Calcium Ions Effect on Planaria Feeding Behavior

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Introduction

- Planarians are a type of free-living flatworm model organism that can be easily maintained and manipulated. They have been used for screening tests along with testing of toxic substances in toxicology.

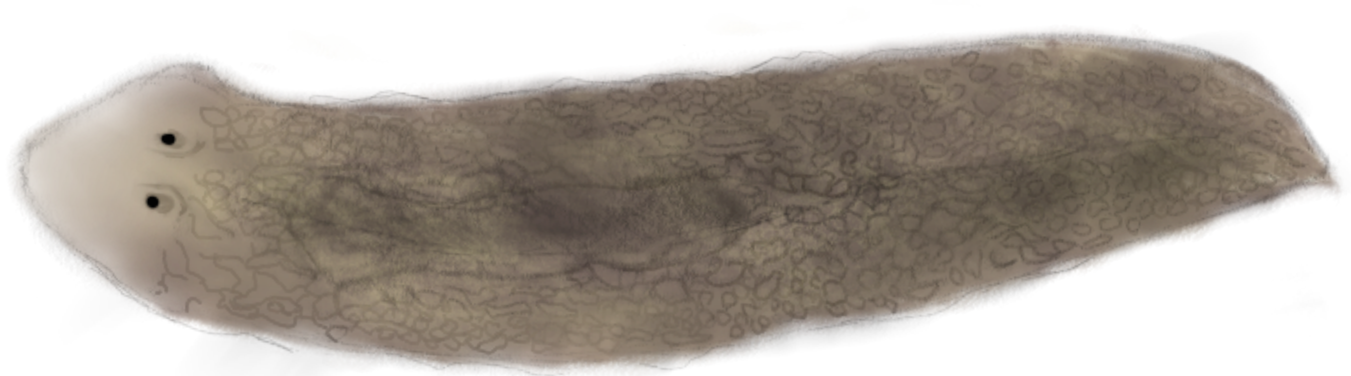
- The micronutrient calcium is important to axonal growth. Without a proper axonal function, neuronal messaging would be dysfunctional (Marchant et al, 2019).

- In addition, lack of calcium inhibits planarian movement, since calcium is required to receive signals for contraction (Marchant et al, 2019).

- Traditional water used for planarian culture in the lab include Montjuïc water, artificial sea water, or specialized mixtures of salt solutions. All these waters have different concentrations of calcium, and other ions, which maintain the worm's homeostasis.

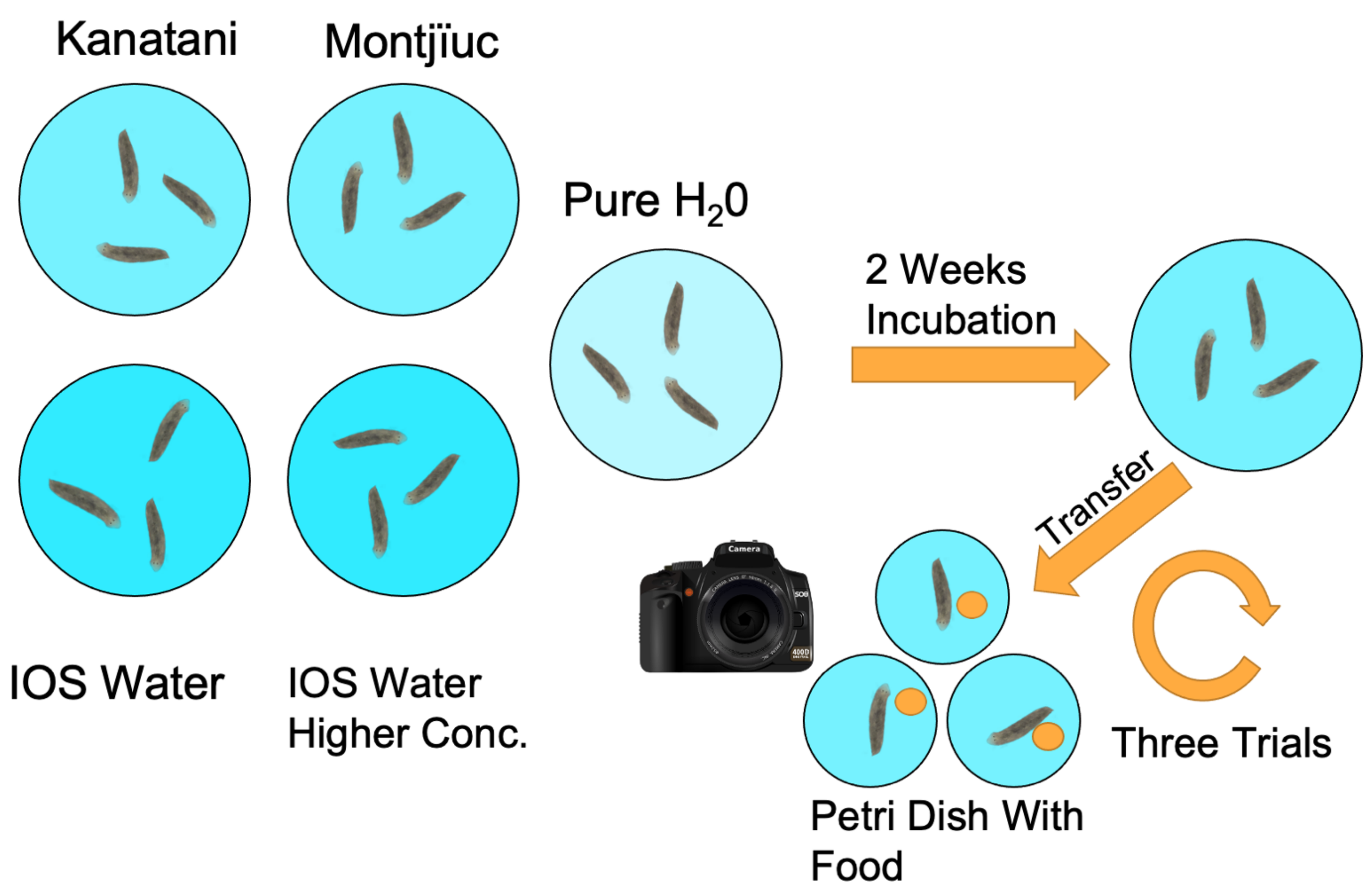
- The main question for this research is how do calcium ions affect planarian motility and feeding behaviors?

