MOLECULAR BIOLOGY (HBSc)

Department of Biology

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

Molecular Biology at UTM provides in-depth training in critical analyses of scientific concepts and literature as well as advanced laboratory skills. Subject areas include virology, immunology, cancer biology, plant and animal developmental biology, and biotechnology. UTM Biology is a dynamic community. With nearly 40 active research scientists, more than 100 graduate students and many post-doctoral fellows doing state-of-the-art research using the latest techniques our students will have the opportunity to learn from the best. Our undergraduate research projects and summer student placements in research labs will give students valuable, first-hand experience working in a laboratory environment.

MAKE THE MOST OF YOUR TIME AT UTM!

We want to help you maximize your university experience, so we've pulled together information and interesting suggestions to get you started, although there are many more! As you review the chart on the inside pages, note that many of the suggestions need not be restricted to the year they are mentioned. In fact, activities such as joining an academic society, engaging with faculty and seeking opportunities to gain experience should occur in each year of your study at UTM. Read through the chart and create your own plan using **My Program Plan** found at **www.utm.utoronto.ca/program-plans**

Programs of Study (POSt)

- Specialist Program ERSPE1237 Molecular Biology (Science)

Check out...

What is the molecular and genetic basis of cancer building? Examine the role of oncogenes, tumor suppressor genes and cell cycle regulating proteins in the developing of this disease through BIO477H5.

What can I do with my degree?

The career you choose will depend on your experience and interests. Visit the Career Centre to explore your career options.

Careers for Graduates: Cytotechnologist; Bacteriologist; Microbiologist; Medical geneticist; Biological technician; Toxicologist; Veterinary technician; Zoologist; Informationist; Community health worker; Radiation therapist; Doctor; Dietitian; Aquaculture technician.

Workplaces: Manufacturing and processing; Government; Scientific R&D; Conservation authorities; Hospitals and medical centres; Pharmaceutical; Academic medical centres/laboratories; Consulting firms.

MOLECULAR BIOLOGY

SPECIALIST Program Plan

HOW TO USE THIS PROGRAM PLAN

Read through each year. Investigate what appeals to you here and in any other Program Plans that apply to you.

Visit **www.utm.utoronto.ca/program-plans** to create your own plan using My Program Plan. Update your plan yearly.

