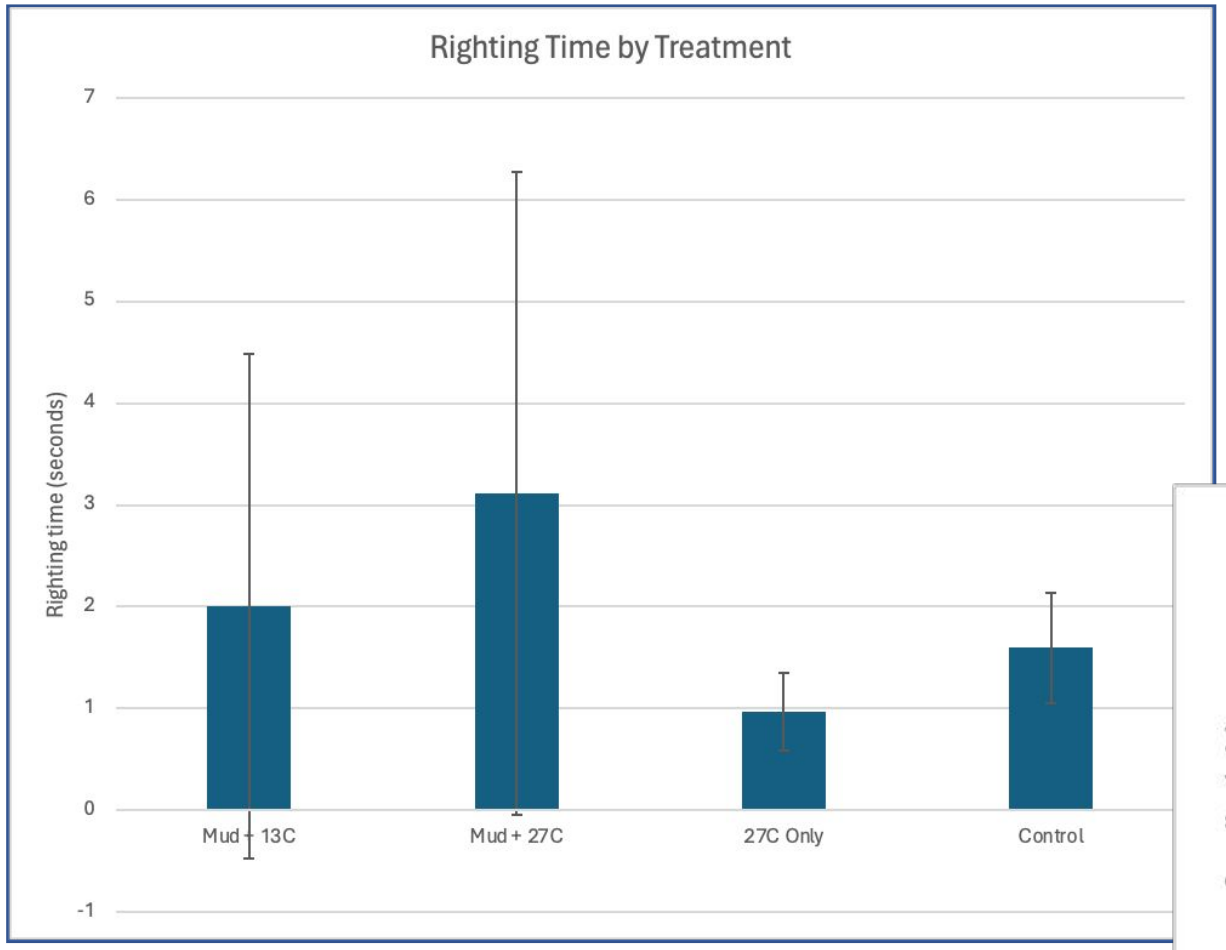
Summary of Analysis Mindset:

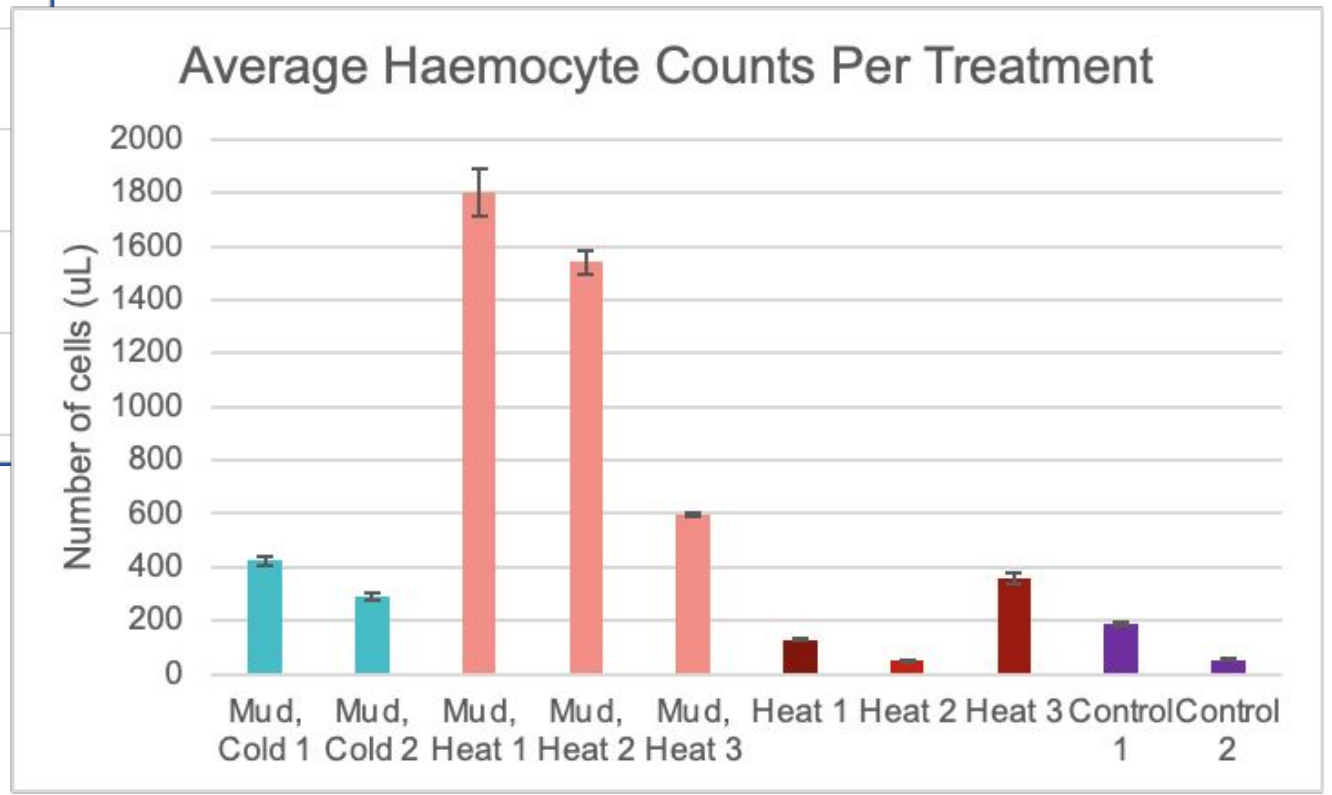
We will analyze and compare data pertaining to stress levels and immune response. We hope to draw connections between organism stress and their immune response. We will analyse heat and mud separately, to hopefully determine their individual effects before analyzing the combined data for all four treatments.

