

Dear prospective Marine Biomedicine student,

As Director of the Marine Biomedicine and Environmental Sciences Center at the Medical University of South Carolina let me introduce you to our doctoral program and explain how it and the graduate school functions. The MBES graduate track provide straining for the Ph.D. degree in numerous aspects of marine molecular biosciences and computational sciences that relate to environmental and human health. An MD/Ph. D. student may also train in the MBES program. We are admitting up to 5 new students per year into the program. We strongly urge prospective students to contact interested faculty (see Research Foci) to identify potential labs in which to do their doctoral research after the first year of coursework is completed.

We are not a traditional Marine Biology program in that we do not offer courses or research in ecology, oceanography, fisheries biology etc. The focus of MBES is on the students gaining molecular/chemistry/computational skills and then applying them to environmentally important questions. Key to the program is the active collaboration of our other on-site partner institutions, National Ocean Service (NOAA), Grice Marine Lab (College of Charleston), Marine Resources Research Institute (SC Department of Natural Resources) and the National Institutes of Standards and Technology. These institutions and MBES occupy a 90-acre campus at Ft. Johnson, site of the beginning of the Civil War and other historical events. Together these institutions provide a rich collection of varied research mentors and training opportunities for MBES students in federal, state and academic institutions. In addition to separate laboratories on the Ft. Johnson campus, these partner institutions occupy space in the newly constructed Hollings Marine Laboratory; an 80,000-sq. ft. facility dedicated to molecular biology and structural chemistry studies of the marine environment.

The purpose of the MBES curriculum is to combine a solid background in molecular and cellular biology with flexible, individually-tailored programs in which students use cutting edge molecular and computational skills to solve environmentally relevant questions including those affecting human health. Thus students are prepared for future leadership roles in marine environmental and health-related sciences. Areas of focus within MBES include marine genomics, eco-toxicology, proteomics, bioinformatics, environmental carcinogenesis, marine natural product chemistry, marine biotoxins, marine mammal immunology, marine microbiology and structural biology (spectroscopy and nuclear magnetic resonance). Examples of current student doctoral research include the toxicity of metals such as nickel and uranium on microbial processes, functional genomic approaches to environmental stress and infection in shrimp, identification of antibiotic peptides in shrimp and oysters, molecular mechanisms of disease resistance in dolphins focused on skin, lungs and peripheral blood lymphocytes, toxin production in algae and molecular mechanisms of heavy metal detoxification in oysters. We have just initiated several new focus groups including algal biochemistry with an emphasis on toxic species such as those causing red tides and Marine Natural Products. The latter is basically a “Drugs from the Sea” research group. The availability of

mentors in each of these areas depends on extramural funding, space, facilities, and the number of students in those labs. Thus there is no guarantee that any incoming student will be able to get into a particular lab. If you have specific research interests, I strongly suggest that you contact the faculty directly begin a dialogue with them.

The curriculum for first-year students involves comprehensive and integrated studies of biochemistry, molecular biology and cell biology with seminars and workshops. The second year consists of specialized courses in which the principles of the first year are applied to focus topics. Each department and program offers some courses designed around their research focus and students are welcome to take ant graduate level course at MUSC or with our “sister marine program”, the College of Charleston (Grice Marine Lab). MBES students have taken courses such as Marine Eco-Genomics, Environmental Carcinogenesis, Proteomics, Bioinformatics, and Biogeochemistry of the Oceans, pollution Microbiology, and Molecular Immunity in Marine Animals.

The College of Graduate Studies Admissions Committee will review your application and then if the indicators (GRE, GPA, letters) are judged to be competitive you will be invited to MUSC for an interview. If we get to that stage, MBES wants to be involved so you can spend at least ½ day on our campus. If you are still interested in MBES please, keep in communication with us so we can track your progress through the system and help you negotiate the process.

All students admitted to the MUSC College of Graduate Studies are provided stipends for the first 14 months bt that College. Stipends for 2009 Fall Semester will be \$23,000 per year including health insurance (please see the College of Graduate studies web site for more information). Following the time of stipend support from the College of Graduate Studies, students are supported by grants from their mentor in whose lab they are doing their doctoral research. Mentors can supplement this amount and students can get extramural grants. Our students are quite competitive in the scientific arena and routinely garner awards at MUSC Student Research Day and presentations at scientific meetings. It is a great group of students and faculty.

So please continue to look at our web site and let us hear from you. You can e-mail (lacyer@musc.edu) or call me (843-876-2050).

Sincerely,
Eric R. Lacy, Ph.D.
Director, Marine Biomedicine and Environmental Sciences Center