



Department of Biology

Molecular Biology Specialist



What is Molecular Biology?

Molecular Biology is an interdisciplinary science that draws its major themes from biochemistry, cell biology, and genetics. It is distinctive in its emphasis on the structure, chemistry, and functions of nucleic acids and focuses on the biochemical basis of cellular genetics.

Why Molecular Biology?

As the cornerstone of contemporary biotechnology, Molecular Biology provides some of the most successful experimental tools in medicine and agriculture. Applications for Molecular Biology can also be seen in the fields of genetics and microbiology. Great improvements and discoveries have been made in the treatment of genetic and infectious diseases, cloning, genome sequencing, and biotechnological tools.

Why Study Molecular Biology at UTM?

Molecular Biology at UTM provides in-depth training in critical analyses of scientific concepts and literature as well as advance laboratory skills. Subject areas include virology, immunology, cancer biology, plant and animal developmental biology, and biotechnology.

Career Paths

- Graduate School
- Education
- Government, Business & Industry
- Research (Lab Technician)

First-Year Biology at UTM

All Molecular Biology Specialist students complete the following courses in their first year:

- **BIO152H5** – Intro to Evolution & Evolutionary Genetics
- **BIO153H5** – Diversity of Organisms
- **CHM110H5** – Chemical Principles I
- **CHM120H5** – Chemical Principles II
- **MAT134Y5** - Calculus for Life Sciences
- **1.0 credit from a list of other first year courses of their choosing (ie. Physics, Psychology etc)**

How Do You Study Molecular Biology at UTM?

Molecular Biology Specialist (14.5 credits)

Courses to Look Forward To!

The department of Biology offers more than 50 undergraduate courses. Students in the Molecular Biology Specialist complete a series of required courses. Students have the flexibility to select 2.5 credits from a list of courses based on their personal interests.

Required courses:

- **BIO206H5:** Introductory Cell & Molecular Biology
- **BIO207H5:** Introductory Genetics
- **CHM242H5 & CHM243H5:** Introduction to Organic Chemistry I & II
- **STA215H5:** Introduction to Applied Statistics
- **BIO314H5:** Lab in Cell & Molecular Biology
- **BIO315H5:** Human Cell Biology
- **BIO360H5:** Biometrics I
- **BIO370Y5:** Microbiology
- **CHM361H5:** Structural Biochemistry
- **CHM362H5:** Metabolism and Bioenergetics
- **BIO372H5:** Molecular Biology
- **CHM372H5 & CHM373H5:** Techniques in Biological Chemistry I & II
- **BIO477H5:** Molecular Biology of Gene Expression and Cancer

Some possible elective courses are:

- **BIO203H5:** Introductory Plant & Morphology and Physiology
- **BIO341H5:** Advanced Genetics
- **BIO374H5:** Modern Biotechnology
- **BIO407H5:** Behaviour Genetics
- **BIO476H5:** Molecular Basis of Disease
- **BIO411H5:** Topics in Molecular and Cellular Physiology
- **PHY333H5:** Physics of the Cell
- **JBC472H5:** Seminars in Biotechnology

Experiential Learning in Molecular Biology

We offer a wide-range of unique learning opportunities across all of our disciplines:

- **Research Opportunity Program (ROP):** participate in original research with a professor, learn research methods, and share in the excitement and discovery of acquiring new knowledge
- **BIO481 - Senior Research Project:** conduct an independent research project under the supervision of a faculty member; learn how to design, carry out, and analyze and evaluate results/data
- **BIO400 – Internship:** learn to apply biology knowledge and skills through a 200-hour work placement in the private or public sector
- **BioPath Professional Development Program:** two-year program open to all biology students. The program aims to facilitate the development of transferrable skills that will help students be successful beyond university.
- **JBC487 – Advanced Interdisciplinary Research Laboratory:** Students will work together as members of a multidisciplinary team toward the completion of an interdisciplinary experimental or theoretical research project. The interdisciplinary projects will be based on current trends in research and student teams will work to complete their projects with guidance provided by a team of faculty advisors from the Biology Department and the Department of Chemical and Physical Sciences.

Departmental Events

The Biology Department offers exciting opportunities for students to expand their interest in biology through a weekly departmental seminar featuring exciting guest speakers from across North America as well as our popular “Walk with your Professor” series where participants are led on a nature walk through the beautiful Mississauga campus.

For more information on career options, please visit the Career Centre site
<http://www.utm.utoronto.ca/careers/>.

For more information on these programs, please explore our Academic Calendar -
<https://student.utm.utoronto.ca/calendar/calendar.pl>.