

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...

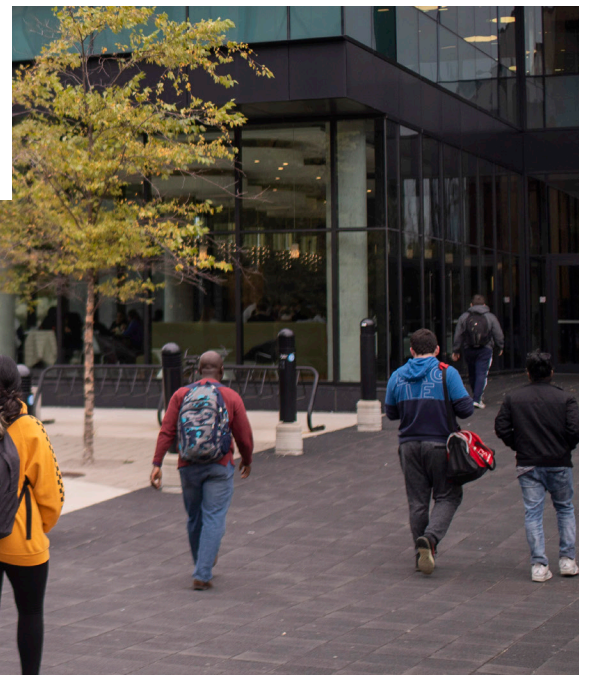
What is the molecular and genetic basis of cancer building? Examine the role of oncogenes, tumor suppressor genes and cell cycle regulating proteins in the developing of this disease through BIO477H5.

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.



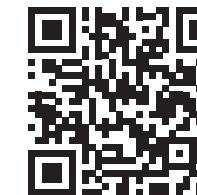
MOLECULAR BIOLOGY

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.



	1 ST YEAR	2 ND YEAR	3 RD YEAR	4 TH OR FINAL YEAR
PLAN YOUR ACADEMICS*	<p>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.</p> <p>Choose a program of study (Subject POST) once you complete 4.0 credits. Use the Degree Explorer and the Academic Calendar to plan your degree.</p> <p>Develop foundational academic skills and strategies by enrolling in a utmONE course. Build community and gain academic support through LAUNCH. Join a RGASC Peer Facilitated Study Group.</p>	<p>Enroll in courses BIO206H5, BIO207H5, CHM242H5, CHM243H5, BIO259H5. Plus 1.0 CR from BIO202H5, BIO203H5 & BIO205H5</p> <p>Throughout your undergraduate degree:</p> <ul style="list-style-type: none"> use the Degree Explorer to ensure you complete your degree and program requirements. see the Office of the Registrar about degree requirements and the Biology Undergraduate Advisor about program requirements. 	<p>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.</p> <p>Attend the RGASC's Program for Accessing Research Training (PART) to enhance your research skills.</p>	<p>Attain BIO477H5 or BIO419H5 plus 1.0 additional credit from the list of courses detailed in the Academic Calendar.</p> <p>Gain practical collaborative research experience! Apply for BIO400Y5, BIO481Y5m or JCB487Y5. Speak to the Biology Undergraduate Advisor for further information and similar opportunities.</p> <p>Log on to ACORN and request graduation.</p>
BUILD SKILLS	<p>Use the Co-Curricular Record (CCR). Search for opportunities beyond the classroom, and keep track of your accomplishments.</p> <p>Attend the Get Hired Fair through the Career Centre (CC) to learn about on- and off-campus opportunities.</p> <p>Attend the Experiential Education Fair.</p>	<p>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.</p> <p>Consider applying for a BIO399Y Research Opportunity.</p> <p>Ask your professor about volunteering in their lab.</p>	<p>Explore your interests. Why not pass on your passion for science? Be a UTM Let's Talk Science Outreach volunteer.</p> <p>Explore your interest. Apply to become a Wellness Ambassador at the Health & Counselling Centre</p>	<p>Apply to the Ontario Ministry of Natural Resources Internship Program as a recent graduate. Look at the MNRF website for eligibility and application details.</p> <p>Gain research skills by working one-on-one with graduate students and a professor through BIO481Y5. Speak to the Biology Undergraduate Advisor.</p>
BUILD A NETWORK	<p>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.</p> <p>Visit the UTM Library Reference Desk.</p>	<p>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).</p>	<p>Establish a professional presence on social media (e.g., LinkedIn).</p> <p>Curious about grad school? Connect with a grad student through the CSE's Grad Connect program to get the inside scoop.</p>	<p>Join a professional association. Check out the Canadian Society for Molecular Biosciences or the Canadian Society of Microbiologists.</p> <p>Go to a conference such as Ontario Biology Day.</p> <p>Consider applying for a NSERC USRA or UTEA for the summer following graduation.</p>
BUILD A GLOBAL MINDSET	<p>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.</p> <p>First-year international students can also take advantage of THRIVE-IN, a one-day conference dedicated to helping you start your UTM journey successfully.</p>	<p>Engage with the community and build skills through the Community Engaged Learning course, BIO209H5: Fundamentals of Human Anatomy and Physiology II. During reading week, students have the opportunity to participate in a UTM Abroad Experience to Peru, or to participate in Alternative Reading Week.</p>	<p>Expanding your intercultural awareness and developing intercultural skills will help you in your academics, personal growth and are highly sought out by employers.</p> <p>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!</p>	<p>Engage in programs like ISTEP and THRIVE-OUT to support your transition out of the University!</p>
PLAN FOR YOUR FUTURE	<p>Where should you start your career journey? The Career Centre's model can help you identify things to consider. You can get started today by visiting My Career Centre to begin exploring on your own. Speak to the Biology Undergraduate Advisor for biology program advice and details.</p> <p>Get ready to select your Program of Study (POST) by attending the Program Selection & Career Options workshop offered by the Office of the Registrar and CC.</p>	<p>Learn how your academics and career goals work together in a Career Counselling appointment.</p> <p>Explore careers through the CC's Job Shadow Program or In the Field.</p> <p>Considering further education? Attend the CC's Graduate & Professional Schools Fair. Research application requirements, prepare for admission tests (LSAT, GMAT) and research funding options (OGS, SSHRC).</p>	<p>Attend CC workshops to learn the basics of creating a resume and cover letter, preparing for an interview, and creating a strong LinkedIn profile. To register, visit the UTM Events page on CLNx. You would also find exciting networking opportunities to connect with employers, industry professionals and alumni.</p> <p>Are you ready to take the next step in preparing for further education? Get started by checking out the Pursue Learning section of My Career Centre and attending a drop-in session with a Career Counsellor for best practices for grad school preparation.</p>	<p>Attend the CC workshop, Now That I'm Graduating What's Next to learn how to develop your job search plan.</p> <p>Ready for employment? Schedule an Employment Strategist Appointment to review your documents and practice your skills. If you are still unsure about the next steps in your career journey, schedule a Career Counsellor Appointment to gain support exploring career options and establishing a career plan.</p>

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

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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905-828-5400

www.utm.utoronto.ca/future-students

