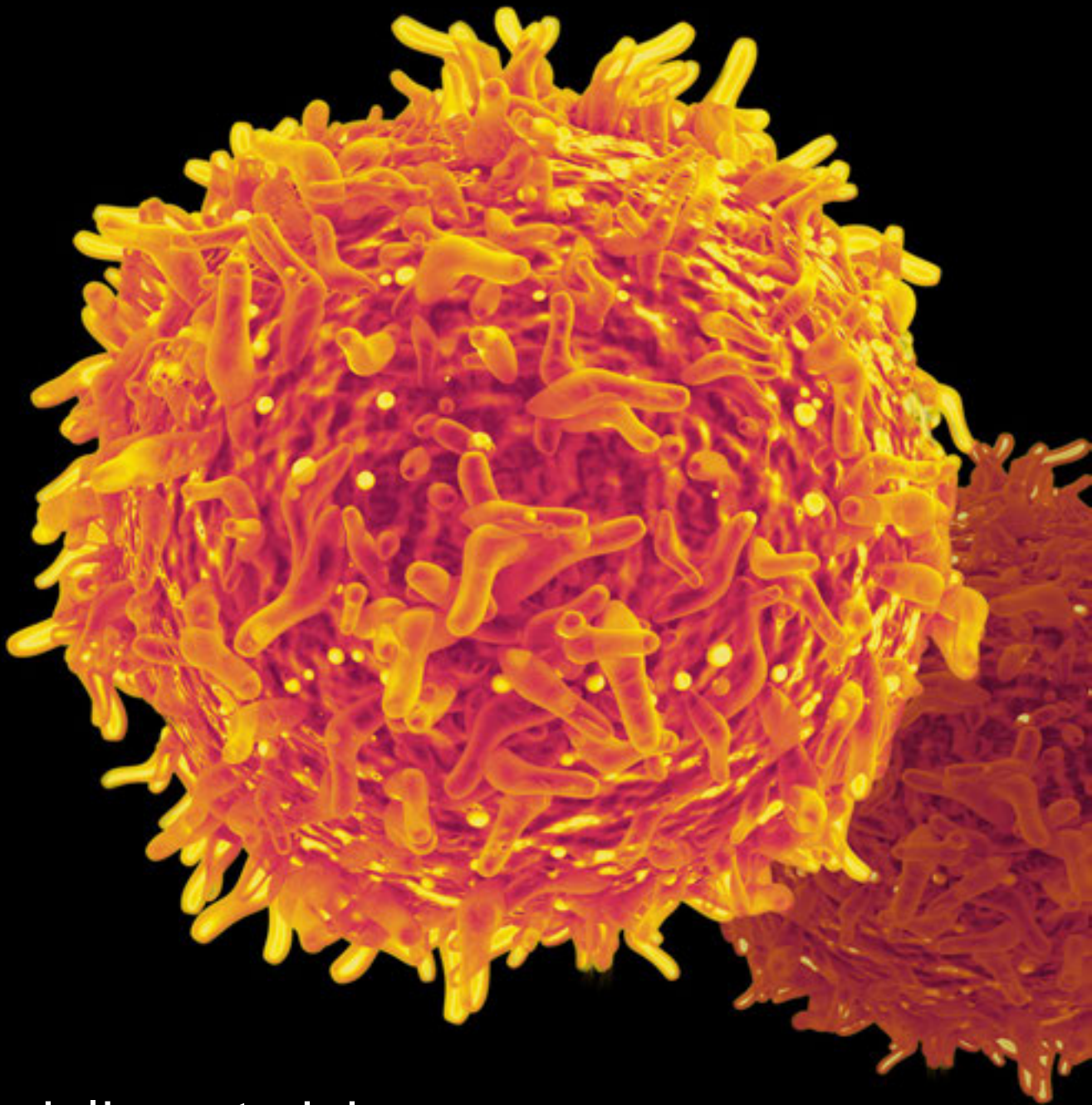


The logo for the Institute for Research in Immunology and Cancer (IRIC) of the University of Montreal. It consists of the letters 'IRIC' in a bold, white, sans-serif font, set against a solid blue square background.

