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. Our students are encouraged to cross boundaries and engage in research across departments and colleges.

**CURRICULUM OPTIONS**

The Department of Microbiology & Immunology offers two majors for undergraduates: a Bachelor of Science in Microbiology and a Bachelor of Science in Biotechnology. Within each major, there are a number of options. The department also offers a minor in microbiology, and collaborates with other departments to offer a minor in genetics.

**Microbiology Major:**
**Microbiology Option**

This option covers all areas of microbiology. Students can choose a microbiology track, a pre-vet track, a pre-med track, or an environmental track, making this option excellent preparation for those who wish to be professional microbiologists, attend medical, dental, or veterinary school, or study environmental microbiology topics.

**Microbiology Major:**
**Medical Lab Science Option**

This option is for students interested in careers that involve the performance of clinical laboratory tests. To become a medical laboratory scientist, students must train in a year-long program and become accomplished professionals in microbiology, chemistry, blood banking, and hematology. Students can receive their training through the Montana Medical Laboratory Science Training Program at MSU.

**Microbiology Major:**
**Environmental Health Option**

This option is for students interested in focusing on environmental health topics, including general environmental sanitation, food and waterborne disease control, air and water quality, water and wastewater treatment, solid and hazardous waste disposal, rodent and insect control, consumer product safety, recreational and occupational safety, radiological hygiene, epidemiology, and health education.

**Biotechnology Major:**
**Microbial Systems Option**

This option is for students interested in working in emerging biotechnology industries. 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.

**Biotechnology Major:**
**Animal Systems Option**

This option provides a challenging basic science curriculum with an emphasis on unique “hands on” learning experiences in methods courses and an internship program. Students gain knowledge of important molecular and biochemical techniques.

Josh Carter received a 2016 Goldwater Scholarship.
RESOURCES AND FACILITIES

Cooley Lab
Cooley Lab is a recently 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 Biosciences 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.

FACULTY RESEARCH ACCOMPLISHMENTS

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.

VETERINARY MEDICINE

In addition to the Microbiology Option: Pre-vet Track Bachelor of Science degree, the department offers a pre-veterinary certificate. The department is also 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.

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 an academic, clinical, industrial, or government setting. Students successfully completing this curriculum will also be prepared to enter graduate or medical professional schools for further study.

For additional information:
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Options within Major
- Microbiology
- Medical Laboratory Science
- Environmental Health
- Microbial Systems
- Animal Systems

Specialized Areas of Study/Minors
- Microbiology
- Genetics

What can I do with a degree in Microbiology and Immunology?
- Bacteriologist
- Biochemist
- Biophysicist
- Biostatistician
- Biotechnologist
- Blood bank technologist
- Chemist
- Clinical chemistry technologist
- Clinical pathologist
- Crime lab analyst
- Cytotechnologist
- Dentist
- Ecologist
- Embryologist
- Environmental impact analyst
- Environmental health educator
- Food and drug inspector
- Geneticist
- Hemotherapist
- Histologist
- Horticulturist
- Hospital administrator
- Immunologist
- Industrial hygienist
- Laboratory technician
- Medical doctor
- Medical laboratory manager
- Medical record technician
- Medical technician
- Microbiologist
- Mycologist
- Natural resources manager
- Naturalist
- Parasitologist
- Patent specialist
- Pathologist
- Pharmaceutical sales representative
- Pharmacologist
- Physical therapist
- Physician assistant
- Public health specialist
- Research scientist
- Toxicologist
- Veterinarian
- Virologist