SSM Annual Research Mixer
Tuesday, November 14, 2017
4:00 p.m. – 5:30 p.m., SSMB Atrium

PI(s): Craig Plante
Email: plantec@cofc.edu
Start date: January, 2018
Duration: 2018
Research Summary/Student Expectations:
Marine microbial ecology projects (varied). Most currently focus on ecology and biogeography of benthic microalgae and employ molecular biology techniques to characterize community structure.

PI(s): Alex Kasman
Email: kasmana@cofc.edu
Start date: flexible
Duration: flexible
Research Summary/Student Expectations:
The project will investigate quaternion-valued solutions to one of the most famous wave equations, the KdV equation. The student investigator should have interest in mathematical physics and have had MATH 203 (Linear Algebra) and MATH 221 (Multivariable Calculus). Experience with Mathematica or some other mathematical software would be a plus.
http://blogs.cofc.edu/math/undergraduate-research-opportunities/visualizing-matrix-soliton-interactions/

PI(s): M. Scott Harris
Email: harriss@cofc.edu
Start date: Ongoing
Duration: Ongoing
Research Summary/Student Expectations:
Students interested in pursuing and understanding of the Continental Shelf, Coastal Zone, or Coastal Plain will benefit greatly from understanding the evolution, construction, and age of this diverse landscape. From tidal variations, sea-level rise since the last glacial maximum, or changes in the landscape over hundreds of thousands of years, we explore these regions using a multitude of remote-sensing and sampling techniques on land and water. While testing hypotheses related to the evolution and understanding of this transitional continental land- and seascape, students may learn high-resolution navigation techniques (real-time kinematic GPS), various marine techniques (sidescan sonar, subbottom profiling, acoustic doppler current profiling, autonomous surface vehicle data collection, sediment sampling), and terrestrial techniques (ground penetrating radar, vibracoring, TEM, drone use).

PI(s): Neal Tonks
Email: tonksn@cofc.edu
Start date: Jan-18
Duration: Spring 2018-Summer 2018
Research Summary/Student Expectations:
Participate in project on polyurethane foams

**PI(s):** Jay Forsythe  
**Email:** forsythejg@cofc.edu  
**Start date:** Jan-18  
**Duration:**

**Research Summary/Student Expectations:**  
http://chemistry.cofc.edu/documents/faculty-research-interest/Forsythe_FacultyProfile.pdf

**PI(s):** Christine Byrum  
**Email:** byrumc@cofc.edu  
**Start date:** Jan-18  
**Duration:** To be determined  
**Research Summary/Student Expectations:**

The Byrum lab is currently studying the roles of nuclear transport proteins in early developmental processes. We use the sea urchin embryo as a model organism to examine the distribution and impact of importins and exportins on cell fate specification. Dedicated student investigators interested in developmental biology, cell/molecular processes, and evolution of marine invertebrates are encouraged to apply.  
http://biology.cofc.edu/about-the-department/faculty-staff-listing/byrum-christine.php

**PI(s):** Chris Fragile  
**Email:** fragilep@cofc.edu  
**Start date:** 5/18/2018  
**Duration:** Summer 2018  
**Research Summary/Student Expectations:**

Student will learn to do computational simulations of fluid dynamic processes in astrophysics (accretion disks, star formation, tidal disruption, etc.). A strong physics and math background, some computational experience, and enthusiasm would be beneficial.

**PI(s):** Heather Fullerton  
**Email:** fullerton@cofc.edu  
**Start date:** Spring Semester  
**Duration:**

**Research Summary/Student Expectations:**

My lab focuses on microbial metabolism and ecology, specifically microbially mediated iron-oxidation. To investigate these processes, students will analyze microbial communities collected from Lō‘ihi Seamount, Mariana arc and/or SC estuaries.
PI(s): Kate Mullaugh  
Email: mullaughkm@cofc.edu  
Start date: Jan-18  
Duration: 2 years  
Research Summary/Student Expectations:  
As the field of nanotechnology has grown, concerns have been raised about the environmental impact of their widespread use. Our lab carries out laboratory experiments to develop analytical strategies to better understand the behavior and transformations of nanoparticles in natural waters.  
*I will only have room in my lab for an additional 1 - 2 new student(s)*

PI(s): Isaure de Buron  
Email: deburoni@cofc.edu  
Start date: ~Jan. 8  
Research Summary/Student Expectations:  
Objective: to carry out a transect along salinity gradient to search for polychaete hosts of fish parasites - Student will be expected to help in the field and in the laboratory. Field work will be wet and muddy. Lab work will include isolating and sorting small polychaetes from oyster shells.

