

Welcome to the 10th Annual P.U.R.E. Symposium! “Spring Session”

Thursday Apr 23, 2015, LSF 102

Snacks 3:45, Talks begin at 4pm



ABSTRACTS:

4:00 – 4:15pm:

“Reproductive Morphology of the Two-Toed Amphiuma (*Amphiuma means*).”

Student: Ashely Harris; Faculty Mentor: Dr. Tamatha Barbeau

The purpose of this study was to examine the reproductive anatomy of the Two-Toed Amphiuma (*Amphiuma means*). Virtually nothing is known about the reproductive biology of this aquatic salamander due to its secretory behavior of hiding at the bottom of streams, ponds, and swamps. During this pilot study, the reproductive tissues (ovary, oviduct, and fat bodies) were examined by gross or microscopic analysis. Fixed tissue samples of ovary and oviduct from a female *A. means* were dehydrated in ethanol and clearing agents, sectioned on a microtome, and the prepared slides were stained with hematoxylin and eosin for examination under light microscopy. We discovered that oviduct morphology consisted primarily of two distinct cell types: secretory goblet cells and columnar epithelial cells, both arranged in a single continuous cell layer surrounding the oviduct lumen. Average goblet cell height was significantly smaller than that of epithelial cells, and goblet cells appeared to be fewer in number. Furthermore, we found a lower number of eggs in this female’s ovaries compared to numbers reported in the only prior publication on this species in 1966. This pilot study provided us with valuable information about the reproductive morphology of *A. means*, which will help direct and elaborate future research on this elusive amphibian.

4:15 – 4:30pm:

“Preparation and Transfection Optimization of pDsRed2-mito Plasmid in PPC1 cells.”

Student: Hunter Johnson; Faculty Mentor: Dr. Lori Turner

The purpose of this research was to prepare a large volume of pDsRed2-mito plasmid and determine the optimal transfection conditions for H295R cells, which are an adrenal carcinoma cell line, and DU145 cells and PPC1 cells, which are both prostate cancer cell lines. *E. Coli* cells were transformed using pDsRed2-mito plasmid, which has a gene for kanamycin resistance and a red fluorescent protein containing a mitochondrial targeting sequence. The cells were then inoculated onto an agar plate containing kanamycin. Colonies of these cells were collected and allowed to grow in LB media, which also contained kanamycin. Cells were removed from the broth and pDsRed2-mito plasma was isolated. The next step of this research is to transfect various human cell lines with the plasmids and view them under a fluorescence microscope. This will allow us to determine optimal transfection conditions for these cell lines, which will aid in future research studies.



4:30 – 4:45pm:

“Monitoring activity Patterns of the American Crow (*Corvus brachyrhynchos*) Population on the Campus of Francis Marion University.”

Student: Morgan Soulantikas; Faculty Mentors: Dr. Jeff Steinmetz and Dr. Paul Zwiers

The American Crow (*Corvus brachyrhynchos*) also known as the “Common Crow”, is a medium-sized, stocky, black, perching bird of the Corvidae family. American Crows mainly reside in woodland, farmland, and also suburban areas. They require open spaces for ground feeding, but scattered trees, woodlots, and forest edges must be present in order for the birds to have a safe place to nest and roost. The campus of Francis Marion University provides a sufficient habitat in which American Crows can thrive.

In this study, bioacoustic monitoring equipment was used to collect data on the population of American Crows living in the campus area from August 2013 to March 2015. A double-microphone recording unit was placed in several wooded regions across FMU’s campus for the span of three to five days at a time. Recorded files were then analyzed by using Song Scope Software where audial activity was displayed as a sound spectrogram. From this format, the distinctive “caw-caw” call of the American Crow could be easily identified and used to determine the exact hours throughout the day when the birds are most vocally active. American Crows residing in the area were most active and produced the highest number of vocalizations between the hours of 7:00am and 12:00pm. Also, seasonal changes and weather factors were discovered to have significant effects on the overall activity of this population. Furthermore, the specific types of crow calls were identified by recognizing various patterns in frequency levels and call length. Seasonal changes can account for the variation in different types of calls throughout the year.

The Department of Biology at FMU strongly encourages student participation in research activities. We offer many opportunities for undergraduates to assist in faculty research or develop their own independent research projects. Students can earn academic credit through Special Studies (BIOL 497) and Honors Independent Study.

If you are interested in learning more about P.U.R.E. or available research opportunities, please visit our website at: http://people.fmarion.edu/tbarbeau/PURE_symposium.htm. You can also contact Dr. Barbeau