	1ST YEAR	2ND YEAR	3RD YEAR	4TH OR FINAL YEAR
PLAN YOUR ACADEMICS*	Enrol in courses BIO152H5, BIO153H5; CHM110H5, CHM120H5; MAT132H5 and MAT134H5. Attain 1.0 credit from the second list of required first year courses in the **Academic Calendar**. Choose a program of study (Subject POSt) once you complete 4.0 credits. Use **Degree Explorer** and the **Academic Calendar** to plan your degree. Develop academic skills and strategies by enrolling in **utmONE** First-Year Foundations Course. Build community and gain academic support through **LAUNCH**. Join a RGASC **Peer Facilitated Study Group**.	Enroll in courses BIO206H5, BIO207H5, CHM242H5, CHM243H5, BIO259H5. Plus 1.0 CR from BIO202H5, BIO203H5 & BIO205H5 Throughout your undergraduate degree: • Use **Degree Explorer** to ensure you complete your degree and program requirements. • See the **Office of the Registrar** about degree requirements and the **Biology Undergraduate Administrator** about program requirements.	Enrol in courses BIO314H5, BIO315H5, BIO342H5, BIO360H5, BIO370Y5, BIO372H5; CHM361H5, CHM362H5, CHM372H5, CHM373H5 plus 0.5 from BIO304H5, BIO310H5, BIO324H5, BIO341H5, BIO347H5, BIO362H5, BIO368H5, BIO374H5, BIO375H5, BIO380H5; CHM347H5; PHY332H5, PHY333H5; BCH335H1, BCH340H1. Attend the RGASC's **Program for Accessing Research Training (PART)** to enhance your research skills.	Attain BIO477H5 or BIO419H5 plus 1.0 additional credit from the list of courses detailed in the **Academic Calendar**. Gain practical collaborative research experience! Apply for BIO400Y5, BIO481Y5 or JCB487Y5. Speak to the **Biology Undergraduate Administrator** for further information and similar opportunities. Log on to ACORN and request graduation.
BUILD SKILLS	Use the **Co-Curricular Record (CCR)**. Search for opportunities beyond the classroom, and keep track of your accomplishments. Attend the **Get Hired Fair** through the Career Centre (CC) to learn about on- and off-campus opportunities. Attend the **Experiential Education Fair.**	Use the **Career & Co-Curricular Learning Network (CLNx)** to find postings for on- and off-campus work and volunteer opportunities as well as **Work-Study**. Consider applying for a BIO399Y Research Opportunity. Ask your professor about volunteering in their lab.	Explore your interests. Why not pass on your passion for science? Be a **UTM Let's Talk Science Outreach** volunteer. Apply to become an Experiential Education Unit **Student Ambassador** and earn a CCR notation.	Apply to the Ontario Ministry of Natural Resources Internship Program as a recent graduate. Look at the **MNRF website** for eligibility and application details. Consider applying for NSERC, USRA or UTEA for the summer following graduation.
BUILD A NETWORK	Networking simply means talking to people and developing relationships with them. Start by joining the **Erindale Biology Society (EBS)**. Follow them @utmEBS. Go to the **EBS Meet the Prof Night**, or the **Biology Seminar Series.** Visit the UTM Library **Reference Desk**.	Do you have a professor you want to connect with? Ask them a question during office hours. Discuss an assignment. Go over lecture material. Don't be shy! Learn **Tips On How to Approach a Professor** available through the **Experiential Education Unit (EEU)**.	Establish a professional presence on social media (e.g., LinkedIn). Curious about grad school? Connect with a grad student through the CSE's **Grad Connect** program to get the inside scoop.	Join a professional association. Check out the **Canadian Society for Molecular Biosciences** or the **Canadian Society of Microbiologists**. Go to a conference such as **Ontario Biology Day**.
BUILD A GLOBAL MINDSET	Engage with the many programs offered by the **International Education Centre (IEC)**, whether you are an international or domestic student. Consider joining the **Canada Eh?** day trips or **English Language Conversation Circles** to deepen your global mindset. First-year international students can also take advantage of **THRIVE-IN**, a one-day conference dedicated to helping you start your UTM journey successfully.	Engage with the community and build skills through the Community Engaged Learning course, BIO209H5: Foundations of Human Physiology. During reading week, students have the opportunity to participate in a **UTM Abroad Experience** to Peru, or to participate in **Alternative Reading Week**.	Expanding your intercultural awareness and developing intercultural skills will help you in your academics, personal growth and are highly sought out by employers. **Earn credits overseas!** Apply to study for a summer term, or year at one of 170+ universities. Speak to the IEC for details about **Course Based Exchange**, funding and travel safety. Attend Global Learning Week to learn about the various opportunities available to you!	Engage in programs like **ISTEP** and **THRIVE-OUT** to support your transition out of the University!
PLAN FOR YOUR FUTURE	Start by exploring the **UTM Career Centre Model**—a chance to reflect and choose what's right for you with guided support. Access **MyCareerCentre** 24/7 for flexible, interactive career learning at your own pace. Drop-in to an **Academic & Career Planning Session** to chat with Advisors and Career Counsellors. Speak to the **Biology Undergraduate Administrator** for biology program advice and details.	Explore your options with the CC's **Job Shadow Program**, **In the Field**, or a one-on-one with a **Career Counsellor**. Thinking about grad school? Attend the **Graduate & Professional School Fair**, research application requirements, admission tests, and explore funding options. Getting ready for work? Join workshops, drop-ins, and networking events to build experience and confidently share your skills – **Register on CLNx**.	Need job search support? Book a coaching appointment with an **Employment Strategist** for personalized guidance. Ready to take the next step for grad school, visit the Pursue Learning section on **MyCareerCentre** and drop-in to chat with a **Career Counsellor** about grad school prep tips. Want to grow your network? Attend the Career Centre Networking Series and Let's Talk About events — **Register on CLNx**.	Join the **Now That I'm Graduating, What's Next?** session to start building your job search plan. Attend the **Sweats to Suits Job Search Conference** and discover diverse career pathways. Work with the **Employment Strategist** team to review your resume and prep for interviews. Still figuring things out? Meet with a **Career Counsellor** to create a career plan and attend a **Career Wellness** session to support your well-being along the way.

