Multidisciplinary training in cancer research
Why study at IRIC?

IRIC, located in the heart of the Université de Montréal campus, operates according to a unique model in Canada that combines, under one roof, fundamental research activities, a university-level training program and a research maturation team. These generate discoveries that advance knowledge and that could quickly translate into new therapeutic solutions.
Acquiring new knowledge and accelerating the discovery of new therapies

At IRIC, each lab has a primary research topic that is reflected in the name of its unit.

Collaboration and collegiality are favoured and as a result, the Institute's teams develop common projects leading to new solutions or paths of reflection involving cancer research.
IRIC is home to 26 research units led by investigators who are fully committed to training a new generation of scientists. Through their experience and expertise, they provide quality academic and scientific mentoring that fosters learning and drives students to surpass themselves.

**Principal Investigators**

Vincent Archambault  
Cell Cycle Regulation

Katherine Borden  
Structure and Function of the Cell Nucleus

Delphine Bouilly  
Design and Application of Electronic Nanobiosensors

Michel Bouvier  
Molecular Pharmacology

Sébastien Carréno  
Cellular Mechanisms of Morphogenesis during Mitosis and Cell Motility

Geneviève Deblois  
Metabolic and Epigenetic Alterations in Cancer

Gregory Emery  
Vesicular Trafficking and Cell Signalling

Etienne Gagnon  
Cancer Immunobiology

Trang Hoang  
Hematopoiesis and Leukemia

David Knapp  
Cellular Engineering

Jean-Claude Labbé  
Cell Division and Differentiation

Sébastien Lemieux  
Functional and Structural Bioinformatics
Research topics

- **Targeted Therapies & Diagnostics**

- **Cell Signaling & Protein Dynamics**
  Study of how cells perceive and interpret stimuli from their environment and how these signals modify gene expression and the activity of the cell’s regulatory proteins.

- **Computational Analysis & Modeling**
  Development of informatics tools for the analysis and interpretation of large biological datasets including genomics, proteomics and structural biology data. Modeling of complex biological systems.

- **Immunology & Hematopoiesis**
  Understanding the protective role of the immune system against cancers and development of immuno-therapeutic approaches. Characterization of the blood stem cells and their derivatives and study of the genesis of hematological cancers.

- **Chemical & Structural Biology**
  Application of chemical analysis techniques to study and manipulate biological systems. Determination of the structure of biological macromolecules and understanding of how alterations of these structures affect their functions.

- **Genomics & Epigenetics**
  Study of how cells perceive and interpret stimuli from their environment and how these signals modify gene expression and the activity of the cell’s regulatory proteins.

- **Cell Division & Migration**
  Identification of the details of the mechanics and regulatory processes of the cell cycle, division and movement of normal and cancer cells.
Accessing infrastructures on the cutting edge of biomedical research

IRIC is home to 10 core research facilities and 1 Drug Discovery Unit. By coming to IRIC, you will learn how to use the various technologies available and then apply them in the context of your project.

- **Drug Discovery Unit**
  Synthesis of original and specific small molecules leading to the discovery of chemical entities with therapeutic potential

- **Histology**
  Preparation and observation of normal or tumor tissue in order to study their properties

- **Flow Cytometry**
  Sort and analysis of cell physical and molecular characteristics

- **High-throughput screening**
  Robotic systems that can measure the effect of hundreds of thousands of molecules

- **Bioinformatics**
  Complex computer analysis of a large volume of data generated by research

- **In Vivo Biology**
  Study of biological mechanisms using rodent models

- **Proteomics**
  Identification and quantification of proteins based on their chemical composition

- **Genomics**
  Determining the genetic code and measuring gene expression

- **Cytogenetics**
  Chromosomal structure analysis of normal cells and cancer cells

- **Biophysics/NMR**
  Molecular structure and interaction analysis using nuclear magnetic resonance (NMR)

- **Bio-Imaging**
  State-of-the-art microscopy for research
IRIC actively participates in training the next generation of scientists. To study at IRIC is to gain access to unique and personalized guidance, a team of experts in fundamental, translational, and applied research, as well as state-of-the-art infrastructures that make it possible to optimize cancer research efforts.
A multitude of study programs available

IRIC welcomes M.Sc. and Ph.D. students from various programs of Université de Montréal’s Faculty of Arts and Sciences, of Medicine and of Pharmacy.

