

School of Life Sciences / Department of Biochemistry and Biophysics

Biochemistry and Biophysics

Revealing how life works



Department of Biochemistry and Biophysics

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COLLEGE OF SCIENCE
ACADEMIC BROCHURE



What will your experience be?

The Department of Biochemistry and Biophysics has 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 of biochemistry and molecular biophysics, including structural biology, genetic code expansion technology, metabolic regulation, signal transduction, protein chemistry, gene expression, epigenetics, and cell movement and adhesion.

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

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



Highlights

- Learn to solve problems at the intersection of biological and physical science with our **nationally accredited curriculum in biochemistry, chemistry, physics, biophysics, mathematics and computational sciences.**
- 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 leadership and service opportunities, peer mentoring and social events with faculty.

Transformative research

By engaging in biochemistry and biophysics research, students greatly enhance their education. They deepen their critical thinking skills, interact one-on-one with faculty, balance collaborative and individual work and explore different career paths. Teamwork is a highly sought after skill in any workplace.

Biochemistry and biophysics students conduct basic and applied research in medical science, agriculture, nutrition, clinical chemistry, food science, toxicology, environmental science, biotechnology and drug development. Students may apply for funding from the University, the College of Science or the department to support their own research projects.

In state-of-the-art laboratories such as the Linus Pauling Science Center, the Center for Quantitative Life Sciences, the Unnatural Protein Facility and the Environmental Health Sciences Center, biochemistry and biophysics students apply concepts learned in classrooms and teaching laboratories to real-world problems.

Thanks to their rigorous research experiences, classroom training and advising by faculty, biochemistry and biophysics majors are highly successful in gaining admission to medical and dental schools, graduate school, pharmacy and other professional schools as well as finding employment in biotechnology companies and research labs.

Student success

Faculty advisors help students make academic decisions consistent with their goals and abilities. They can also be tremendously helpful in interpreting and explaining university policies and procedures to keep students on track for graduation.

Advisors also help students apply to medical, dental, or pharmacy school and identify relevant research and internship opportunities. For course requirements, refer to the OSU General Catalog online. For information about careers and graduate programs, contact the Department of Biochemistry and Biophysics.



Sample curriculum

YEAR ONE

Chemistry
Calculus
Biology
Introduction to Research
General Course:
Comparative Cultures
Study abroad, research

YEAR TWO

Cell and Molecular Biology
Organic Chemistry
Calculus
Physics
Statistics
Scientific Theory & Practice
General Course:
Global Public Health
Research, study abroad

YEAR THREE

Biochemistry
Experimental Chemistry
Physical Chemistry
Introduction to Biological
Sequence Analysis
Elective Credits
(Advanced Biophysics,
Neuroscience or
Pre-medicine)
Research, study abroad

YEAR FOUR

Biophysics
Biochemistry Lab
Elective Credits

Recent graduates work as:

- Researchers in biochemistry, tumor virology and molecular biology
- Health professions such as doctors, dentists, physician assistants and pharmacists
- Research scientists/executives in biotechnology companies
- Laboratory assistants in food processing plants and pharmaceutical facilities
- Laboratory technicians for university or medical school research laboratories
- Educators in STEM fields

Recent graduates have been accepted at:

- Medical schools
- Dental schools
- Pharmacy schools
- Graduate schools

What can you do with a degree in Biochemistry and Biophysics?


Conduct research in neuroscience, genetics and medicine; develop new life-saving drugs or vaccines; work in cutting-edge biotech companies to develop and test new products and processes; find solutions to environmental, agricultural and public health issues.

If you enjoy math, physics and the life sciences and are interested in learning how the structure of biological molecules relates to their function, the Biochemistry and Biophysics major is an excellent choice. You will learn the chemistry and physics of life processes in an interdisciplinary major that integrates the principles of chemistry, biology, physics and mathematics and computer science.

Biochemists explore the chemical structure of living matter and the chemical reactions occurring in living cells. Biophysicists use the methods of physical science to study the structure and functions of macromolecules. Training in biophysics is especially valuable for students who are interested in drug design.

Career preparation

Powerful new research tools such as recombinant DNA technology, large-scale genome analysis and advances in computational biology have created exciting job opportunities. Biochemists and biophysicists work in universities, government and private research, hospitals and industry. Employers in agricultural chemical manufacturing, food processing, and the biotechnology, pharmaceutical and cosmetics industries hire our graduates.



Maria Franco Lab



Colin Johnson Lab:
Mechanisms of
membrane fusion