-We hypothesize that when the planaria are exposed to the five differing salt solutions, highest concentrated IOS water will be the most successful in supporting feeding responses.

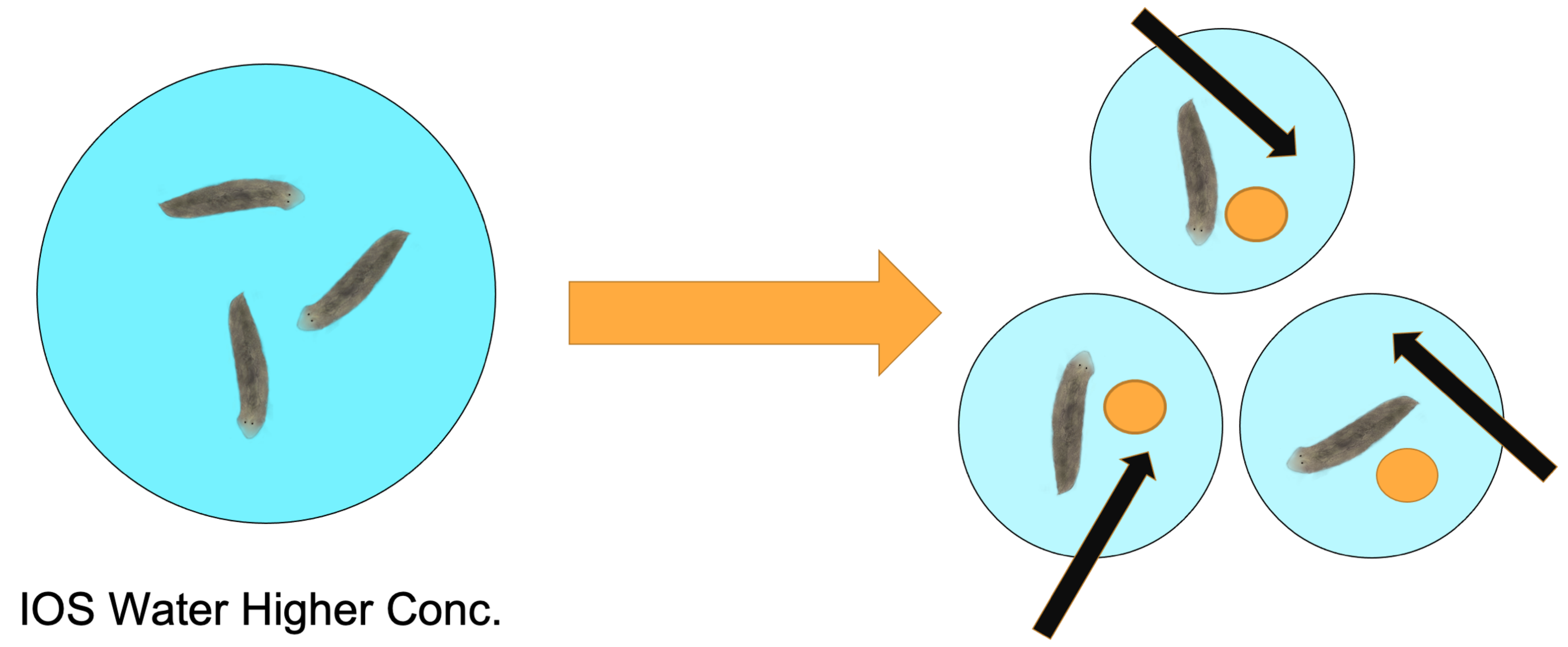


Methodology

Nine *Girardia dorotocephala* will be placed into each of five 10 cm petri dishes with differing water types (tap, IOS, Montjuïc, Kanatani, and 2 X IOS). After 2 weeks have passed, we will monitor individual worm food allocation and feeding behavior. There will be three trials for each treatment group.



Predicted Results



We think that the planaria are not getting enough calcium ions from the IOS water used in the lab. So, we predict that just adding more calcium salt would provide the necessary calcium ions in the water to support planaria movement.

So, we predict that a doubled concentration of IOS water will give rise to the most activity or movement of the planarians.

Future Directions

The next step after doing both feeding and movement assays is to introduce calcium chelators to measure lethality, movement, and feeing.

Through the development of this simple screening assay, we begin to can determine the purpose of calcium in *G. dorotocephala* planarian neuro-muscular connections.

References

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