

Everyday, molecular and biomedical biology is shaping our lives. At a most basic level molecular and biomedical biology involve the use of biological organisms, systems, or processes to develop technologies and products to improve the quality of life. Nowhere is this more apparent than in healthcare and new avenues to diagnose and treat disease.

Our program has been developed cooperatively with the University of Nebraska Medical Center (UNMC). The curriculum focuses on molecular biology, genetics and genomics, cellular biology, and biochemistry. The program also ensures that students are able to participate in research through a semester-long internship in an academic, commercial, clinical, or government laboratory in the region.

While many graduates pursue careers in research labs or medicine, molecular and biomedical biology have a wide variety of career opportunities ranging from sales and marketing, to research and development, to manufacturing and quality control and assurance. The industry continues to flourish nationwide. Not only are the total number of companies increasing, but employment in the field continues to grow as well.

The molecular and biomedical biology curriculum at UNO also includes pre-requisite courses needed to apply to medical school or other health professions programs, so many students who aspire to become physicians, physician assistants or other health professionals choose this major.

## Course Highlights:

- Molecular Genetics
- Comparative Genomics
- Cancer Biology
- Virology
- Immunology
- Cellular Biology
- Developmental Biology

## Knowledge & Skills gained:

### Knowledge

- Appreciation for the molecular mechanisms in living systems
- Understanding genomes and the role of genetics in normal and disease states
- Understanding the process and outcomes of molecular evolution
- Observing of the interdependence of living things
- Understanding the role of molecular biology and biotechnology in addressing issues in health, biomedical research, and product development.
- Understanding the mechanisms of genetic inheritance and information flow
- Observing emergent properties of complex biological networks
- Understanding structure-function relationships of biological molecules

### Skills

- Design, conduct and interpret scientific research
- Isolate and analyze DNA, RNA and protein
- Sequence genomes
- Apply a scientific approach to problems
- Expertise in laboratory techniques such as microscopy, spectrophotometry, gel electrophoresis, cell culture gene cloning and others
- Communicate findings using models, charts and graphs
- Communicate new research findings to lay audiences
- Integrate biological concepts with disciplines like chemistry, physics and math
- Collaborate with others to solve problems
- Communicate new scientific findings

## Major at a glance:

**Number of majors:** 750      **Credit hours needed:** 36-45  
**Degrees offered:** B.A. & B.S.      **Minors offered:** Yes  
**Concentrations:** No

## Career Opportunities:

By nature, Liberal Arts majors make great employees in any field because of their ability to communicate effectively, think critically and solve complex problems. These timeless skills make them attractive to employers in a variety of professions. Specifically though, Biology majors often pursue careers as:

- Agricultural biotechnology
- Animal biotechnology
- Biofuels
- Biomanufacturing
- Biomaterials
- Biopharmaceuticals
- Conservation biology
- Drug discovery
- Education
- Environmental monitoring
- Food Safety
- Forensics
- Genomics
- Immunochemistry Lab
- Medical devices
- Medical diagnostics
- Molecular biology
- Nutraceuticals
- Water quality

\* Some may require graduate study

When the Molecular & Biomedical Biology (MBB) major is matched with complementary minors and thoughtful internships, new possibilities arise. A few examples are:

- **MBB** + Computer Science = High-tech Biological research
- **MBB** + Gerontology = Nursing Home Coordinator
- **MBB** + Business = Industry jobs of all types
- **MBB** + English = Technical Writer

## Tracks Available:

### Track 1: Molecular Biotechnology

- This track will position students to excel in graduate or professional schools, as well as industry jobs. This track includes an optional internship.

### Track 2: Biomedical Sciences

- This track will prepare students for success in medical school and related programs. Students completing this track will earn the minor in Medical Humanities.

## Student Opportunities:

- Molecular Biology Journal Club
- INBRE Scholars
- NE STEM 4U
- Nebraska Watershed Network
- Anatomy Academic Assistants (AAA)
- Pre-Medical Committee
- Pre-Health Professionals Club
- Clubs for most Pre-Health professions
- Students United for Global Health
- Women in Science Technology Engineering and Mathematics

## For more information:

For program information, contacts and course requirements:

[www.unomaha.edu//biology/](http://www.unomaha.edu//biology/)

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