

RESEARCH OPPORTUNITIES

Students in the Cellular and Molecular Biology Program are encouraged to perform independent undergraduate research.

Faculty Research Interests:

Mike Abler | Molecular techniques and classical genetics to explore the roles of RNA-degrading enzymes in plant metabolism.

Scott Cooper | Molecular techniques to study the regulation of blood clotting in hibernating ground squirrels.

Anne Galbraith | Molecular biology, genetics, and some biochemistry to understand the roles of DNA replication proteins in yeast meiosis.

Tisha King-Heiden | Use of a variety of physiological, behavioral and molecular techniques to better understand how environmental contaminants influence development and health in fish.

Jennifer Klein | Molecular biology, biochemistry, biophysical spectroscopy and computational simulations to understand muscle and cytoskeletal protein dynamics.

Sumei Liu | Microscopy and molecular techniques to study the effects of stress on the intestinal nervous system.

Jennifer Miskowski | Genetics, microscopy, and molecular techniques to investigate the cellular processes involved in development of the worm, *C. elegans*.

Tony Sanderfoot | Molecular and bioinformatics tools to study the secretory pathway in green plants.

Brad Seebach | Electrophysiology, pharmacology and molecular approaches to study circuits in the developing, mammalian spinal cord that support walking.

Jaclyn Wisinski | Use biochemistry and microscopy techniques to understand G-proteins regulation of platelet aggregation and hormone secretion.

Amy Yu | Genetics and molecular biology to understand tissue specific regulation of circadian rhythms in the fruit fly, *Drosophila melanogaster*.



UNIVERSITY OF WISCONSIN-LA CROSSE



College of Science and Health

UNIVERSITY of WISCONSIN
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BIOLOGY MAJOR CELLULAR & MOLECULAR CONCENTRATION

www.uwlax.edu/biology/undergraduate-majorsminors

UNIVERSITY OF WISCONSIN-LA CROSSE
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WHAT IS CELLULAR AND MOLECULAR BIOLOGY?

Cellular and Molecular Biology are fields of biology that focus on understanding living processes at a molecular level. Many of the most exciting biological discoveries in the past 20 years have occurred in these fields. These discoveries have identified some of the genes responsible for cancer, the events regulating how a cell divides and how organisms develop from a single cell. These discoveries have helped to drive the current boom in biotechnology.

BIOLOGY MAJOR CELLULAR & MOLECULAR BIOLOGY CONCENTRATION

WHAT DOES THE CELLULAR AND MOLECULAR BIOLOGY PROGRAM AT UW-L HAVE TO OFFER?

In their course work, students use state of the art equipment and learn current techniques employed in cell and molecular biology research labs. The curriculum provides a balance between classic fundamental concepts and the latest breakthroughs. In Genetics, students use PCR and other diagnostic tests as well as classical Mendelian experiments to understand inheritance. In Cell Biology, students use immunofluorescence microscopy and cell culture techniques to explore factors that regulate cell growth and development. Molecular Biology has a lab in which students perform the latest techniques to measure gene transcription in different tissues. New electives expose students to the latest molecular techniques used in medicine, plant biotechnology and human genetics. The combination of theory and application makes students competitive in both the job market and in acceptance to graduate programs.

CAREER OPPORTUNITIES

Over 90% of CMB students obtain jobs in research or go on to graduate school.

Industry

Students graduating from this program will be well-trained for entry-level positions in many areas of industry. Biotechnology is used increasingly in the development and production of new drugs, agricultural products and diagnostic tests.

Graduate School

This program prepares students for graduate school in many disciplines

of biology including biochemistry, cell biology, genetics, plant biology, molecular biology and immunology.

Medical School and Health Care

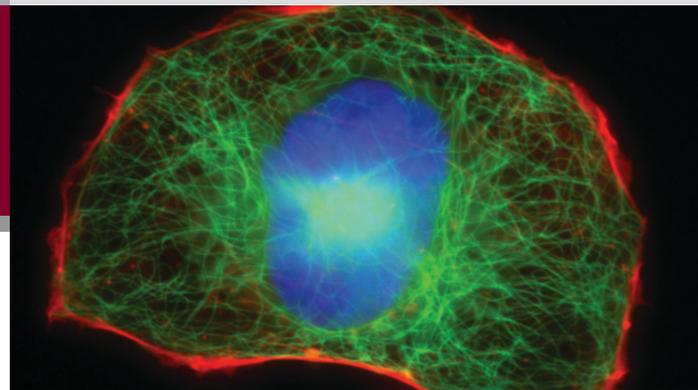
Medicine is becoming increasingly molecular in nature. As we discover the genetic causes of many diseases, new treatments and tests are developed. Future doctors and healthcare professionals will need to have a strong grasp of molecular biology to make diagnoses and prescribe treatments.

Environmental Applications

Many of the current testing methods used in environmental research use molecular techniques. These include research involving population studies, toxicology, endangered species and evolution.

Internships

During the school year there are several internships available at local biotechnology companies. In addition, students are encouraged to perform internships outside of La Crosse during the summer.



SURE PROGRAMS

Many major universities around the country offer Summer Undergraduate Research Experience (SURE) Programs for students from universities like UW-L. So in addition to research opportunities at UW-L, these SURE programs give students exposure to research in other dynamic settings.

UNIVERSITY of WISCONSIN
LA CROSSE

CURRICULUM

BIOLOGY REQUIREMENTS: 39 CREDITS

REQUIRED:

BIO 105 General Biology (4)
BIO 203 Organismal Biology (4)
BIO 306 Genetics (4)
BIO 307 Ecology (3)
BIO 315 Cell Biology (4)
BIO 435 Molecular Biology (3)
BIO 436 Molecular Biology Lab (1)
OR
BIO 468 Human Molec Genetics Lab (1)
BIO 440 Bioinformatics (2)
BIO 491 Capstone in Biology (1)

ELECTIVES:

At least 13 credits from the following:
BIO 202 Intro Bio Data Analysis Interp
BIO 312 Human Anat & Phys I
BIO 313 Human Anat & Phys II
BIO 337 Plant Phys
BIO 406 Parasitology
BIO 408 Developmental Biology
BIO 410 Human Cadaver Dissection
BIO 412 Mycology
BIO 424 Endocrinology
BIO 428 Adv Nut Hlth Prof
BIO 429 Evolution
BIO 432 Biology of Cancer
BIO 433 Radiation Biology
BIO 436 Molecular Biology Lab

BIO 443 Molec Mech Disease & Drug
BIO 449 Microscopy & Biological Imaging
BIO 450 Internship in Biology*
BIO 463 Aquatic Animal Health
BIO 466 Human Molecular Genetics
BIO 468 Human Molecular Lab
BIO 479 Biology Laboratory Asst*
BIO 489 Independent Study*
BIO 495 Service Learn Biol*
BIO 499 Undergraduate Research*
MIC 230 Fundamentals of Micro
MIC 406 Immunology
MIC 420 Intro Virology
MIC 421 Virology Lab
MIC 427 Indust/Ferment Micro

CHEMISTRY REQUIREMENTS:
CHM 103 General Chemistry I
CHM 104 General Chemistry II
CHM 301 Quantitative Analysis
CHM 300 Survey of Organic OR
CHM 303-305 Organic Chemistry
CHM 325 Survey of Biochem. OR
CHM 417, 418 Biochemistry

MATH REQUIREMENTS:

MTH 145 Elem. Statistics
MTH 175 Applied Calculus OR
MTH 207 Calculus I

*A total of 2 credits of these courses can count toward the major.