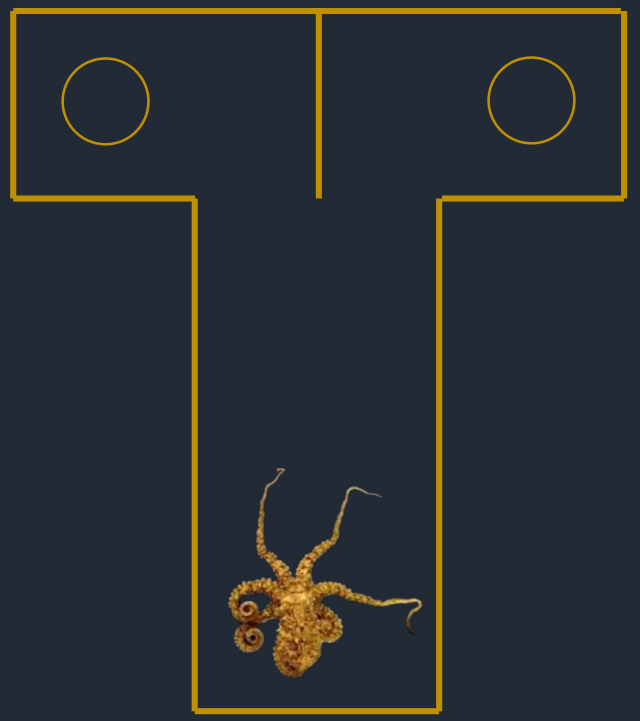
Influence of Sleep on the Consolidation and Recall of Memory in *Octopus rubescens*

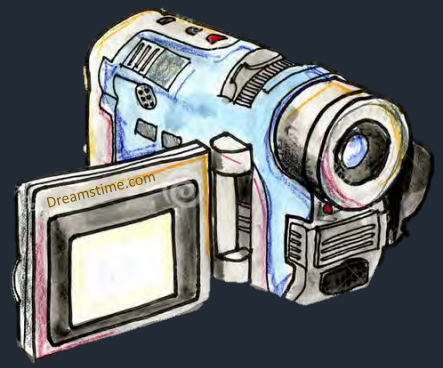
Development of STEM Students at the APU Aquarium Lab

Mitchel McCloskey

Influence of Sleep on the Consolidation and Recall of Memory in *Octopus rubescens*



Stage 1: Housing for Octopuses



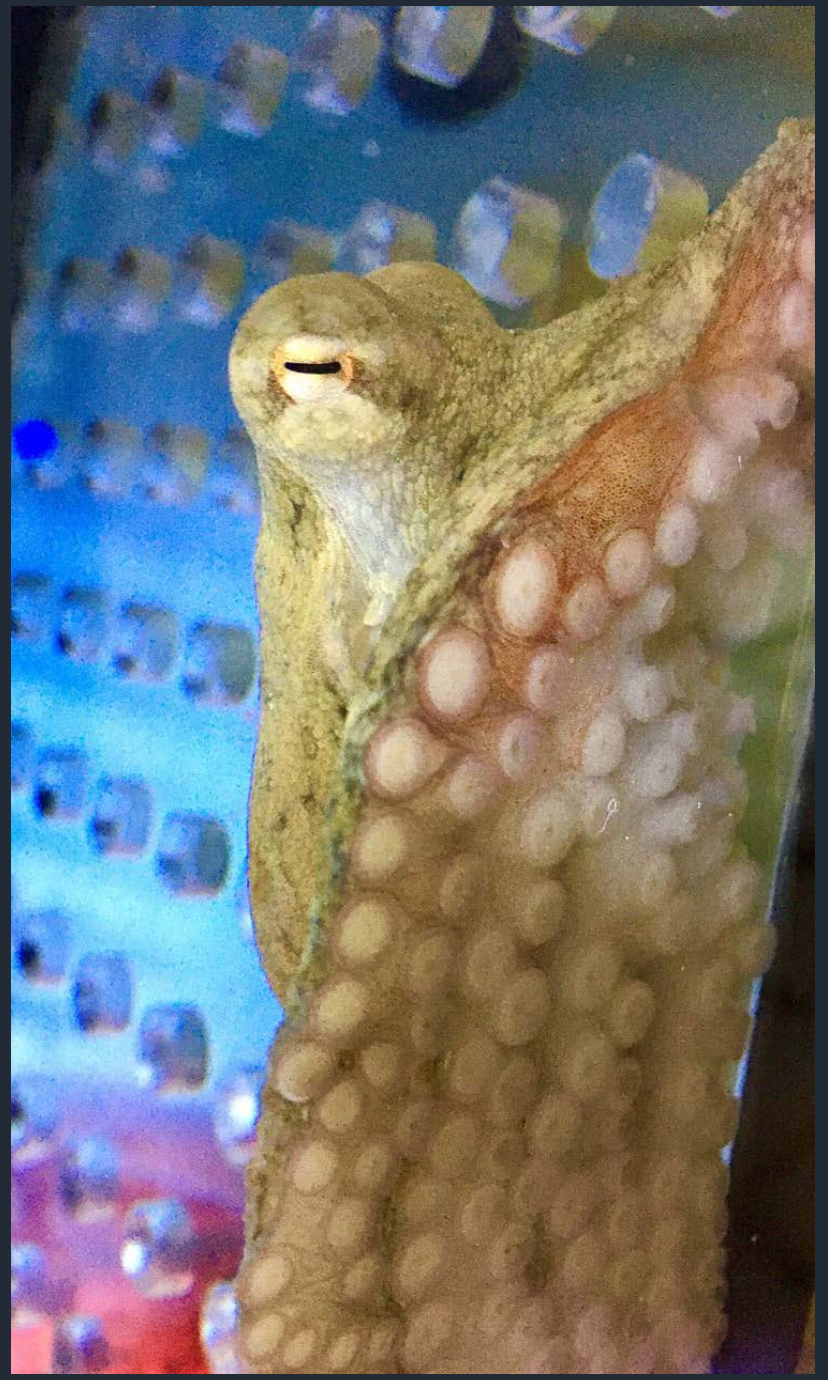
Stage 2: Identification of Sleep in Octopuses

