

BIOCHEMISTRY AND MOLECULAR BIOLOGY

Revealing how life works



Department of Biochemistry and Biophysics

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This publication will be made available in an accessible alternative format upon request. Please contact the College of Science at 541-737-4811 or science@oregonstate.edu.

What will you discover?

The Department of Biochemistry and Biophysics offers world-class faculty, a tradition of interdisciplinary research, teaching excellence and extraordinary laboratories to facilitate undergraduate learning.

The department ranks high nationally and internationally in many research areas, including signal transduction, gene expression, epigenetics, metabolic regulation, structural biology, and genetic code expansion technology.

The department offers two Bachelor of Science degrees, both accredited by the American Society for Biochemistry and Molecular Biology (ASBMB):

- **Biochemistry and Molecular Biology (BMB)** with options in Advanced Molecular Biology, Computational Molecular Biology, and Pre-medicine;
- **Biochemistry and Biophysics (BB)** with options in Advanced Biophysics, Neuroscience, and Pre-medicine.



Highlights

- Solve problems at the intersection of biological and physical sciences with our **nationally accredited program in biochemistry, molecular and cellular biology, chemistry, molecular genetics, physics and statistics.**
- Tailor your education to specific career goals with three different options.
- Thrive in a smaller, supportive department within a world-class research university.
- Pursue interdisciplinary research projects with faculty across OSU.
- Participate in the Biochemistry Club for community, leadership and service opportunities, peer mentoring and social interactions with faculty.



Transformative power of research

Students who engage in research learn to balance collaborative and individual work as well as explore different career paths. On-the-job experience working in teams is a highly sought after skill in any workplace.

Participating in undergraduate research helps students deepen their critical thinking skills and academic experience by interacting one-on-one with faculty. Students may apply for research funding from the University, the College of Science, or the department to support their individual projects.

Many of our students conduct basic and applied research in medical science, cell biology, genomics, biotechnology, drug development, healthy aging, agriculture, nutrition, clinical chemistry, food science, toxicology, and marine science.

Students take concepts learned in the classrooms and apply them to real world problems in state-of-the-art laboratories: the Environmental Health Sciences Center, Linus Pauling Science Center, Center for Genome Research and Biocomputing, and the Unnatural Protein Facility.

Thanks to rigorous research experiences, classroom training and faculty advising, BMB majors are well prepared for medical and dental schools, graduate schools, pharmacy and professional schools and are extremely well qualified for jobs in biotechnology and pharmaceutical sectors.

Student success

Advisors are available to help students make academic decisions that support their goals and career plans. Advisors also help interpret and explain university policies and procedures to keep students on track for graduation.

Faculty advisors also help students apply to medical, dental, or pharmacy school, identify relevant courses, research and internship opportunities. For current course requirements, refer to OSU's General Catalog online (catalog.oregonstate.edu). For more information about careers and graduate programs, contact the Department of Biochemistry and Biophysics.

Sample curriculum

YEARS ONE & TWO

Chemistry, Organic Chemistry
Principles of Biology
Calculus
Introduction to Research
Cell and Molecular Biology
Scientific Theory and Practice
Physics
Statistics
General course: Wealth and Poverty
Electives

YEARS THREE & FOUR

Biochemistry Series for Majors
Labs: Organic Chemistry, Molecular Biology, Biochemistry
Research/Study abroad

Macromolecular Structure
Advanced Molecular Genetics
General Course: Science and Society
Elective Credits (Advanced Molecular Biology, Computational Molecular Biology or Pre-Medicine)
Internship

Recent graduates work as:

- Researchers in biochemistry and molecular biology
- Health professionals such as doctors, dentists, physician assistants, pharmacists
- Research executives in biotechnology and pharmaceutical companies
- Laboratory assistants in pharmaceutical companies, food processing plants and universities
- Clinical/molecular diagnostics and genetic testing professionals
- Bioinformatics software developers, trainers and scientists
- Educators in science, technology, engineering, mathematics

What can you do with a degree in Biochemistry and Molecular Biology?

Conduct research in neuroscience, genomics, bioinformatics and medicine; work in biotech and pharmaceutical companies to develop and test new products; find solutions to environmental, agricultural and health issues.

The Biochemistry and Molecular Biology major is a good fit for students who are curious and excited about the cellular, genetic and molecular mechanisms in living organisms. Students learn about the diverse chemical and physical processes necessary for living systems, such as metabolic regulation, RNA processing, chromosome structure and replication, cell division, growth and death as well as protein synthesis.

Students study molecular and cellular processes connected with aging, disease and oncogenesis as well as learn how the concepts of molecular biology inform research approaches. They also acquire training in fundamental and state-of-the-art molecular biological experimental strategies, bioinformatics software and computer-based analysis of protein structures.

Graduates who are career-ready

The development of powerful research tools such as recombinant DNA technology, large-scale genome analysis and advances in computational biology present exciting opportunities for graduates. They pursue rewarding careers in healthcare, genetic technologies, pharmaceutical development, patent law, basic and applied research and more. With an education in biochemistry and molecular biology, graduates are well-prepared for careers in universities, government, research institutes, hospitals, pharmaceutical companies and other industries.

