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Departments
and Programs
in the College
of Science

Biochemistry &
Biophysics

Biology

Botany & Plant
Pathology

Chemistry

Environmental
Sciences

Geosciences

Mathematics

Microbiology

Molecular &
Cellular Biology

Physics

Pre-professional
Programs in the
Health Sciences

Professional
Science Masters

Science &
Mathematics
Education

Statistics

Zoology

Molecular & Cellular Biology

Molecular mechanisms, genomes and cellular organization. *The graduate program in molecular and cellular biology focuses on research and education in fundamental aspects of mechanistic biology. Graduate students are prepared for careers in forefront areas of biomedical, environmental, and agricultural science.*

Research

Faculty members are leaders in research areas that cross disciplinary boundaries, such as cellular mechanics, developmental biology, genomics and proteomics, computational biology and many other fields.

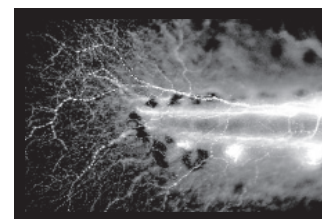
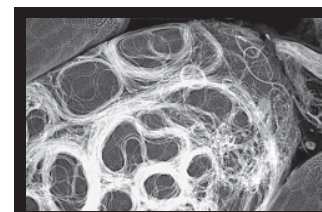
Research projects vary depending on faculty and student focus areas. For example, these projects highlight MCB research:

MCB Research Areas include:

- Molecular, cellular and developmental biology
- Genome and computational biology
- Structural and chemical biology
- Evolutionary biology
- Molecular pathogenesis and host-microbe interactions
- Plant and microbial biology
- Applied and health-centered biology, such as drug discovery, nutrition, environmental restoration and conservation

- Combining high-throughput genomic technology, bioinformatics and field studies, mechanisms of marine microbial genome adaptation and evolution in the world's oceans are being revealed.

- Using zebrafish as models, molecular, biochemical and genetic approaches are pinpointing the mechanisms by which environmental chemicals and drugs perturb development and tissue regeneration.
- Investigation of novel families of transcriptional factors and developmental regulators are revealing the pathways controlling development of vascular, neural, and reproductive organs in model organisms such as mice and flies.
- Research into the functions of microRNAs and other small RNA molecules in multicellular organisms has resulted in shifts in how molecular biologists view gene and genome regulation, chromatin modulation and antiviral defense.



Molecular and cellular approaches to studying life sciences have opened up all areas of contemporary biological research. Recognizing this fact, this MCB curriculum brings students into contact with a broad range of faculty mentors, disciplines, and experimental approaches that are essential to help students remain competitive for a lifetime.

Molecular & Cellular Biology

The MCB graduate program at OSU is an interdepartmental program; over 90 affiliated faculty members participate from 16 departments in 6 colleges.

Education

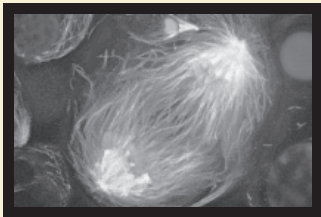
The interdepartmental Molecular and Cellular Biology (MCB) Program offers rigorous training in the fundamental theory and practice of molecular biology. The Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) degrees are offered. Biological sciences faculty across 6 colleges and 16 departments have designed the core curriculum, which includes core courses, a seminar and journal club series, research rotations, and a series of faculty research presentations. Weekly scientific seminars bring the scientific community together, another opportunity to interact with colleagues across the disciplines. Students interact with faculty weekly through the MCB Journal Clubs, presentations through which students experience peer-reviewed, evidence-based, critical assessments of current topics. First-year MCB students also complete three research rotations, which helps them to select a thesis research advisor and solidify the individual Ph.D. programs.

Students can receive their Ph.D. degrees and research training in the Molecular and Cellular Biology Program or through one of the traditional basic science departments, such as animal science, biochemistry and biophysics, botany and plant pathology, crop and soil science, environmental and molecular toxicology, food science and technology, forest science, horticulture, Linus Pauling Institute, microbiology, pharmacy, veterinary medicine, or zoology.

In addition, the Professional Science Master's Degree Program in Applied Biotechnology was designed to provide students with specialized training that will enable them to be productive participants in the biotechnology sector. This program leads to the M.S. degree in molecular and cellular biology, and it is founded on the core curriculum of the molecular and cellular biology program. The Applied Biotechnology Professional Science Master's track builds on this fundamental curriculum, adding training in areas where the emphasis in industrial laboratories differs from training needed to pursue a career in basic research.

Faculty

Many faculty of the graduate program in MCB are affiliated with Oregon State University's centers and institutes. They represent nationally known scientists from OSU's Linus Pauling Institute, the Center for Genome Research and Biocomputing, and the Environmental Health Sciences Center. A complete list of faculty members and their research and teaching foci are available on the program's website.



**for more information,
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