PI(s): Agnes Ayme-Southgate  
Email: southgatea@cofc.edu  
Start date: spring 2018  
Duration: Spring 2018-  
Research Summary/Student Expectations:  
Protein structure-function and evolution. Regulation by RNA processing, in particular alternative splicing. Model systems: honeybee, moths and dragonfly.

PI(s): Allison Welch  
Email: welcha@cofc.edu  
Start date: ongoing  
Duration: ongoing  
Research Summary/Student Expectations:  
My lab is interested in the ecology, behavior, and conservation of amphibians. We are investigating effects of various anthropogenic environmental stressors – including elevated salinity, pharmaceutical pollutants, and pesticides – across different stages of the amphibian life cycle.  
*I will be available from 4:30-5:30. Interested students are also welcome to contact me by email (welcha@cofc.edu).*

http://biology.cofc.edu/about-the-department/faculty-staff-listing/welch-allison.php
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**PI(s):** Matthew (Moshe) Rhodes  
**Email:** rhodesme@cofc.edu  
**Start date:** 15-Jan-18  
**Duration:** Spring 18-Fall 18  
**Research Summary/Student Expectations:**
Halophiles are organisms that can grow in extremely salty environments, often more than 10 times more saline than the ocean. These environments are dominated by members of the archaeal group the Haloarchaea. I intend to investigate the potential for the Haloarchaea in large hyper saline lakes and arctic sea ice to contribute to cloud formation. This project would entail culturing a number of halophilic isolates, analyzing cell densities with microscopy and other techniques, and potentially assisting with the cloud ice nucleation chamber at the National Oceanic and Atmospheric Association in Boulder Colorado.  
http://biology.cofc.edu/about-the-department/faculty-staff-listing/rhodes-matthew.php

**PI(s):** Tim Barker  
**Email:** barkertj@cofc.edu  
**Start date:** Spring 2018  
**Duration:** 10 week summer + 1+ semesters  
**Research Summary/Student Expectations:**

**PI(s):** Erin K Beutel  
**Email:** beutele@cofc.edu  
**Start date:** Ongoing  
**Duration:** Ongoing  
**Research Summary/Student Expectations:**
I am looking for students who have had at least the introductory Geology sequence to help create a map of deformation in the Southeastern United States associated with the break-up of the super-continent Pangea. No specific skills or time commitment is necessary. Multiple avenues available for approaching this problem.

**PI(s):** Dawn Ruth  
**Email:** ruthdc@cofc.edu  
**Start date:** Jan 8 2018  
**Duration:** Jan - May 2018  
**Research Summary/Student Expectations:**
I am assessing the role of regional extensional structures on magma production at open vent, frequently active volcanic systems in arc settings. The student will aid in collecting data and analyzing data sourced from geochemical and geodynamical databases. The results of this work will be presented in a poster at the School of Science and Math Research Symposium at the end of the semester.  
*This is a collaborative project with Dr. Erin Beutel.*
PI(s): Kristin D. Krantzman  
Email: krantzmank@cofc.edu  
Start date: Spring 2018  
Duration: 1-2 years  
Research Summary/Student Expectations:  
Students will perform molecular dynamics simulations on a Unix workstation to study the interaction of biomolecules with graphene and graphene oxide surfaces. Only biochemistry and chemistry majors. Students should be comfortable working on computers and be able to troubleshoot problems.

