

Microbiology?

Microbiology programs study basic biological sciences, chemistry, and physics to learn about unicellular organisms and colonies, and sub cellular genetic matter, such as bacteria, molds, yeast, viruses, fungi, unicellular algae, and protozoa. General microbiology explains microorganism diversity, functions, growth, structure, genetic makeup, reproduction, and preservation. The program is usually coupled with immunology, the study of the biological mechanisms involved in the pathogenesis of disease, and parasitology, the study of biological organisms living with host organisms.

The program at Montana State University gives students a strong knowledge base in supporting subjects such as chemistry, physics, math and the liberal arts. Specialty courses are offered in general, medical, food and water, ecological, and biochemical microbiology, as well as in immunology, virology, molecular biology and microbial physiology and genetics. This program offers the following option areas: Biotechnology: Microbial Systems Option, Environmental Health Option, Medical Laboratory Science Option and the Microbiology Option. The **Biotechnology: Microbial Systems Option** enables a student to work in the emerging biotechnology industries. This option exposes individuals to the industry of 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. The **Environmental Health Option** is concerned with 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. The **Medical Laboratory Science Option:** is for students interested in careers that involve the performance of clinical laboratory tests. These tests provide data that are used in the diagnosis and treatment of disease. To become a Clinical Laboratory Scientists, students must train in a year long program and become accomplished professionals in microbiology, chemistry blood banking and hematology. The **Microbiology Option** covers all areas of microbiology and prepares students to be professional microbiologists. The curriculum is also excellent preparation for those who wish to attend medical, dental and veterinary schools, and other related professional programs.

Characteristics associated with success in this major include precision, dependability and a strong sense of responsibility.

You should:

- have a strong ability in mathematics and natural sciences
- enjoy the challenge of change, discovery and exploration
- have a strong desire to help others
- have an interest in improving the environment and creating a better society
- be very curious about how things work and how they can be preserved
- be capable of logical thinking and problem-solving
- have good computer skills
- have an ability to accept responsibility
- have an ability to do detailed work
- have an ability to work well under emergency conditions
- have a genuine concern for public well-being
- have good communication skills

Related occupations include:

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|--|---|---------------------|
| • Biologist | • Food and Drug Inspector | • Microbiologist |
| • Molecular Biologist | • Industrial Waste Inspector | • Aquatic Biologist |
| • Industrial-Safety-and-Health Technician | • License Inspector | • Biophysicist |
| • Occupational-Safety-and-Health Inspector | • Hazardous-Waste Management Specialist | • Zoologist |
| • Safety Inspector | • Environmental Epidemiologist | • Nematologist |
| • Customs Inspector | • Environmental Health Specialist | • Mycologist |
| • Biochemist | | |

What Can I **Do** With a Major In...

Microbiology?

MSU graduates (Bachelor's degree) were hired in the following selected fields:

Clinical Lab Scientist- St. Lukes Presbyterian Hospital
Medical Technologist- Quest Diagnostics; St. Vincent Healthcare; The Children's Hospital
Research Assistant- Montana State University
Certified Nurses Assistant- Phillips County Good Samaritan Center
Lab Technician- University Hospital of Colorado; Bioscience Laboratories, Inc.; Abbott Labs; Montana State University; LigoCyte Pharmaceuticals
Internship- Sacred Heart; Park Butte Episcopal Medical School; University of Wyoming; Benefis Health Care; Rapid City Regional Hospital; Oregon Health Services
Environmental Health Specialist- Gallatin County; Minnesota University; University of Minnesota; University of New Mexico; Rapid City Regional Hospital; New York University
Phlebotomist- St. Vincent's; Medical Lab Services
Microbiologist/ Lab Technician- SGM Biotech, Inc.; Dairigold, Inc
QC Associate- Medimmune Vaccines
Bioinformatician- Montana State University
Scrub Team/ Nurse Aide- Bozeman Deaconess Hospital
Lab Specialist- Montana State University
Biological Technician- US Fish and Wildlife Service
Cruise Staff- Holland America
Maintenance Supervisor- Bay Area Medical Center
Urethane Lab Technician- Diversified Plastic, Inc
Production Technician- Ribic Immunochem
Associate Scientist- MSE, Inc
English Teacher- Peace Corps
Real Estate Agent- Self Employed
Operating Room Assistant- Bozeman Deaconess Hospital
Research Technician- LigoCyte Pharmaceuticals
Senior Laboratory Technician – University of Minnesota
Receptionist – Slabworks of Montana

Salary averages of survey respondents: (# of respondents in parentheses)

2004: MT: \$29,500 (2) Out of State: \$30,000 (1)
2005: MT: N/A Out of State: N/A
2006: MT: \$20,800 (1) Out of State: \$19,157 (1)
2007: MT: N/A Out of State: \$27,500 (1)

Graduates from this program entered programs of further education at these institutions:

University of Washington	University of Montana	Berkshire Medical Center
Sacred Heart	Montana State University	University of North Dakota

Other Sources of Information:

American Society for Biochemistry and Molecular: www.asbmb.org
Department of Microbiology, Montana State University: www.montana.edu/wwwmb

For more information contact:



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177 Strand Union Building
Bozeman, MT 59717
(406) 994-4353
www.montana.edu/careers

¹University of Oregon. 2007. Created by intoCareers, a unit of the University of Oregon. Montana information Montana Career Information System. Discover: 2008 by ACT, Inc.

²Montana State University Department of Microbiology

³Montana State University Career & Internship Services

Number of graduates/number of respondents: 2004: 9/4; 2005: 10/8 ; 2006: 6/5; 2007: 5/3