Stage 3: Learning Trials

NASA Objectives

1. Engage in partnership strategies
2. Manage human capital
3. Understand responses of biological systems to spaceflight
4. Pursue advanced capabilities in artificial intelligence

Stage 1: Housing for Octopuses



Tank
Room

Student research projects made possible through this grant

Kaitlyn Houck

Jon Emanual Perry

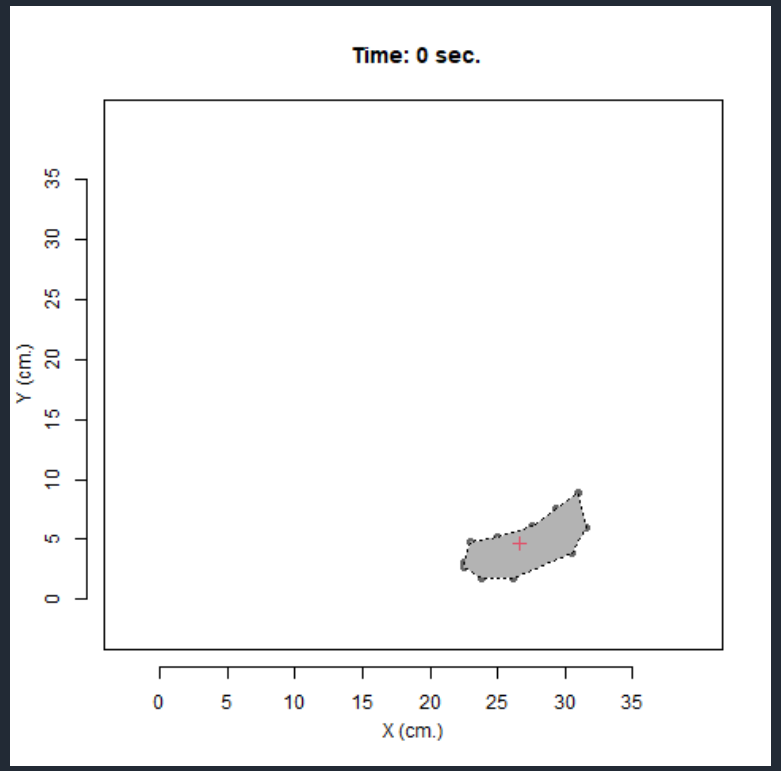
NASA Objectives accomplished in Stage 1

1. Engage in partnership strategies
2. Manage human capital
3. Understand responses of biological systems to spaceflight
4. Pursue advanced capabilities in artificial intelligence

