

Welcome to the 4th Annual P.U.R.E. Symposium!

Tuesday April 21, 2009
LSF 102



Diet analysis of Diamondback Terrapins, *Malaclemys terrapin*, from North Inlet-Winyah Bay, SC.

Abby Marlow 3:45 – 4:00pm
Faculty mentor: Dr. Peter King

The diet of diamondback terrapin turtles, *Malaclemys terrapin*, from North Inlet Winyah Bay, Georgetown, SC. was studied. Feces from 5 terrapins in 2007 and 19 terrapins in 2008 were collected and examined for evidence of prey or food items. Food items included two species of snails, at least three species of crabs, fish, mussels and barnacles. The diet of terrapins was found to consist primarily of periwinkle snails (*Littorina irrorata*). Different species of crab represented the second most common food item. Male terrapins seem limited to smaller periwinkles, reducing competition for the larger periwinkles by female terrapins.

Investigation of Leadmium Green as a useful fluorescence sensor of cadmium in live cells

Dylan Cook & Will Kirkland 4:00 – 4:15pm
Faculty mentors: Dr. Latha Malaiyandi & Dr. Kirk Dineley

Cadmium is a common industrial pollutant, and its accumulation is toxic to energy intensive tissues such as brain, heart, liver and kidney. The study of cadmium cytotoxicity is difficult in part due to the unavailability of a probe that can detect cadmium in living cells. Recently, Invitrogen™ developed the metal-sensitive fluorophore Leadmium Green, which was used to monitor nanomolar levels of lead and micromolar levels of cadmium in live Jurkat cells using flow cytometry. Using the cell-impermeant form, we evaluated the selectivity of Leadmium Green in MOPS-buffered solution with spectrofluorometry. Consistent with manufacturer's claims, Leadmium Green responded robustly to lead or cadmium in a concentration-dependent manner, and furthermore proved insensitive to calcium. However, it also responded to zinc at low micromolar concentrations. Using fluorescence microscopy, we then evaluated the response of Leadmium Green inside live HT-22 cells, a hippocampal neuronal cell line. We observed large fluorescence increases in HT-22 cells treated with zinc and the ionophore pyrithione. Moreover, the metal chelator TPEN, which has high affinity for zinc, reversed these changes. Given the abundance and ubiquity of zinc in living systems, these results question the utility of Leadmium Green as a live-cell cadmium and lead sensor.

Using chromatin immunoprecipitation to determine the isoform of C/EBP- β present at the p53 promoter.

Jennifer Smith 4:15 – 4:30pm
Faculty Mentor: Dr. Erin Eaton

Chromatin Immunoprecipitation, or ChIP, is used to determine whether a particular protein binds to a specific DNA sequence *in vivo*. Specifically, we are using ChIP to determine what isoform of C/EBP- β is binding to and modulating the p53 promoter. C/EBP- β and the tumor suppressor p53 interact through a feedback mechanism in which C/EBP- β activates the promoter but then inhibits p53 activity. C/EBP- β levels play an especially important role in ovarian and breast cancers.

Study of the turtle community in the pond at Francis Marion University in Florence, SC.

Katherine McDaniel & Monica Sokol 4:30 – 4:45pm
Faculty Mentor: Dr. Julia Krebs

A study was conducted to learn about the turtle community in the pond at Francis Marion University. We used the mark and recapture method. The turtles were caught using two different types of traps: large barrel turtle traps and small basket turtle traps. Once the turtles were marked, they were then measured and weighed. The studies were conducted over a period of two semesters. The first samples were taken in the spring of 2008 from April 1st to April 3rd. The second samples were taken in the fall of 2008 from October 7th to October 14th. During the spring semester, a total of 11 turtles were captured; 10 of them were *Trachemys scripta scripta* (Yellow-Bellied Sliders) and one was *Sternotherus oederatus* (Common Musk Turtle). During the fall semester, a total of 9 turtles were captured; 8 of them were *Trachemys scripta scripta* (Yellow-Bellied Sliders) and one was a *Chelydra serpentina* (Common Snapping Turtle). There was also a recapture from the previous semester, and it was found that the turtle had grown from its previous measurements from the semester before. Both semesters, it was found that the majority of the turtle population in the Francis Marion University pond was almost exclusively *Trachemys scripta scripta* with the exception of two individuals of an alternate species. When the two sets of data from the mark and recapture study were compiled and compared, it was estimated that the turtle population of the Francis Marion Pond was 80 individuals. This population was isolated to only the population of *Trachemys scripta scripta* living in the pond.

Floristic survey of the North Inlet / Debidue Beach area in Georgetown County: Collection, identification, and production of herbarium specimens.

Kevin Floyd 4:45 – 5:00pm
Faculty Mentor: Dr. Gerald Long

Plants were gathered while aiding Dr. Peter King with Diamondback Terrapin research in North Inlet. Terrestrial vascular plants were collected in the areas that we were looking for terrapin traces and clues. Flora collecting techniques were practiced on the beach and in the marsh. Also, plenty of time was dedicated to enhance plant identification skills. Herbarium specimens were produced at the FMU Herbarium. Dr. Gerald Long assisted in developing the expertise involved in the production of a complete Herbarium specimen.

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 (BIO 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://www.fmarion.edu/academic/Biology> and click on 'Research' link. You can also contact Dr. Barbeau (tbarbeau@fmarion.edu) or Dr. Pryor (gpryor@fmarion.edu), the coordinators of P.U.R.E.