

# Microbiology, Cell & Molecular Biology

## Curriculum

The Bachelor of Science degree in Microbiology, Cell and Molecular Biology offers two degree options:  
 Microbiology/Cell & Molecular Biology  
 Medical Laboratory Science

## Microbiology, Cell & Molecular Biology majors develop the following skills:

- Problem Solving
- Analytical skills
- Quantitative orientation
- Oral and written communication
- Independent work habits
- Self-motivated work ethic
- Operate scientific equipment
- Biology theory and practical knowledge
- Statistical application
- Precision
- Spirit of Scientific inquiry
- Critical thinking
- Technical Skills
- Science Communication

## Job and Internship Websites

- American Society of Microbiology  
<http://www.asm.org>
- American Society for Clinical Laboratories  
<http://www.ascls.org>
- Anheuser-Busch  
<http://www.buschjobs.com/careers>
- Bio Careers  
<http://www.biocareers.com>
- Careers in Biotech  
<http://accessexcellence.org/RC/CC>
- Cell & Molecular Biology Online  
<http://www.cellbio.com/joblists.html>
- National Institute of Health  
<http://www.training.nih.gov>
- International Society for Microbial Ecology  
<http://www.isme-microbes.org>
- Microbiology Careers  
<http://www.microbiologycareers.org/>
- National Institute of Environmental Health Sciences  
<http://www.niehs.nih.gov/summers>
- National Institutes for Health Clinical Center  
<http://clinicalcenter.nih.gov/>
- Oklahoma State Bureau of Investigation  
<http://www.ok.gov/osbi/Employment/>
- Personal Care Products Council  
<http://jobs.personalcarecouncil.org/home/>
- Science Jobs  
<http://www.newscientist.com>  
<http://www.sciencejobs.org>
- Science Careers  
<http://www.sciencecareers.org>
- Stevenson Cancer Center (OU Medicine)  
<http://www.oumedicine.com/mi/ok-inbre/summer-undergraduate-research-program>
- US Dept. of Agriculture  
<http://www.afm.ars.usda.gov/>
- US Dept. of Health and Human Services  
<http://hhs.gov>
- US Food and Drug Administration  
<http://www.fda.gov/scienceresearch/default.htm>
- USA Jobs  
<http://www.usajobs.gov>

## Get Involved

American Society for Microbiology  
 Microbiology Club  
 Microbiology and Molecular Genetic  
 Graduate Student Association

A complete list of student clubs and organizations can be found online at:  
<https://campuslink.okstate.edu>

## College of Arts & Sciences Career Services

213 Life Science East  
 Tel: 405 744 5658

For appointments and resources:  
<http://cascareers.okstate.edu>

# Microbiology, Cell and Molecular Biology Career Paths...

**Medicine and Health:** Diseases are prevented by vaccines developed and produced by microbiologists. Many techniques for detecting diseases have been developed as Microbiologists and biochemists continue to develop new diagnostic tools to improve existing systems

**Drug Manufacture and Design:** This is one of the largest industries employing Microbiology majors. Doctors prescribe them, pharmacists dispense them, but chemists, biochemists and microbiologists discover them. In order to discover and develop a new drug, a thorough understanding of the interactions between biological macromolecules and small molecules is needed. Microbiologists are also involved in their production and quality assurance.

## **Biotechnology and Related Industries:**

Microbiologists use new enzymes to help the diverse metabolic activities of microorganisms to discover with biotechnology problems This contributes to a range of activities from cleaning up the environment (bioremediation) to the development of biofuels. Microbiologists are also involved in food production, processing and safety.

**Forensic Science: (Crime Lab Science)** Not only are molecular geneticists and their expertise used in DNA fingerprinting, which has become so prominent in criminal investigation, but the examination of other biological samples (blood, saliva, semen, and flesh) are essential in many criminal investigations. This is a field of growth as science becomes a critical part of crime scene investigation.

**Professional School:** A Microbiology degree is a great preparation for medical school, dental school, veterinary school and law school. It is also very common for a Masters or Ph.D to be required for work in this field. Undergraduate research in this area of study is also very helpful for professional school applications.

## Job Titles

Bacteriologist	Biomedical Lab Manager
Clinical Med Tech	Chemistry Lab Tech
Technical Sales	Quality Assurance Tech
Geneticist	Educator/Professor
Dairy Technologist	Bomb Technician
Mycologist	Environmental Scientist
Virologist	Forensic Specialist
Analysts	Clinical Microbiologist
Consultant	Veterinary Microbiologist
Food Technologist	Academic Science Admin
Parasitologist	Medical Technologist
Biochemist	Clinical Microbiologist
Biotechnologist	Science Writer
Cell Biologist	Research Assistant
Immunologist	Medical Technologist

**Research:** Most microbiology graduates tend to work in a traditional laboratory and research environment and some may choose to work with a scientific company or research facility.

**Food Science:** The study and use of microbes in the production of cheese, wine and beer may also lend itself to provide work for microbiologists. Professionals are also involved in positions related to food safety through inspection, evaluation and implementing sanitary procedures.

**Genetic Counseling:** Students in our program receive a strong background in genetics. This provides an excellent basis that can be adapted into future careers in this marketable field. Genetic counselors incorporate the latest in genetic sciences into their practice in the care for patients at risk of inheritable disorders.

**Medical Laboratory Science:** Microbiology is a very important aspect in diagnosing infections and future treatments. Medical Laboratory Scientist are healthcare professionals that perform diagnostic science involving simple to complex testing procedures in a clinical laboratory. This field links technology and information to healthcare and medicine.

## Types of Employers

- Biotechnology Firms
- Health Maintenance
- Hospitals
- Computer Firms
- Chemical Manufactures
- Energy Firms
- Colleges/Universities
- Research Institutes
- Manufacturing Firms
- Crime and Forensic Labs
- Disease Diagnostic Labs
- Pharmaceutical Companies
- Research & Development Labs
- Medical Instrument Companies
- Centers for Disease Control
- Dept. of Agriculture
- US Military
- National Cancer Institute
- Drug Enforcement Agency
- National Institutes of Health
- Public Health Service
- Health and Human Services
- Research Laboratories
- Educational Institutions
- Food & Drug Administration
- Environmental Protection Agency