What is the Molecular and Cell Biology Major?

Molecular and Cell Biology (MCB) is the science that seeks an understanding of life processes in terms of the properties and functions of molecules that make up living cells, including interactions between and regulation of different types of DNA, RNA, and protein synthesis. The scope of questions addressed in Molecular and Cell Biology ranges from evolution to development to the regulation of gene expression. A career in this field requires a strong background in biology, chemistry, mathematics, and physics.

Major requirements are set to assure a high degree of proficiency in various areas while allowing as much flexibility as possible for students to individualize the program. Each student in the major is assigned a faculty advisor and a staff advisor to help guide students in course selection and exploration of undergraduate and post-graduate opportunities.

Who should declare the major?

The MCB major is for students who are interested in rigorous coursework related to molecules and cells. The MCB major is designed for students who:

- Plan to enter a research career in molecular and cell biology or related fields such as biochemistry, genetics, oncology, microbiology, developmental biology, or neuroscience
- Plan to enter a clinical or research career in medicine or allied health fields; OR
- Plan to pursue careers in biotechnology or pharmaceutical science

What can I do with this major?

Career opportunities for students with an undergraduate major in MCB are amazingly diverse. Graduates from our program have worked in the following areas:

- Health Care (ex. Physician, Nurse, Pharmacist, Dentist, Psychiatrist, Genetic Counseling, Vet)
- Education & Research (ex. Professor, Research/Lab Directors or Analysts, Forensics, Science Writing)
- State and government agencies (CDC, EPA, NASA)
- ...and many more (Patent Law, Bioinformatics, Marine Biology, Software Engineering, Research & Development, Public Health)
The Molecular and Cell Biology Curriculum
Students complete core requirements in Math, Biology, Chemistry, and Physics. All students take foundational coursework in biochemistry, cell biology and molecular biology and genetics. Then students have maximum flexibility to choose depth courses in topic areas such as biochemistry and biophysics, cellular systems, genetics, microbiology and virology, or quantitative biology, depending on student interests. All students must also complete a laboratory course and research experience, along with general education and L&S degree requirements.

Honors in the Major
Highly motivated students interested to further challenge themselves with MCB coursework, as well as complete a research thesis based on original work under the guidance of a mentor may find honors in the major to be a good fit. This option provides opportunities to interact directly with faculty in both research and other scholarly ways, and student-driven opportunities to share experiences and intellectual stimulation with other Honors students.

Honors in the Major Requirements
Complete all requirements for the major with a major GPA and an overall GPA of 3.3 or higher. Complete at least 15 credits of honors credits in the major through coursework, research, and a seminar while in residence at UW-Madison.

- Complete at least 9 credits of honors level credits from Breadth and Depth course options in the major.
- Complete Molecular and Cell Biology Senior Honors Thesis, an original research composition with a research mentor during your final two semesters (6 credits)
- Complete one semester of Molecular Biology 686: Senior Honors Seminar in Molecular Biology (1 credit)

Advising
All students are assigned to a team of two advisors – a faculty advisor, selected by the student, and a staff advisor. Students are encouraged to use their faculty advisor to discuss undergraduate experiences that will help prepare for graduate work or a career after graduation. The staff advisor can work with students to discuss course selection, registration, major and degree requirements, transfer credits, and tracking progress towards graduation, as well as connecting you with important resources on campus.

Senior Honors Thesis
The Senior Honors Thesis is a two-semester, 6 credit research commitment on a topic that you and your faculty mentor agree on. The result is an academic paper, often of publishable quality. A senior thesis allows a deeper dive into a topic and can provide the opportunity to build a strong relationship with a faculty mentor and strengthen your application to graduate and professional school.

Check out the MCB website’s “Undergraduate Research” page or contact the MCB advisor to learn about how to find a research experience.