Welcome to the 7th Annual P.U.R.E. Symposium!

Fall Session

Thursday Nov 29, 2012

LSF 102

PROGRAM FOR UNDERGRADUATE RESEARCH EXPERIENCE

4:00 – 4:15pm:

Diamondback Terrapin Research: Population Study and Nesting Ecology

Student: Caitlynne McNeill, Faculty Mentor: Dr. Peter King

Diamondback Terrapins, *Malaclemys terrapin*, are small sea turtles that live in salt marshes and lagoons. At North Inlet-Winyah Bay (Georgetown, South Carolina), two studies occurred: Population Study and Nesting Ecology. The Population Study was seeing how the population numbers changed throughout the years. The terrapins were caught, weighed, measured, tagged, and then released. There were many recaptures and some newly caught ones. This might mean that this population stays around the same place and does not migrate much. The second study was terrapin nesting ecology. The nests were located by them being depredated (destroyed). The amount of eggshells were counted, depth of nest, vegetation around the nest, location (coordinates), and date were all recorded. The average clutch size was about 4 eggs per nest (ranging from 0 to 8 eggs). The average depth was 7.14 millimeters. These nests were surrounded almost always by some type of vegetation. The female is very careful and thoughtful in where she puts her eggs. Sometimes she will not lay them if she is disturbed. Learning more about the Diamondback Terrapin nesting sites and why they nest near vegetation can help people preserve and protect this species better.

4:15 – 4:30pm:

Effect on Cell Viability of Prostate Cancer Cells Following Ceramide/Chloroquine Combination Treatment.

Student: Chris Johnson , Faculty Mentor: Dr. Lori Turner

Ceramide, produced in cellular response to stress, is a component of sphingolipids which function structurally in lipid membrane and in signaling processes such as differentiation, proliferation and apoptosis (programmed cell death). Acid ceramidase (AC) is a lysosome-localized enzyme responsible for metabolizing ceramide in the cell. Previous work has shown that AC is over-expressed in multiple prostate cancer cell lines and in primary tumor samples, and contributes to resistance to chemotherapeutics and radiation treatments. This is due to AC conversion of ceramide, a pro-apoptotic molecule, into sphingosine. This allows a sphingosine kinase to phosphorylate sphingosine into spingosine-1-phosphate, a pro-survival molecule. This suggests that the increased metabolic degradation of ceramide by over-expression of AC allows a cancerous cell to escape ceramide-induced apoptosis, thus providing a potential target for cancer treatment options to be studied. Additionally, previous work has shown that due to the lysosomal localization of AC in a cell, pre-treatment with the FDA approved anti-malarial drug chloroquine, which has destabilizing effects on the lysosome, can increase cell sensitivity to ceramide-induced apoptosis. The focus of present research has been to further confirm the link between AC over-expression and cell viability, and to determine an effective dosage ratio for possible options utilizing chloroquine to increase cell sensitivity to ceramide inducing treatments.

4:30 – 4:45:

Summer Internship at Riverbanks Zoo and Garden

Student: Caitlynne McNeill, Mentor: Scott Pfaff

Riverbanks Zoo and Garden has been opened since April 25, 1974 and is accredited by Association of Zoos and Aquariums (AZA). It has more than 350 species of animals and over 4,200 species of native and exotic plants. My summer internship was hard to attain because the mammal department did not except me, but the herpetology department did. That is rare because they do not expect hardly anyone. Learning the routine of all the herpetology staff took a while, but it came easy after that. I helped with cleaning, feedings, and some special projects with the tortoises, snakes, geckos, lizards, etc. I was basically working as a zookeeper, and it was harder than I thought it would be. I learned many skills and learned more about what exactly zoos do and their conservation efforts in protects certain species. My internship helped me put what I learned at Francis Marion into use, and appreciate what zookeepers do to help protect certain species.

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://departments.fmarion.edu/biology/PURE.htm. You can also contact Dr. Barbeau (tbarbeau@fmarion.edu) or Dr. Pryor (gpryor@fmarion.edu), the coordinators of P.U.R.E. We can answer any questions you might have and get you started on a research project!