



Microbiology

College of Science & Health

Microbiology is the study of microscopic organisms, their activities, and applications. Although small in size, microorganisms play an enormous role in many areas of society including human health and disease, food, pharmaceutical and biotechnology industries, agriculture, and the environment. As a result of the widespread importance and application of microbiology, career opportunities are almost limitless. There are more microbiologists than any other type of biologist and the American Society for Microbiology is the oldest and largest single life science membership organization in the world.

The Microbiology Department, located in the Cowley Hall of Science, supports undergraduate and graduate programs in microbiology. The microbiology major has been in existence since 1984 and the program has been recognized by the University of Wisconsin System as a Center of Excellence since 1988. The program is nationally known for excellence in undergraduate education and emphasizes laboratory competence in microbiology and related disciplines. A microbiology major provides a foundation for the abundant employment opportunities in microbiology and is also excellent preparation for graduate school or professional schools. Microbiology is cited as the major that best prepares pre-med students for the rigors of medical school.

The curriculum is based on the recommendations from the American Society for Microbiology, and is designed to ensure that graduates gain excellent, state-of-the-art experience in microbiology. After completing a core of Microbiology courses, students may choose electives that allow them to specialize in specific areas. A large number of electives are available in areas of virology, parasitology, mycology, molecular biology, bioinformatics, food and industrial microbiology, environmental microbiology, plant microbiology, and research. Students may also elect a biomedical, environmental science, or business concentration with slightly different curricula. A particular emphasis of the UW-La Crosse Microbiology major is laboratory competence. Faculty have received over one million dollars in educational grants to ensure that teaching laboratories are equipped with the latest equipment. Microbiology majors receive more laboratory instruction than any other major on campus, which results in exceptionally high employability.

Undergraduate Program

Major:

- Microbiology
- Microbiology with concentrations in
Biomedical Science
Environmental Science
Business

Minor:

Microbiology

Department Features

Facilities

The department of microbiology has four teaching laboratories equipped with state-of-the-art equipment in microbiology, immunology, molecular biology and genetics, microbial physiology, virology, and fermentation microbiology. Laboratories are supported by a microbiology prep room that has three staff members to prepare

materials for teaching laboratories. Additional facilities available include a National Institutes of Health approved animal room, a state-of-the-art industrial fermentation facility, radiation laboratories, scanning and transmission electron microscopes, and individual faculty research laboratories. Several research laboratories are located in the new Health Science Center and include a level three biosafety laboratory, a PCR diagnostic suite, and a tissue culture facility.

Faculty

The department has eight Ph.D. microbiologists and three instructors. In addition, six faculty in the Department of Biology teach courses that serve as microbiology electives. All faculty have an exceptional commitment to quality undergraduate education. The faculty provide students with individualized instruction in microbiology and are actively involved in developing laboratory curricula to meet the ever-changing techniques of microbiology. In the past 10 years, microbiology faculty have received

over \$2 million in research and teaching improvement grants. The department also has numerous adjunct faculty from area hospitals, federal agencies, and industries who support departmental activities.

Research and Internship Opportunities

Each faculty member has an active research program and provides undergraduates opportunities to conduct research in any of the following areas:

- Infectious Disease
- Antimicrobial Agents
- Immunology
- Virology
- Microbial Genetics
- Molecular Biology
- Microbial Physiology
- Microbial Ecology
- Fermentation Microbiology
- Environmental Microbiology

In addition, numerous area industries, federal agencies, and hospitals provide internship opportunities for microbiology majors. The adjunct faculty also provide research and internship

opportunities for microbiology majors. A goal of the department is to provide each microbiology major with some relevant work experience through either research or employment. Most internships are paid, and students may apply for university grants to obtain funding for supplies, travel, and summer stipends for undergraduate research.

Career Opportunities

Entry Level

Career opportunities are abundant in microbiology and over 95 percent of microbiology graduates interested in employment at the bachelor's level obtain jobs within the discipline.

Each year several companies come to UW-La Crosse to interview microbiology majors. Employment opportunities include:

- Clinical Microbiologist
- Environmental Microbiologist
- Food and Dairy Microbiologist
- Fermentation Microbiologist
- Immunologist
- Research and Development Microbiologist
- Pharmaceutical Sales Person
- Public Health Microbiologist
- Research Technician

Continuing Education

Microbiology is an excellent major to prepare students for graduate or professional school:

- Graduate study in microbiology, biochemistry, epidemiology, immunology, and molecular biology
- Medical School
- Dental School
- Pharmacy School
- Physician Assistant Programs
- Veterinary School

Occupational Outlook

Microbiology has always provided excellent career opportunities, but the outlook for employment in microbiology will be even better in the future. With new emerging

diseases, increase in antibiotic resistant pathogenic microbes, and the threat of bioterrorism, the demand for medical microbiologists is continually increasing.

Microorganisms provide numerous applications in a variety of food, beverage, pharmaceutical, and environmental industries. However, it is estimated that less than one percent of all microbes have been discovered to date. The discovery of new microbes with a variety of applications is increasing daily, suggesting that opportunities in microbiology are almost limitless.

Professional Associations

The department has an active Microbiology Club that is an official affiliate of the American Society for Microbiology. The club sponsors various activities related to Microbiology including field trips to organizations that employ microbiologists, trips to regional and national meetings, and sponsors seminars by renowned microbiologists and alumni. Students are also encouraged to become student members of the American Society for Microbiology.

Microbiology Department
3004 Cowley Hall
(608) 785-6960
www.uwlax.edu/microbiology