

Department of Microbiology and Immunology

The Department of Microbiology & Immunology at Montana State University has a unique combination of expertise in pathogen biology, bioremediation, biofuels, immunology, cell and developmental biology, microbial ecology, host/pathogen interactions, biofilm biology, and geomicrobiology. With this diverse expertise, the department strives to provide a broad and thorough curriculum to both undergraduate and graduate students. Our students are encouraged to cross boundaries and push their studies and research further via interactions across departments and colleges.



CURRICULUM OPTIONS

B.S. Biotechnology

The Bachelor of Science in Biotechnology is an interdisciplinary degree offered by the College of Agriculture. Students will pursue a basic science curriculum the first two years and then choose an area of emphasis in plant, animal or microbial systems for the junior/senior years.

Microbiology Option

Students interested in finding solutions that parlay into emerging biotechnology industries should consider this option. These industries are involved in developing products to maintain biodiversity, restore soil and water quality, develop new pharmaceuticals or vaccines to combat disease, decrease our dependence on nonrenewable resources, provide tools and skills for investigative and forensic sciences and improve food and fiber production.

B.S. Microbiology

Microbial Systems Option

Industries are involved in developing products to maintain biodiversity, restore soil and

water quality, develop new pharmaceuticals or vaccines to combat disease, decrease our dependence on nonrenewable resources, provide tools and skills for investigative and forensic sciences and improve food and fiber production. Biotechnology uses organisms to produce commercial products, either through natural processes, or through genetic manipulation.

B.S. Biotechnology

Animal Systems Option

The Animal Systems option provides a challenging science curriculum with an emphasis on providing students unique “hands on” learning experiences in methods courses and through an internship program. Students will gain both theoretical and working knowledge of the most important molecular and biochemical techniques used in biotechnology.

Pre-Veterinary Science Curriculum

The MSU Pre-Veterinary Curriculum prepares students for admission to professional veterinary school leading to a Doctorate in Veterinary Medicine (DVM). This program is a non-degree granting program designed to fulfill the requirements for an application to a College of Veterinary Medicine. Students typically declare a major in a degree-granting curriculum after two semesters in the pre-veterinary curriculum.



Specialized Areas of Study/Minors

- Genetics
- Microbiology

Graduate Programs:

- M.S. in Immunology and Infectious Diseases
- M.S. in Microbiology
- Ph.D. in Microbiology
- Ph.D. in Immunology and Infectious Diseases
- Washington Idaho Montana Utah Regional Program in Veterinary Medicine

What can I do with my degree?

- Bacteriologist
- Biochemist
- Biotechnologist
- Cell Biologist
- Clinical Microbiologist
- Dentistry
- Environmental Scientist
- Geneticist
- Immunologist
- Medicine
- Mycologist
- Parasitologist
- Science Writer
- Teacher
- Veterinarian
- Virologist

For additional information:

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RESOURCES AND FACILITIES

Cooley Lab

Cooley Lab is a newly renovated lab, which serves as the primary hub for biomedical research at Montana State University. The building is LEED certified and serves as a state-of-the-art facility for faculty and students researching everything from treatments for infectious diseases to safeguards against bioterrorist attacks.

Molecular Biosciences Building

The Molecular Bioscience building houses state-of-the-art facilities with core laboratories for flow cytometry, cell biology, and molecular sciences, as well as pathogen containment facilities for small (BSL-3) and large animal research (ABSL-2). Instrumentation suites house equipment for DNA sequencing, genomic analysis, flow cytometry and cell sorting, and confocal microscopy.

CAREERS WITH A DEGREE IN MICROBIOLOGY AND IMMUNOLOGY

Projections for the next 20 years suggest that there will be a demand for trained microbiologists to fill positions in all aspects of microbiology.

Students interested in microbiology, animal or plant science, biochemistry, biotechnology and animal or human medicine will find

challenging careers in the diverse areas of microbiology and immunology in either an academic or industrial setting. Students successfully completing this curriculum will also be prepared to enter graduate or medical professional schools for further study.

ACCOMPLISHMENTS AND DISTINCTIONS

Faculty research accomplishments boost the department to consistently rank in the top tier of research expenditures at MSU, and the department is known as one of the university's primary research engines.

The department is home to the Washington Idaho Montana Utah Regional Program in Veterinary Medicine, which brings with it numerous research, programming and outreach opportunities for undergraduate and graduate students.

