



Career Options after

# Molecular Biology and Biotechnology

the study of molecules and microorganisms

[www.utsc.utoronto.ca/sbiosci](http://www.utsc.utoronto.ca/sbiosci)

Co-op, Specialist

## What is Molecular Biology & Biotechnology?

**Molecular Biology** is the branch of biology that deals with the macromolecules essential to life. **Biotechnology** involves the manipulation of living organisms to create useful products. (Sources: *Oxford and Merriam-Webster Dictionaries*)

## Skills of Biology Grads

- Collect, analyze, interpret and make projections from data
- Utilize statistical tests in data analysis
- Conduct, design and troubleshoot experiments
- Observe and make measurements on organisms
- Write literature reviews and scientific reports
- Chart the development of complex organisms

### Biotechnology Skills:

- Understand how genetic, genomic and microbial techniques are combined to produce products and treatments in industrial, medical and agricultural settings.

### Molecular Biology Skills:

- Prepare and dispense precisely formulated solutions, even at microliter quantities
- Use electrophoresis, blotting, chromatography and centrifugation equipment
- Use nucleic acid hybridization in a range of formats
- Purify, modify and analyse DNA, RNA, proteins
- Use microscopy with in situ hybridization, immunocytochemistry and fluorescent protein technologies to analyse gene and protein expression and function

What makes Biotechnology at UTSC unique? Students in this program increase their knowledge of the biological processes that occur at the cellular and molecular levels while gaining rich laboratory experience.

## Entry-Level Jobs for Bachelor Grads

Common employment destinations include:

- Clinical Research Assistant in Hospitals
- Laboratory Technician in Industrial and Government Agencies
- Sales in Pharmaceuticals and Medical Supplies
- Assistant Biologist in Food Inspection Agencies
- Teaching Assistant or Tutor in Private Schools
- Quality Control in Biopharmaceutical Industry
- Laboratory Assistant in Genetic Testing Services
- Marketing Associate for Medical Devices

*The Career Directory:* [www.canadastop100.com/tcd](http://www.canadastop100.com/tcd)

## Graduate & Professional Studies

Popular further education opportunities include:

- Biology – Master, PhD
- Public Health or Health Science - Master, PhD
- Epidemiology or Biostatistics - Master, PhD
- Biotechnology – Master, Diploma
- Genetic Counselling - Master
- Medical or Dentistry School - MD or DDS
- Nursing – Bachelor
- Medical Laboratory Science – Diploma
- Genetic Technology – Graduate Diploma
- Molecular Biology & Genetics – Master, PhD
- Clinical Research - Post-Graduate Certificate
- Regulatory Affairs - Post-Graduate Certificate

### Use LinkedIn!

UTSC Biology graduates are working in Research, Education, Healthcare and Business.

Attend our LinkedIn workshop to learn about the *Find Alumni* tool for networking!

### Biotechnology Grads from UTSC have gone on to:

- Roche (Regulatory Affairs Associate)
- Quality Cheese (Quality Assurance Manager)
- Pall Life Sciences (Director)

## Examples of Fields that 'Fit' the Skills of Biology Grads

- Healthcare
- Federal, provincial, municipal governments
- Food & Agriculture
- Colleges and universities
- Pharmaceutical
- Industrial (Production and Manufacturing)
- Environmental (bioenergy)
- Medical research
- Education
- Quality Control (food, pharmaceutical, medical)

## Your 4-Year Career Exploration Action Plan

### 1 Do Your Research

The databases below provide you with details about job prospects, nature of work, educational requirements, working conditions, pay and related career paths:

**Career Cruising:** Log into [cln.utoronto.ca](http://cln.utoronto.ca), click on Resources, and click on Career Cruising to be logged in automatically

**O\*Net:** [online.onetcenter.org](http://online.onetcenter.org) (U.S. site)

Attend our workshop **Discover Your Skills and Career Options**, meet with a Career Counsellor, and use our resources to get to know your skills, values, personality and interests:

[www.utsc.utoronto.ca/aacc/get-know-yourself](http://www.utsc.utoronto.ca/aacc/get-know-yourself)

Use the advice on our tip sheets for gathering info: [www.utsc.utoronto.ca/aacc/tipsheets](http://www.utsc.utoronto.ca/aacc/tipsheets)

- Information Interviews
- Working On-Campus
- Internships
- Volunteering

### 3 Build Your Network

Explore Professional Associations and get involved: volunteer for their events and conferences, and get to know people in your industry of interest. These are your future mentors, supervisors and colleagues!

Biology Student Association at UTSC - [www.thebiosa.org](http://www.thebiosa.org)

About Bioscience - [www.aboutbioscience.org](http://www.aboutbioscience.org) Canadian Food Inspection Agency - [www.inspection.gc.ca](http://www.inspection.gc.ca)

Association of Clinical Research Professionals - [www.acrpnet.org/certificationprograms](http://www.acrpnet.org/certificationprograms)

Biotechnology Industry Association - [www.bio.org](http://www.bio.org)

Canadian Council of Technicians and Technologists (CCTT) - [www.cctt.ca](http://www.cctt.ca)

Canadian Society of Biochemistry, Molecular and Cellular Biology - [www.csbmcb.ca](http://www.csbmcb.ca)

The Canadian Society of Microbiology - [www.csm-scm.org](http://www.csm-scm.org)

The Society for Biomolecular Sciences - [www.slas.org](http://www.slas.org)

The Student Doctor Network - [www.studentdoctor.net](http://www.studentdoctor.net)

BioTalent Canada - [biotalent.ca](http://biotalent.ca)

BioteCanada - [www.biotech.ca](http://www.biotech.ca)

### 2 Explore Career Options & Get Experience

Gain exposure to your options in the world of work and make connections while you're a student via campus events and programs listed on [cln.utoronto.ca](http://cln.utoronto.ca) and [ccr.utoronto.ca](http://ccr.utoronto.ca):

- [Extern Job Shadowing](#)
- [In the Field](#)
- [Explore It!](#) (course-based)
- [Partners in Leadership](#) (4<sup>th</sup> year students)
- [iLead, uLead, weLead](#) (Dep't of Student Life)
- Employer Information Sessions
- Career & Volunteer Fairs
- [Departmental Student Association](#) Events

Apply for [Work Study](#) jobs in CLN in Fall and Spring! You might also find work via [www.scsu.ca/jobs](http://www.scsu.ca/jobs).

Find networking opportunities, internship programs and entry-level jobs via websites like [www.talentegg.ca](http://www.talentegg.ca) and [www.charityvillage.ca](http://www.charityvillage.ca).

As an upper year student (14+ credits), attend UTSC's [Get Hired Conference](#) and participate in [Jobs for Grads](#).

As a graduate, explore internships and other trainee programs like [www.careeredge.ca](http://www.careeredge.ca)