

Biochemistry and Molecular Biology Program

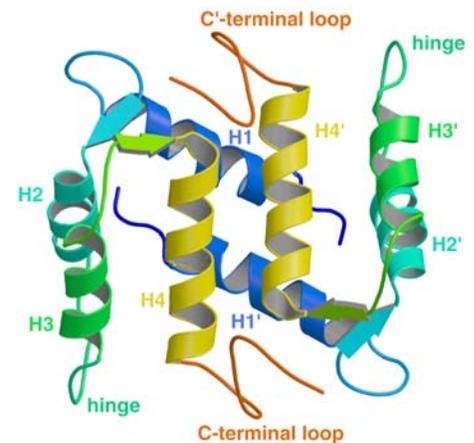
Program Highlights

Research Foci

- Structural Biology
- Gene Expression and Regulation
- Cancer and Stem Cell Biology
- Muscle Biology
- DNA Repair
- Fluorescence Methods
- Viral DNA Packaging

The Graduate Program in Biochemistry and Molecular Biology is an intercampus program taught by faculty at both the University of Maryland, Baltimore (UMB) and the University of Maryland Baltimore County (UMBC). Together, we offer courses of study leading to the Master of Science and Doctor of Philosophy degrees through top-tier training plans that boast nationally and internationally renowned faculty members. UMB and UMBC graduate programs are also highly inclusive, with more than 100 minority PhD students enrolled in the intercampus Meyerhoff Graduate Program. Many of our students go on to conduct postdoctoral work at such renowned institutions as the National Institutes of Health, Johns Hopkins, Yale, and Harvard prior to obtaining permanent positions in academia, national laboratories, or in private industry/pharmaceutical companies. Others take advantage of diverse non-traditional training opportunities to embark on careers as leaders in science administration, advocacy, and business.

Our curriculum begins with a comprehensive core introductory course in biomedical science followed by advanced courses in biochemistry and molecular biology and additional elective courses in students' areas of interest. During the first three semesters, a series of laboratory rotations familiarizes students with faculty research interests and expands their range of laboratory skills. Following

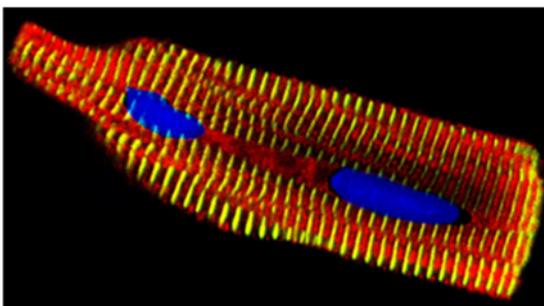


3D structure of Metastasis Protein 1 (mts1) determined by NMR

completion of the core curriculum in the second year of study with a minimum grade point average of 3.0, doctoral students must pass an oral examination and defend their thesis proposal prior to admission to candidacy for the Ph.D. degree. Following successful completion of the qualifying exam, students focus on their thesis research in the laboratory of their faculty advisor. Completion of the Ph.D. program, including the final thesis defense, usually requires five years. Throughout the period of study in the program, various seminar series and journal clubs provide opportunities for students to keep abreast of current work and thinking in the field.

Lab Research

Laboratory research is a central component of our training plan. Doctoral students receive a competitive stipend, tuition remission, health coverage, and opportunities for additional awards. Many faculty also participate in NIH training programs including the Interdisciplinary Training Program in Muscle Biology and the Training Program in Integrative Membrane Biology, that provide additional specialization in select topics. Students can also present their work at our annual program retreat as well as regional, national, and international scientific conferences. These meetings are key components of a student's development, providing them with opportunities to network with researchers from other institutions and develop professional relationships that foster collaborations and often lead to employment prospects following graduation.



Cardiomyocyte showing positions of nuclei (blue) and two sarcomeric proteins (red and yellow).



As a student in the Biochemistry and Molecular Biology graduate program at the University of Maryland, you will work with faculty who are leaders in their fields. Research is performed in a stimulating training environment featuring state-of-the-art facilities and internationally recognized centers of excellence. Interactions between faculty specializing in different areas provide graduate students with research opportunities in a wide range of areas including diverse aspects of cancer, cardiac and vascular diseases, AIDS, stem cell biology, biosensor development, and more.

Research Foci and Facilities

The Program in Biochemistry and Molecular Biology combines faculty with expertise in biochemistry, molecular biology, and structural biology from the University of Maryland Schools of Medicine and Dentistry, and the Department of Chemistry and Biochemistry at the University of Maryland, Baltimore County (UMBC). This varied expertise has allowed us to expand far beyond traditional biochemistry to encompass a wide range of molecular and cellular processes, including transcriptional and post-transcriptional regulation of gene expression, viral DNA packaging, DNA repair, cell cycle checkpoints, tumor suppressor structure and function, regulation of calcium and signal transduction pathways, enzyme catalysis, cardiac and skeletal muscle function, complex polysaccharide structure/function, organic and bio-organic mechanisms, fluorescence and biosensor development, DNA- and RNA-binding proteins, DNA-binding drugs, retrovirus structure and function, and studies on HIV.

Our laboratories are modern, spacious and ideally equipped for technically advanced biochemical and cellular research. Students in the program have access to outstanding centers and research organizations including the Howard Hughes Medical Institute, the University of Maryland Greenebaum Comprehensive Cancer Center, two NMR facilities (950 MHz, two 800 MHz, and three 600 MHz spectrometers), X-ray crystallography facilities, a fluorescence spectroscopy center, the Center for Stem Cell Biology and Regenerative Medicine, and more than 50 nationally and internationally recognized faculty members. Our research is well funded by many agencies including the National Institutes of Health (NIH), The National Science Foundation (NSF), The American Cancer Society (ACS), The Howard Hughes Medical Institute (HHMI), The American Heart Association (AHA), and several other foundations.



Our 950 MHz NMR spectrometer

Visit our website:

<http://lifesciences.umaryland.edu/biochemistry/>

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