

BIOCHEMISTRY & MOLECULAR BIOLOGY**Program of Study**

The Department of Biochemistry, Microbiology, and Molecular Biology offers programs in graduate studies leading to a M.S. in Biochemistry and a Ph.D. in Biochemistry and Molecular Biology. The course of study includes a requirement for a graduate level seminar course each semester and courses chosen by the student and his or her advisory committee from course at the 400-level or above in this department, or suitable courses in other departments or programs such as Biological Sciences, Chemistry, Computer Science, Mathematics, and Physics, and the School of Marine Science. The curriculum plan is variable and will take into account each student's goals for graduate study and the content of his or her previous preparation. The master's program generally requires two to three years for completion, while the time for completion for a doctorate is typically four to six years. Comprehensive examinations are part of the doctoral program requirements as described in the regulations of the Graduate School. A non-thesis Master's, the Master of Professional Studies in Biochemistry, is also offered.

Financial Aid

All applicants will be automatically considered for any available teaching or research assistantships. No additional application material beyond the application for admission is normally required. The department has a number of teaching assistantships. Research assistantships are occasionally available through the Maine Agricultural and Forestry Experiment Station. In addition, some students are supported by research grants to individual faculty members. All assistantships include tuition remission. For optimal consideration for financial support, the Graduate School should receive completed applications for Fall admission no later than January 15. Financial support is also occasionally available for spring admission as well. The department does not normally provide financial support for students enrolled in the non-thesis master's option.

Research Facilities

Students may choose from research areas such as cell regulatory systems, protein biochemistry, physical biochemistry, plant biochemistry, and plant molecular biology. Equipment and facilities available for research include those for DNA sequencing, PCR thermocyclers, digital-imaging equipment, preparative and analytical ultracentrifuges, liquid scintillation radioisotope counters, tissue culture facilities, HPLCs, gas chromatographs, phase and fluorescent microscopes, scanning and transmission electron microscopes, controlled -environment chambers, greenhouses, and facilities for raising and maintaining fish. Students admitted to graduate programs in Biochemistry and Molecular Biology may also carry out their research in a number of laboratories in other departments at the University, the Jackson Laboratory in Bar Harbor, the Maine Medical Center Research Institute in Portland, or through other cooperative institutional arrangements.

Students

The Department of Biochemistry, Microbiology, and Molecular Biology typically has 20-25 graduate students enrolled in all of our programs. With a graduate faculty of eleven in the department, there is considerable direct interaction between faculty and graduate students. Individual research laboratories typically have regular research meetings or journal clubs for faculty, graduate students, and undergraduate students in that laboratory in order to discuss their own or other's research findings. Students are encouraged to present the results of their research at local, regional and national scientific meetings, for which financial support is usually provided.

Applying

Students come from various backgrounds with undergraduate majors in the life sciences, chemistry, and others. Preparation should include courses in biochemistry, chemistry, mathematics, and physics substantially equivalent to that required of undergraduate students at this institution whose major is Biochemistry or Molecular and Cellular Biology. For optimal consideration the suggested deadlines are January 15 for fall admission and September 15 for spring admission.

Correspondence

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(For a list of Graduate Faculty, please visit the online Graduate Catalog at: gradcatalog.umaine.edu)

Updated: 9/29/2009

BIOCHEMISTRY & MOLECULAR BIOLOGY**Graduate Faculty**

Robert E. Gundersen, Ph.D. (University of Texas-Austin, 1983), Associate Professor and Chair. The Role of signal transduction during growth and development in eukaryotes.

Sharon L. Ashworth, Ph.D. (Purdue University, 1998) Assistant Professor. Biochemical and microscopic analysis of the dynamic interactions between the actin cytoskeleton and actin-associated proteins during kidney failure using cell culture, rat, mouse and zebrafish model systems.

Dorothy E. Croall, Ph.D. (University of Rochester Medical School, 1979) Professor. Structure and regulation of Ca-dependent proteolytic systems in mammalian cells.

Julie A. Gosse, Ph.D. (Cornell, 2005) Assistant Professor. Biochemical, molecular and cellular toxicology to aid in human environmental health risk assessment.

Keith W. Hutchison, Ph.D. (Wisconsin-Madison, 1974) Professor. Regulation of gene expression during growth and maturation of conifers.

Carol H. Kim, Ph.D. (Cornell, 1992), Associate Professor. Viral pathogens and vaccine development in a zebrafish model system.

Charles E. Moody, Ph.D. (Rhode Island, 1976), Associate Professor and Graduate Coordinator. Developmental and comparative immunology.

Mary E. Rumpho, Ph.D. (Washington State, 1982), Professor. Mollusk and algal chloroplast symbiosis, physiological genomics of low oxygen stress in plants, anticancer metabolites from plants and mollusks.

John T. Singer, Ph.D. (Georgia, 1983), Professor. Molecular genetics and microbial physiology.

Rebecca J. Van Beneden, Ph.D. (Johns Hopkins University, 1983), Professor. Molecular oncology and aquatic toxicology; the role of cellular oncogenes and tumor suppressor genes in response to environmental toxicants; regulation of gene expression; molecular mechanisms of tumorigenesis in non-mammalian models.