



COLLEGE OF NATURAL SCIENCES, FORESTRY, AND AGRICULTURE

Biochemistry

UMaine's ADVANTAGE

- Hands-on experience early in your program
- Close interaction with faculty
- Extensive research opportunities
- High placement rates in competitive graduate and professional schools

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WHY STUDY BIOCHEMISTRY AT UMAINE?

Biochemistry is concerned with the study of all living systems at the cellular and molecular level and is, therefore, fundamental to all life sciences. The field is broad in its disciplinary subjects and applications. It emphasizes the use of chemistry and other physical sciences to understand basic life processes. Biochemists study the structure and function of biological molecules and understanding of metabolism, as well as aspects of molecular biology, molecular genetics, and many areas of biotechnology. It is a major component of medical research and practice, bioengineering and contemporary agriculture and environmental research.

WHAT CAN I DO WITH A DEGREE IN BIOCHEMISTRY?

A career in biochemistry offers an opportunity to explore new phenomena, participate at the frontiers of actively expanding areas of science and to make significant contributions to the human condition and global community. Our graduates have taken positions in university research laboratories; biotechnology industries; medical, dental and veterinary research laboratories; public health laboratories; pharmaceutical, food and chemical industries; and environmental research and monitoring laboratories.

Our majors also find that they are highly competitive in getting into graduate programs at colleges and universities around the country, where they earn Ph.D., M.S. or M.D. degrees. Our students are very competitive for admission to medical schools and other health-related fields as a result of our rigorous biochemistry and microbiology courses.

OUR UNDERGRADUATE PROGRAM

The department offers three related undergraduate programs leading to a bachelor of science degree in biochemistry,

microbiology or molecular and cellular biology. All three programs are designed to give students a broad background in the biological and physical sciences and an opportunity for in-depth concentration in one or more of these disciplines.

HANDS-ON EXPERIENCE: A key aspect of all three undergraduate programs is the opportunity to gain hands-on experience in the laboratory. Laboratory courses are offered in fundamental aspects of biochemistry and microbiology as well as specialized topics such as recombinant DNA techniques, virology, cell culture, immunology, pathogenic microbiology and microbial genetics and diversity. Laboratory courses in these topics are not generally available at smaller institutions that lack graduate and research programs or at many larger research universities where student numbers are too large to accommodate numerous laboratory courses in such specialized areas. In their senior year, all majors are required to engage in independent research with a faculty member. This direct link to active national and international-level research activities is an important aspect of our undergraduate programs. Students become part of a research team in the faculty's laboratory and are actively engaged in ongoing research projects that are both publicly and privately funded.

OUR GRADUATE PROGRAM

Our graduate students plug into faculty research in such areas as: the molecular biology of gene expression and the regulation of development; toxicology and carcinogenesis; membrane function and structure; molecular biology of the development of cell surface antigens; structures and interactions of DNA; evolution of DNA sequences; molecular mechanisms of virulence of pathogens; host-pathogen interaction, cell-cell communication mechanisms and mechanisms of symbiosis.

ABOUT UMAINE

The University of Maine, founded in Orono in 1865, is the state's premier public university. It is among the most comprehensive higher education institutions in the Northeast and attracts students from across the U.S. and more than 73 countries. It currently enrolls 11,286 total undergraduate and graduate students who can directly participate in groundbreaking research working with world-class scholars. The University of Maine offers doctoral degrees in 35 fields, representing the humanities, sciences, engineering and education; master's degrees in roughly 70 disciplines; 90 undergraduate majors and academic programs; and one of the oldest and most prestigious honors programs in the U.S. The university promotes environmental stewardship on its campus, with substantial efforts aimed at conserving energy, recycling and adhering to green building standards in new construction. For more information about UMaine, visit umaine.edu.



In addition, the department participates in the statewide Graduate School of Biomedical Sciences and Engineering (GSBSE) Ph.D. program, with cooperating faculty at The Jackson Laboratory, the Maine Medical Center Research Institute, the Foundation for Blood Research, the University of Southern Maine, Mount Desert Island Biological Laboratory and others to offer graduate students expanded research and educational opportunities.

OUR FACULTY

Our faculty are active in a variety of research fields. Many have working relationships with top research institutes in Maine, such as The Jackson Laboratory and Maine Institute for Human Genetics and Health. Funding for faculty research comes from the National Science Foundation, National Institutes of Health and other national organizations.



My experience at UMaine has played a huge role in the path my education has taken, as it not only built a foundation for me scientifically, but made me confident enough to immerse myself in the unknown and pursue a career in scientific research.” — Sarah Tisdale, Class of 2006, Biochemistry major

OPPORTUNITIES TO EXCEL

Faculty in our department generally have an open lab policy, accepting motivated and qualified majors to work in their labs very early in their education. Most students will continue this lab work throughout their UMaine career. Generous funding by alumni underwrites this undergraduate research experience. Our majors have been very successful in selection for early acceptance to Tufts University School of Medicine through the Tufts Maine Track Early Assurance program. UMaine consistently has high placements in the program.

HOW DO I APPLY?

Visit umaine.edu for an application, as well as information about academics and life at UMaine.

explore

*Bachelor of Science in
Biochemistry*

*Minor in
Biochemistry*

*Master of Science in
Biochemistry*

*Master of Professional Studies in
Biochemistry*

*Ph.D. in
Biochemistry and Molecular Biology*