PI(s): Donna Roberts  
Email: robertdr@musc.edu  
Start date: as convenient  
Duration: ongoing  
Research Summary/Student Expectations:  
This is a project funded by NASA to examine structural changes of the brains of astronauts following long-term spaceflight. The research will involve neuroimaging data analysis.

PI(s): Dr Asemani  
Email: asemani@musc.edu  
Start date: as soon as possible  
Duration: 2017-2019  
Research Summary/Student Expectations:  
Statistical analysis, image processing, 3D images, MRI, Psychology, cognitive assessment

PI(s): Bryan W. Heckman, Ph.D.  
Email: heckmanb@musc.edu  
Start date:  
Duration:  
Research Summary/Student Expectations:  

PI(s): Aleksandra Silvernale  
Email: silverna@musc.edu  
Start date:  
Duration:  
Research Summary/Student Expectations:  

PI(s): Gabriel Williams  
Email: gabriel.j.williams@gmail.com  
Start date: Spring 2018  
Duration: 1 year
Research Summary/Student Expectations:
The goal is to investigate the kinematic and thermodynamic structure of the hurricane boundary layer for landfalling hurricanes. The research involves investigating airplane reconnaissance data, satellite imagery, and radar imagery to explain the structural changes that occur as mature hurricane approach land.  
http://williamsgj.people.cofc.edu/research.html

PI(s): Jamie Peters  
Email: petersjl@musc.edu  
Start date: ASAP for training  
Duration: Spring semester 2018

Research Summary/Student Expectations:
see website/require at least 8 hours per week in the lab
The Emotional Memory Lab is recruiting students for Spring semester 2018, with training beginning now. Please send your CV and a brief description of your research interests to petersjl@musc.edu.  
petersjlab.com

PI(s): Jane Joseph  
Email: lohnes@musc.edu  
Start date: Any  
Duration: 2017-2022

Research Summary/Student Expectations:
Students will have the opportunity to analyze fMRI data relative to a variety of research interests and/or to participate in various elements of human subjects research examining biomarkers as predictors of Alzheimer’s Disease.  
http://academicdepartments.musc.edu/neuro-research/research/lab/joseph_lab/

PI(s): Kristin Marquardt, PhD  
Email: marquard@musc.edu  
Start date: flexible  
Duration: 1-2 years

Research Summary/Student Expectations:
The Chandler lab is focused on neural adaptations that occur during alcohol exposure, including those that lead to uncontrolled drinking. I, Kristin, am a postdoctoral fellow in the Chandler lab, with several diverse projects focusing on how alcohol disrupts prefrontal cortex function. As a student you would be working directly with me. The expectation, is that you will participate in current projects for 3 to 4 months learning various laboratory techniques before proposing an extension project for a senior thesis. This timeline is highly dependent upon how motivated you are as a student to learn and propose a project. A minimum of 10 lab hours a week is expected.  
****You must be okay participating in animal research with both mice and rats.
The two projects I am currently looking for students to extend are as follows:
One project is determining the contribution of dopamine receptor-containing neural populations in the function prefrontal cortex during habitual alcohol seeking.
The second project is focused on how perineuronal nets (a specialized extracellular matrix) in the prefrontal cortex are disrupted by adolescent alcohol exposure and how this ultimately affects adult behavior. This project may ultimately extend to studying perineuronal nets in the context of post-traumatic stress disorder (PTSD).
No qualifications or experience is necessary as the point of an internship is to learn. Some of my projects include copious data analysis through Matlab, therefore an interest or experience in learning coding will increases variability in potential projects.

Looking for 1-2 students

PI(s): Daniel McGlinn
Email: mcginndj@cofc.edu
Start date: now
Duration: open ended

Research Summary/Student Expectations:
I conduct research on biodiversity and how ecological communities change through time. My field work is primarily in terrestrial longleaf pine forests currently but my students have worked on a variety of systems and taxonomic groups that include both marine and terrestrial organisms. Much of the work done in our lab is computational but I am happy to mentor field studies as well. I expect students to be curiosity driven and to be hard independent workers.
mcgin.web.unc.edu