Stage 2: Identification of Sleep in Octopuses

Willem Weertman

Theresa Phillips – Tracking of circadian movements of nudibranchs

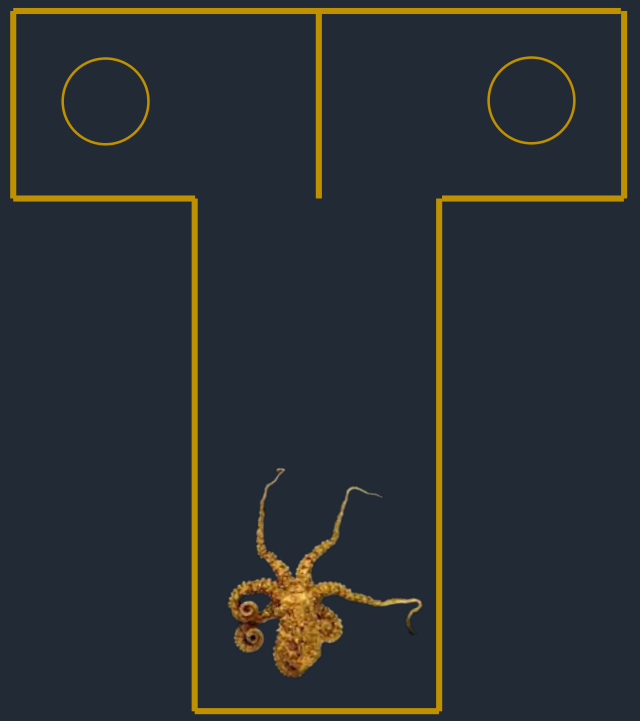


NASA Objectives accomplished in Stage 2

1. Engage in partnership strategies
2. Manage human capital
3. Understand responses of biological systems to spaceflight
4. Pursue advanced capabilities in artificial intelligence

Learning Trials

Influence of Sleep on the Consolidation and Recall of Memory in *Octopus rubescens*



NASA Objectives accomplished in Stage 3

1. Engage in partnership strategies
2. Manage human capital
3. Understand responses of biological systems to spaceflight
4. Pursue advanced capabilities in artificial intelligence

Project Impact

Number of students participating in this project (8)

Number of student research projects made possible through this grant (4)

Additional students participating in this project for summer 2021

Additional student research projects for summer 2021

Future students participating in this project

...

Number of future student research projects made possible through this grant

...

Alaska Pacific University

Christopher Jung

Friday Harbor Laboratories

Alaska Space Grant Program

The Pupating Lab

UNIVERSITY of WASHINGTON
Gire Lab

Monterey Abalone Company

BLaST
BIOMEDICAL LEARNING AND STUDENT TRAINING

UAF BLaST Equipment Funding

University of East London

THE UNIVERSITY OF MELBOURNE

PBS

APU Indigenous One Health Expansion

Alaska Space
Grant Program

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PBS

APU Indigenous One Health Expansion

Josie Malinowski

Acknowledgements

Space grant hired students

Mitchel McCloskey – Octopus Sleep Using DeepLabCut
Theresa A Phillips – Nudibranch Activity Rhythms Using DeepLabCut
Rebecca Barragan – Octopus Side Bias
Willem Weertman – Octopus Olfaction Using DeepLabCut

Students participating in this project

Kaitlyn Houk
Jon Perry
Theresa Phillips
Rebecca Barragan
Jon E Perry
Cassandra Johnson
Tyree' X Brown
Andrea Cintron-Felix
Emily Reynolds
Elaina A Maddaloni

Collaborators and committee members

Dr. David Scheel – Advisor, Graduate Committee Member
Dr. Barret Klein – Graduate Committee Member
Dr. Christopher Jung – Graduate Committee Member
Dr. Josie Malinowski – Collaborating Faculty
Dr. David Gire – Technical Advising
Dr. Venkatesh Gopal– Technical Advising

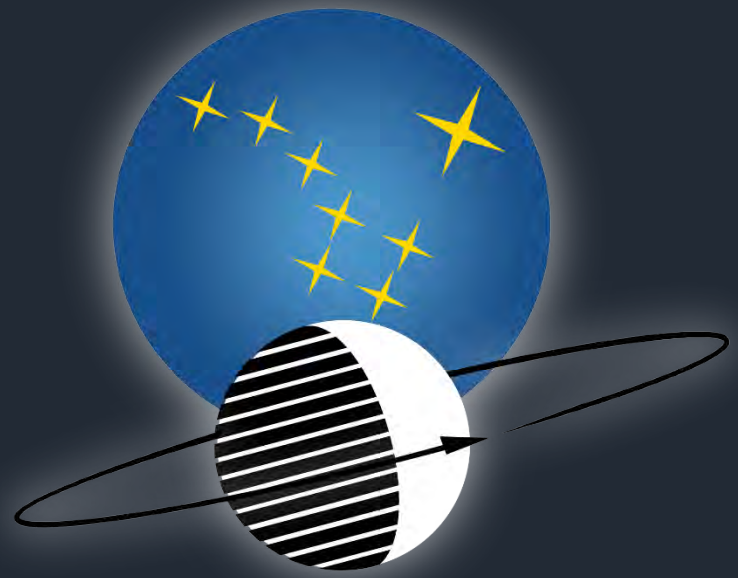
Acknowledgements

The work and equipment provided by ASPGP made possible:

- The recruitment of new students
- Development of STEM skills
- Research into biological systems
- Continued partnerships

Alaska Space Grant Program

Thank you!



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Questions?

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