

# Biochemistry & Biophysics

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Cellular Biology

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The graduate program in biochemistry & biophysics is ranked by the NRC among the top 20% of biochemistry programs nationally and as one of the top 15 programs in the western United States.

The department is fully integrated into OSU's centers and institutes in the biological sciences, e.g., the Linus Pauling Institute, and the Center for Genomic Research and Biotechnology.

The Department of Biochemistry and Biophysics was instrumental in establishing many of OSU's successful multidisciplinary programs.

From molecules to mice. Nothing is more fundamental in science than understanding life—what life is, how it works, and how living systems are affected by their environment. The Department of Biochemistry and Biophysics at Oregon State University takes an interdisciplinary approach to tackle some of the most fundamental problems in the biological sciences; problems that are consequential to human health and the health of our environment, and problems that are of local, national, and international interest.

## Research areas include:

Bioinformatics  
Biological mass spectrometry  
Cardiac development  
Cell adhesion  
Cell signaling  
Cellular biosensors  
Chemical carcinogenesis  
Computational biology  
Control of gene expression  
Micronutrients  
Motor proteins  
Neurodegeneration  
Neuronal development  
Nucleic acid enzymology  
Nucleic acid structure and function  
Oxidative stress  
Protein structure and function  
Protein-protein interactions  
Protein-nucleic acid interactions

## Research

Research in the Department of Biochemistry and Biophysics is supported by outstanding facilities and a large number of externally funded grants and contracts. The Department faculty:

- supports undergraduate research through grants from the Howard Hughes Medical Institute and from the National Science Foundation.
- holds patents in areas of biotechnology and bioengineering.
- has been awarded over \$5 million in annual grants and contracts from the National Institutes of Health, National Science Foundation, Department of Defense, Department of Energy, and private foundations.

Faculty members in the department are internationally recognized leaders in their fields, and they include the current directors of OSU's Linus Pauling Institute and

the Environmental Health Sciences Center as well as past directors of OSU's Environmental Health Sciences Center and Center for Gene Research and Biotechnology.

Faculty in biochemistry and biophysics hold membership in the National Academy of Sciences, are listed among the top-cited biochemists in the world, and have held numerous fellowships and honors, including Guggenheim and Fulbright Fellowships.

Two of the most widely used textbooks for instruction in the fields of biochemistry and in biophysics were written by members of the department faculty.

Research has been published by departmental faculty in some of the most visible journals in the sciences; it has also been highlighted in news stories by the British Broadcasting Corporation and the Washington Post.

## Faculty

The Department of Biochemistry and Biophysics has 16 faculty members, who hold honors including: National Institutes of Health (NIH) Merit Award  
NIH Research Career Development Awards (2 awards)  
NIH James A. Shannon Director's Awards (3 awards)  
National Science Foundation CAREER Award  
American Chemical Society, Pfizer Award in Enzyme Chemistry  
Guggenheim Fellowship  
Discovery Awards, Oregon Medical Research Foundation (3 awards)  
OSU Distinguished Professors  
Sigma Xi Researcher of the Year Award (3 awards)  
OSU Dar Reese Advising Award  
Loyd Carter Awards for Excellence in Teaching (2 awards)  
Olaf Boedtker Award for Excellence in Academic Advising  
Gilfillan Award for Excellence in Research  
Milton Harris for Excellence in Research (2 awards)  
Frederick H. Horne Award for Sustained Excellence in Teaching Science

OSU researchers in biochemistry and biophysics examine living systems from the atomic structure of basic molecular building blocks, to the molecular basis for diseases and aging, to the mechanisms responsible for the development of cardiovascular and neuronal systems in mammals.

# Biochemistry & Biophysics

**For 10 years, over 50% of biochemistry and biophysics students have graduated cum laude or higher; about 15% graduate with Honors.**

**Students in biochemistry & biophysics include five Goldwater scholars and one finalist among Rhodes Scholars.**

## Education

Experiential learning attracts some of the best and brightest students at OSU to the department's undergraduate program; its graduate program is nationally ranked.

The department offers an undergraduate program leading to a bachelor of science (B.S.) degree, and a graduate program leading to the master of science (M.S.) and doctor of philosophy (Ph.D.) degrees.

Laboratory research is a strong component of the department, and this research is an integral part of both the undergraduate and graduate programs. In 2006-2007, there were 125 undergraduate majors and 25 Ph.D. students.

Alumni have continued their education in some of the most prestigious post-graduate programs across the country, including the M.D./Ph.D. programs at Stanford University and the University of Washington, M.D. programs at the Mayo Clinic, Dartmouth Medical School, Oregon Health and Sciences University, and Ph.D. programs at Johns Hopkins University and the University of

Wisconsin. Several have been awarded very competitive graduate research fellowships from the National Science Foundation.

Ph.D. and M.S. degree graduates have established successful careers in academia and industry, holding faculty positions at Johns Hopkins University, Vanderbilt University, and the Mayo Clinic as well as positions at the leading pharmaceutical companies, including Schering-Plough, Merck, and Novartis.

## Outreach

Faculty, staff and students of the department participate in various community outreach and education programs, including College of Science Ambassadors, Science Connections, Discovery Days, and SEPS, and various outreach programs associated with the Environmental Health Sciences Center.

Members of the faculty have also provided lectures on chemistry, biochemistry, molecular biology, structural biology to local middle school and high school students in their own classrooms and in classrooms at OSU, including the stereographics classroom.

## Facilities

The department has available a number of specialized research facilities, including Confocal microscopy,

Flow cytometry,

X-ray crystallography,

NMR spectroscopy,

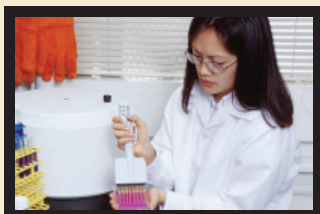
Mass spectrometry,

Analytical ultracentrifugation,

Computational resources.

## Student Achievements

- Five Goldwater Awards in three years
- Iota Sigma Pi Undergrad Researcher of the Year
- 25 of last 27 students applicants accepted to medical schools
- Rhodes Scholarship finalist
- Marshall Scholarship finalist



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Environmental Sciences

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Professional Science Masters

Science & Mathematics Education

Statistics

Zoology

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