

# BIOMEDICAL SCIENCES, M.S.

The Biomedical Science Graduate Program at the University of South Carolina School of Medicine offers a two year course of graduate study and significant research opportunities leading to the Master of Science (MS) degree with a major in biomedical science. Students have the option in this degree program of electing to complete a research-based thesis project or a non-thesis, coursework based program of study. Biomedical science is a multidisciplinary field of study aimed at advancing our knowledge of human disease. Scientists working in the USC SOM Biomedical Science program have diverse interests ranging from the study of molecular and cellular processes to the study of organ systems and whole organism functions. This interdisciplinary program prepares students for careers in biomedical fields including research positions in academia and industry. The MS degree is also ideal for students seeking advanced preparation for entry into professional (medical, dental, veterinary) schools. The program provides a broad foundation of knowledge in the basic medical sciences with an opportunity to focus further on a specific discipline(s) including immunology, neuroscience, cardiovascular biology, complimentary medicine and others.

The program is administered by the Biomedical Sciences Graduate Director in consultation with the Graduate Education Committee and the Biomedical Sciences Graduate Committee. These committees include faculty representatives from all of the School of Medicine Basic Science departments.

## Learning Outcomes

1. Students will demonstrate an understanding of the scientific principles underlying biomedicine.
2. Students will demonstrate an understanding of responsible conduct of research and ethical issues related to biomedical research including animal use human subjects in research data management collaborative science authorship (including plagiarism) conflicts of interest and peer review.
3. Students will obtain entry into desired professional schools (medical, dental, graduate, etc) or obtain desired employment in the biomedical field following graduation from the School of Medicine Biomedical Sciences MS program. While this outcome does not directly assess student knowledge or appropriateness of the curriculum it is an important measure of program success.

## Curriculum

The two year curriculum presents multiple training components designed to prepare students for a career in biomedical fields. In the first year of the two year program, there is a core of basic medical science courses together with multidisciplinary laboratory courses on research methods, facilities, and major equipment. These must be passed with a B average. The student will also participate in the Biomedical Sciences seminar programs that are designed to expose the student to modern, cutting-edge research in diverse biomedical areas.

In the second year, the MS student finishes required courses and performs research with a selected mentor. This can either be laboratory research or library research. The former leads to a thesis based upon a research hypothesis and data generated by the student. It is hoped that data generated by the student will also lead to the publication of research paper(s). The library-based research program requires the student to conduct an extensive literature review focused on a

specific topic of interest. This leads to a thesis reviewing published literature and addressing current deficiencies in the area. It is hoped that this will culminate in the publication of a review paper by the student-mentor team. Opportunities for laboratory or library research are in such current areas of interest as cancer, reproductive biology, biodefense, complementary medicine, immunology, cell and molecular biology, neuroscience, microbiology, vision science, developmental biology, cardiovascular biology, AIDS and many more specialties. A detailed description of research activities within the biomedical science program may be found at the School of Medicine web site: <http://www.med.sc.edu>.