

CELL AND SYSTEMS BIOLOGY

www.csb.utoronto.ca

Within the Faculty of Arts & Science, there is no single biology department. For more information, please see the Biology information page.

The Department of Cell and Systems Biology studies life from the molecular level to functioning individual organisms. Cell biology seeks to understand the underlying molecular processes that control cell behaviour in a developmental and physiological context. Systems biology studies dynamic networks in biological systems through the integration of large datasets arising from the genomics revolution.

HONOURS BACHELOR OF SCIENCE PROGRAMS

Animal Physiology (major)
Bioinformatics and Computational Biology (specialist)
Biology (specialist, major, minor options)
Cell and Molecular Biology (specialist and major options)
Developmental Biology (specialist)
Genome Biology (major)
Neuroscience (specialist and major options)

FIRST-YEAR COURSES

BIO 130H1 – Molecular and Cell Biology

ADVICE FOR FIRST YEAR

Students who are interested in studying cell and systems biology should take BIO 120H1 – Adaptation and Biodiversity and BIO130H1 – Molecular and Cell Biology. Most programs also require first year chemistry (CHM 138H1 and 139H1), math (JMB 170Y1 or MAT 135H1 and 136H1) and/or physics (PHY131H1 and 132H1).

The bioinformatics specialist also requires the following computer science courses: both of CSC 108H1 – Introduction to Computer Programming and CSC 148H1 – Introduction to Computer Science, **or** CSC 150H1 – Accelerated Introduction to Computer Science, **and** CSC 165H1 – Mathematical Expression and Reasoning for Computer Science.

CAREERS

A BSc degree in Cell and Systems Biology will form a strong foundation for individuals who choose to pursue a professional degree in areas such as: medicine; dentistry; nursing and other health sciences; veterinary medicine; forensic sciences; business administration; and



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law. Students who go on to complete graduate degrees may find employment as professors and/or lead researchers in universities, government, research institutes and industry. Occupations also include those associated with: bioinformatics; high-throughput technologies; pharmaceutical discovery, testing, and regulation; and patent law.

Possible career options include:

- Basic, applied and clinical research
- Biotechnology
- Education
- Sales
- Consulting
- Publishing
- Information technology

A career in any of the fields above may require additional technical training, graduate education and /or experience beyond the undergraduate level. Students are advised to use the resources offered by the University of Toronto's Career Centre.

ADMISSION INFORMATION

Students should apply to the **Life Sciences** admission category on the St. George campus, for which six Grade 12 U or M courses, including English and Calculus and Vectors are required.

Senior high school credits in Biology and Chemistry are required preparation for first-year courses. Chemistry is not required for minor option.

Senior high school Physics is recommended for Animal Physiology, Bioinformatics and Computational Biology and Neuroscience. Physics is required for the Cell and Molecular Biology specialist option.

Students outside of Ontario should have the equivalent senior high school credits.