*Consult the Academic Calendar for greater detail on course requirements, program notes and degree requirements.

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Visit **www.utm.utoronto.ca/program-plans** for the online version and links.

MOLECULAR BIOLOGY

Skills developed in Molecular Biology

To be competitive in the job market, it is essential that you can explain your skills to an employer. Visit the Career Centre to learn how to articulate and market the following skills:

Communication & interpersonal: write scientific reports; present research findings; interact professionally with a multidisciplinary team of researchers, technicians, students and professors; and literacy writing.

Research: conduct journal research and utilize logical reasoning to interpret results/data derived from scientific experimentation.

Technical: use specialized computer programs; perform laboratory procedures; maintain laboratory equipment and instrumentation; and comply with quality control procedures.

Quantitative: analyze data for trends and apply statistical tests to data.

Critical thinking & problem-solving: logically interpret trends and results.

Get involved

Check out the 100+ student organizations on campus. Here are a few:

- Erindale Biology Society (EBS)
- UTM Student Union (UTMSU)
- UTM Athletics Council (UTMAC)

For a full listing of clubs on campus visit the **Student Groups and Societies Directory**

Services that support you

- **Accessibility Services (AS)**
- **Career Centre (CC)**
- **Centre for Student Engagement (CSE)**
- **Equity, Diversity & Inclusion Office (EDIO)**
- **Experiential Education Unit (EEU)**
- **Health & Counselling Centre (HCC)**
- **International Education Centre (IEC)**
- **Office of the Registrar (OR)**
- **Recreation, Athletics and Wellness Centre (RAWC)**
- **Robert Gillespie Academic Skills Centre (RGASC)**
- **UTM Library, Hazel McCallion Academic Learning Centre (HMALC)**

Department of Biology

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FUTURE STUDENTS

Admission to UTM

All program areas require an Ontario Secondary School Diploma, or equivalent, with six Grade 12 U/M courses, or equivalent, including English. The admission average is calculated with English plus the next best five courses. The Grade 12 prerequisites for this program are Advanced Functions, Biology and Chemistry. The approximate average required for admission is low- to mid-80s. More information is available at **utm.utoronto.ca/viewbook**.

NOTE: During the application process, applicants will select the Life Sciences admissions category, but will not officially be admitted to a formal program of study (Specialist, Major, and/or Minor) until after first year.

Sneak Peek

What's in your genes? Take BIO207H5 to find out about the principles of Mendelian inheritance and modern genetics. Curious about animal physiology? Discover the diversity of structure and function in animals in BIO202H5.

Effective biological training involves careful study of real organisms, both living and dead. Consequently, almost all Biology courses with laboratories involve students in one or more of the following activities with animals, plants, and/or microorganisms: collecting and preserving organisms from the field; dissecting or handling preserved or euthanized specimens (or properly anaesthetized living specimens); observing and making measurements on organisms maintained under laboratory conditions approved by the Canadian Council of Animal Care.

Student Recruitment & Admissions

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University of Toronto Mississauga
3359 Mississauga Rd
Mississauga ON Canada L5L 1C6

905-828-5400
www.utm.utoronto.ca/future-students

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