Data Analysis Methods:

Using excel, the data will be averaged for each treatment and the standard deviations will be calculated. Bar graphs will be created to visualize the information, making comparison easier. The final numbers will be compared to the original hypothesis, where it will be determined if we accept or reject the hypothesis.

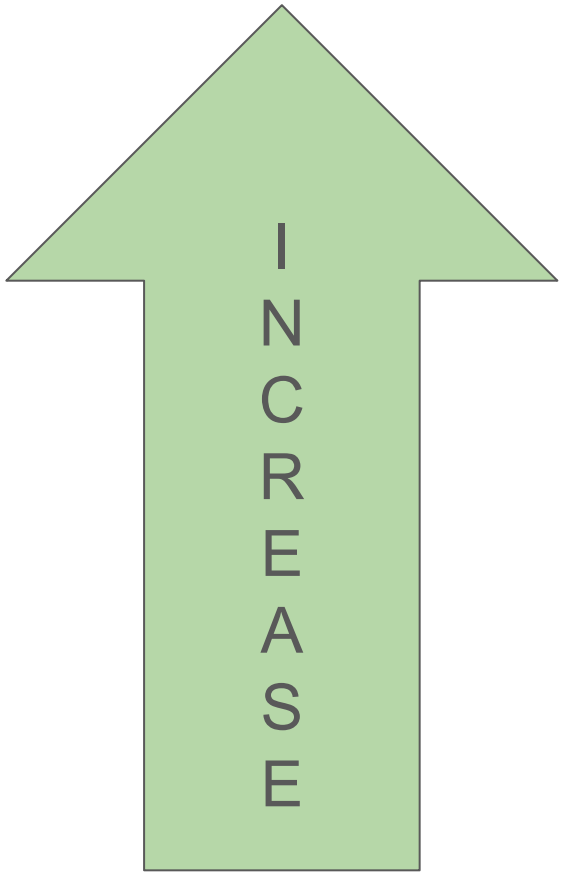
Additional Information:





Sub-Alternative Hypothesis

Under heat-stress conditions…



Righting time

Glucose

Lactate

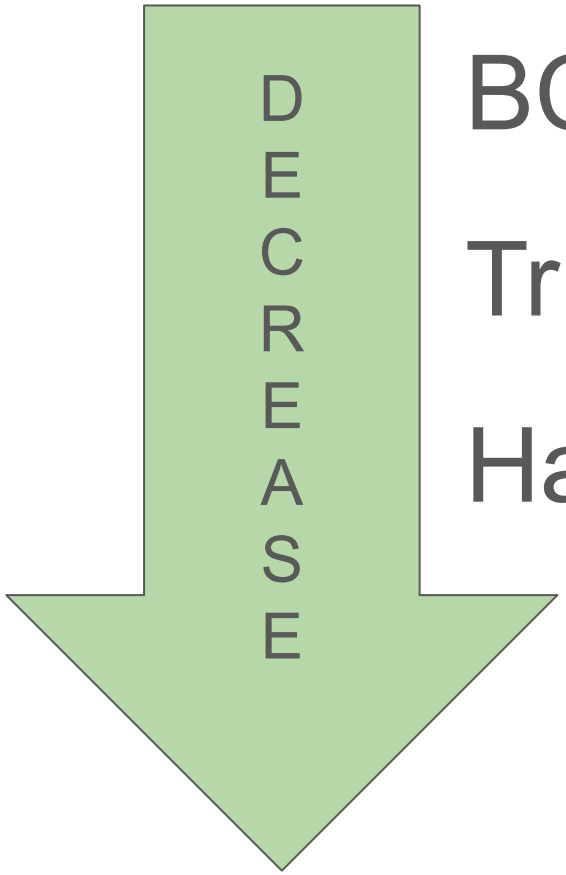
Osmolarity

Oxygen consumption

compared to control conditions.

Sub-Alternative Hypothesis

Under heat-stress conditions…



BCA Protein

Triglycerides

Haemocyte concentration

compared to control conditions.