



3. Record prey manipulation and swallowing at “normal” speed (60 frames per second) with

*Week 1:* Instruct students in animal maintenance chores; supervise literature search; familiarize students with snake head anatomy; record preliminary data to gain experience using the camera equipment.

*Weeks 2-8:* Make digital video recordings of snakes capturing and swallowing prey; analyze resulting data on snout and upper jaw movements each day; relate observed kinematics to head anatomy.

*Weeks 9-10:* Finish data analysis, synthesize experimental and anatomical data for presentation, draft poster.

Emma is currently planning to go to veterinary school, so familiarity with the techniques of experimental morphology should have particular relevance for her. Tevo'n plans to pursue graduate studies in Forensic Science, where the ability to analyze and solve unexpected problems (which often arise when working with live animals) should be a useful skill. Emma and Tevo'n both took General Zoology (Biology 112) from me, so they have had important background material that should help them understand the context of this study. This project will require them to elucidate the anatomy without the aid of a dissection manual, as the anatomy of these snakes is, in many cases, poorly known. Hands-on research experience and formal presentation of the results should make Emma and

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*Kinematics of prey handling in arboreal snakes*

Dr. Frances Irish

Emma Adam and Tevo'n Campbell

|              |  |
|--------------|--|
| \$ 300       | Expendable supplies. Includes dissection materials, animal food & bedding, additional research animals (if required), etc. The primary research equipment for this project (cameras, lights, filming box, computer software, etc.) is available in-house. The Department of Biological Sciences will supply additional equipment and supplies if required. |
| <hr/> \$ 300 | Total  |

: *Kinematics of prey handling in arboreal snakes*

Emma Adam

Chemistry (Pre-Vet track)

: 2019

: Dr. Frances Irish

: Requested

I have been interested in veterinary medicine since I was six years of age. As I grew older, the desire to help animals slowly formed into a desire to study them as well. Animal studies have always been my passion, and I am currently trying to expand my knowledge on exotic species of animals. My passion for animals has led me to the opportunity to perform research in a field that I hope to have a career in as well as perform research on exotic animals to gain more knowledge of their living habits and eating techniques.

I approached Dr. Irish about participating in the SOAR program with a project revolving around snakes in particular. This project specifically deals with arboreal snakes, such as Asian vine snakes (*Ahaetulla prasina*), juvenile Hispaniolan boas (*Chilabothrus striatus*), and Solomon Island tree boas (*Candoia bibroni*). By studying these snakes, I will gain knowledge of their living environments,



applying learnt work to practical situations---as an unknown author once said: “A mind when stretched by a new idea never regains its original dimensions.”