

Collaborative Specializations

1. **Biomedical Toxicology** - The Collaborative Specialization in Biomedical Toxicology is administered by the Department of Pharmacology and Toxicology, and provides graduate students with a unique opportunity to gain breadth and depth of knowledge in biomedical toxicology beyond their thesis research. This program aims to prepare participants for careers related to toxicology and emphasizes the development of critical thinking and communication skills in addition to acquiring greater knowledge of basic principles and specific aspects of biomedical toxicology.
2. **Cardiovascular Sciences** - The Cardiovascular Sciences Collaborative Program is an exciting program created to develop cooperative and joint graduate teaching and research across departmental boundaries under the [Faculties of Applied Science & Engineering](#), [Dentistry](#), [Kinesiology and Physical Education](#), [Medicine](#) and [Pharmacy](#). The Program builds on the strengths of the collaborating graduate departments (Chemical Engineering and Applied Chemistry; Dentistry; Exercise Sciences; [Institute of Biomaterials and Biomedical Engineering](#); Institute of Medical Science; [Laboratory Medicine and Pathobiology](#); Medical Biophysics; Pharmaceutical Sciences; Pharmacology; Physiology; and Rehabilitation Science) and the clinical departments of [Anesthesia](#), Medicine and Surgery - enhancing the visibility of cardiovascular studies and facilitating interdisciplinary training and research. The Program offers diverse areas of training including 2 major streams of studies: Cardiac and Vascular. Research in Cardiovascular Sciences at the [University of Toronto](#) has a long and illustrious history. This includes contributions to the discovery of atrial natriuretic factor (ANF) and the first clinical use of heparin. Faculty at the University of Toronto were among the first to perform successful open heart surgery and discover and implement the use of hypothermia to protect the heart during surgery. Many lifesaving pediatric surgical procedures, now used worldwide, were first used by surgeons at the University. With these many achievements, Toronto and the University is an excellent environment in which to learn and grow.
3. **Developmental Biology** - The Collaborative Specialization in Developmental Biology brings together researchers in six university departments and two institutes: Biochemistry, Physiology, Cell & Systems Biology, Immunology, Laboratory Medicine & Pathobiology, Molecular Genetics, Institute of Biomaterials & Biomedical Engineering, and the Institute of Medical Science. It is open to MSc, MASc, MHSc and Ph.D. students in the host departments who investigate aspects of development under the supervision of a member of the program.
4. **Musculoskeletal Sciences** - This multidisciplinary program aims to enhance the experience of graduate students by strengthening their education, and fostering multi-disciplinary approaches to musculoskeletal research. Students will learn how their work fits into the larger community of musculoskeletal research that stretches from bench to bedside to society. Our Program will train the future leaders in the field of musculoskeletal sciences to bring transformative changes to the study and treatment of musculoskeletal diseases. The Collaborative Specialization offers a Foundation course that covers musculoskeletal physiology, disease, clinical treatments and basic science. There is a monthly seminar program, at which invited experts present their latest research reflecting the breadth of expertise of this inter-disciplinary program. CPMS also holds an annual Research Day that provides the students an opportunity to present their work and

network with other students and faculty of the Collaborative Specialization from across the University.

5. **Neuroscience** - The Collaborative Specialization in Neuroscience (CSIN) at the University of Toronto recognizes graduate courses in neuroscience, identifies/organizes distinguished neuroscience lectures, and hosts an annual poster presentation event. CSIN also provides volunteer opportunities through organizing high school outreach activities to enhance the leadership training of its graduate students. SCSIN aims to foster a strong and proactive collaborative neuroscience training program, recognize and promote excellence, increase the versatility of the trainees for their career development and enhance the national and international recognition of our neuroscience program, and ultimately attract the best graduate students and postdoctoral fellows to our program.
6. **Resuscitation Sciences** - Students who are enrolled in the Collaborative Specialization in Resuscitation Sciences attend seminar type courses – a core course (0.5 CR), Foundations in Resuscitation Science Research and a Graduate Seminar Series (NR), which introduce them to myriad topics within the field of resuscitation research. Topics include bioethics, clinical trials, health services, medical and engineering innovation, knowledge translation, basic science, social determinants and gender, health policy, simulation research, paramedicine, among others. Students at PhD level who have completed the Foundations core course are eligible to take the Advanced Topics in Resuscitation Science Research course (also 0.5CR), which is designed to assist students to establish contact with like-minded colleagues, to set the stage for ongoing collaborative work groups, to facilitate the timely completion of projects and prepare students who intend to enter academia and other fields. All classes are led by faculty members who are actively involved in research across the 12 graduate units/institutes the program is affiliated to. The CSRS is also the lead training program for the Canadian Resuscitation Outcomes Consortium (CanROC) – a pan Canadian initiative to build research capacity and best practice in resuscitation. The CSRS offers dedicated assistance with award/salary support applications and superlative opportunities for networking and mentoring. The program also offers 10 travel grants per year of up to \$1000, for students enrolled in the program who are accepted to present or want to attend meetings or conferences outside the Greater Toronto Area.