- 1-year intensive M.Sc (Molecular Biology)
- 2-year traditional M.Sc.
- 5-year Ph.D.

Competitive financial support

Yearly base scholarship for all enrolled students.

- $23,370 M.Sc.
- $25,578 Ph.D.
Systems Biology, a program unique to IRIC

In the age of genomics and proteomics, emerging technologies and new multidisciplinary approaches make it possible to address cancer as a whole and provide new hope for developing treatments for the disease. It was with a view to training the next generation of scientists for these new approaches that IRIC set up research training in systems biology, an option of the Molecular Biology program.

Master’s in Research

With internships

1 year

Research project in two laboratories

In-lab rotations as part of two of the research teams (Fall and Winter semesters)

Theoretical and practical courses during the Summer School (Summer semester)

With thesis

2 years

Research project in one laboratory

Theoretical and practical courses during the Summer School (Summer semester)

Ph.D.

With thesis

5 years

Research project in one or two laboratories

Some theoretical courses from the Summer School and others specific to the study program

Summer School in Systems Biology

By its rich and dynamic programming, the Summer School will enable you to directly apply the concepts learned in class, develop your autonomy in the laboratory and become familiar with the equipment and scientific resources available.

Theoretical courses

- Cellular and Molecular Biology of Cancer
- Approaches in Systems Biology
- Immuno-oncology: from the lab to the clinic

Practical in-laboratories courses

- Practice in Molecular Biology
- Bioinformatic Analysis
- Functional Genomics
- Biochemistry of Proteins
Personalized support

Welcome days for new students
Follow-up meetings
Support in the preparation of applications for external scholarship competitions
Writing groups
Identification of pertinent resources
Student-student mentorship program

Academic and scientific activities

Professional and transversal skills / competences development workshops
"Academic" breakfasts
Networking events
Scientific days, symposiums, scientific conferences
Weekly presentations of the research work carried out by students and postdoctoral fellows

Personalized and integrated support unique at IRIC

The members of the Office of Academic Affairs is committed each day to supporting students in the development of their academic and professional path by ensuring personalized supervision. It also works on creating various activities allowing students to be open to career opportunities in life sciences.
Student association

The IRIC Student Association (AÉIRIC) organizes various academic, scientific and social activities in order to allow students, postdoctoral fellows and other members of IRIC team to get to know each other better and contributes to generating cohesion and conviviality.

Social activities

- Happy hours and BBQs
- Pizza lunch
- Bowling nights
- Sugar shack outings
- Halloween parties

Academic and scientific activities

- Integration nights for new students
- Mental health awareness workshops
- Scientific research popularizing events
- "Tech-talks"

In addition to the resources offered by the Institute, the Université de Montréal offers students and postdoctoral fellows privileged access to a wide range of services and activities that contribute to the enrichment of their student life.

Welcome and integration
- Welcome and support for new students
- Off-campus housing
- International Students Office
- International House
- Humanitarian and community action
- Cultural activities
- First Peoples Centre

Support for students with disabilities
- Health and Psychological Consultation Centre
- Medical consultation
- Nursing and vaccination
- Psychological consultation
- Nutrition
- Physiotherapy
- Laboratory analyses

Socio-economic resources
- Financial Aid Office
- Scholarships
- Study-work programs

Centre for Physical Education and Sports of the University of Montreal
- Sports Complex
- Kinesiology Clinic
- CHUM and UdeM Sports Medicine Clinic

Student Centre for Success Support
- Written Communication Centre
- Educational and professional information
- Academic and vocational guidance
- Learning support
- Faculty support
- Career advice
Apply anytime

Deadline: none

Investigators are on the lookout for interns and students with a passion for scientific research who wish to actively participate in the advancement of knowledge. Please note that because the recruitment process at IRIC takes place throughout the year, there is no deadline for submitting your application.

iric.ca > submit your application

Apply to the Student Recruitment Event

Deadline: early March
Recruitment event: early June

Each year, 30 to 40 applicants from various countries are selected to take part in three days of recruiting in Montreal.

This is a unique opportunity to visit IRIC, its laboratories and core facilities, to meet and discuss with the Institute’s Principal Investigators and students, and take part in one-on-one interviews with the Principal Investigators.

Following the visit, certain participants will receive a recruitment offer from one or several Investigators.

iric.ca > student recruitment event