

## MICROBIOLOGY

### Program of Study

The Department of Biochemistry, Microbiology, and Molecular Biology offers programs in graduate studies leading to a M.S. or Ph.D. in Microbiology. 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 courses 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 Microbiology, 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, completed applications for fall admission should be received by the Graduate School 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 microbial symbiosis, microbial physiology and molecular biology, microbial ecology and biogeochemistry, virology, and host-pathogen interactions. Equipment and facilities available for research include DNA sequencing, 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 Microbiology 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 generally provided.

### Applying

Students come from various backgrounds but typically with undergraduate majors in microbiology or other life sciences. Preparation should include courses in microbiology, biochemistry, organic chemistry, mathematics, and physics. For optimal consideration the suggested deadlines are January 15 for fall admission and September 15 for spring admission.

### Correspondence

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## **Graduate Faculty**

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

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

**Jody Jellison**, Ph.D. (Oregon State, 1983). Cooperating Professor. Metal metabolism on fungi.

**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.

**Stylianos M. Tavantzis**, Ph.D. (Pennsylvania State, 1980), Cooperating Professor. Plant virology.

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