Institute for Research in Immunology  
and Cancer of the Université de Montréal

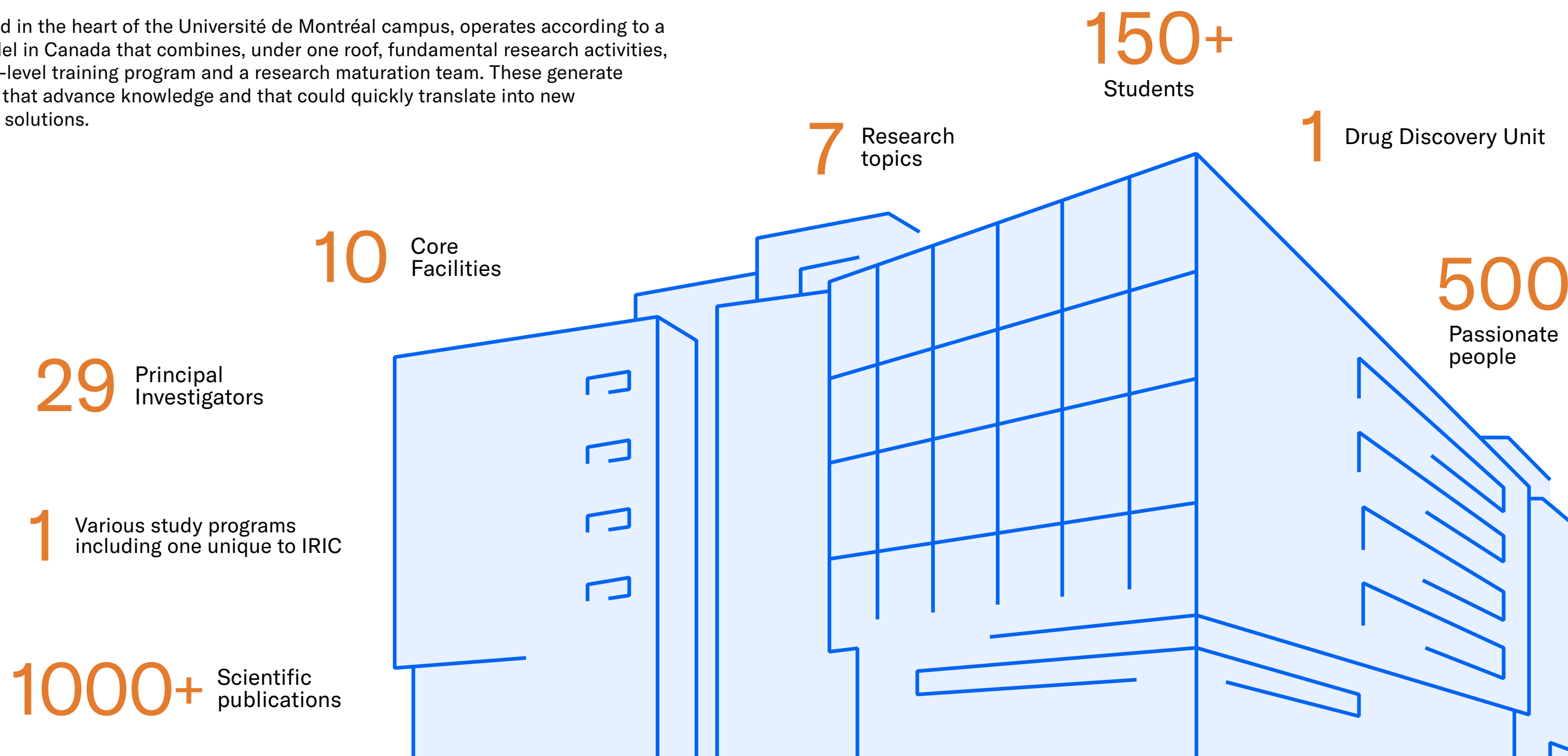


Multidisciplinary training  
in cancer research

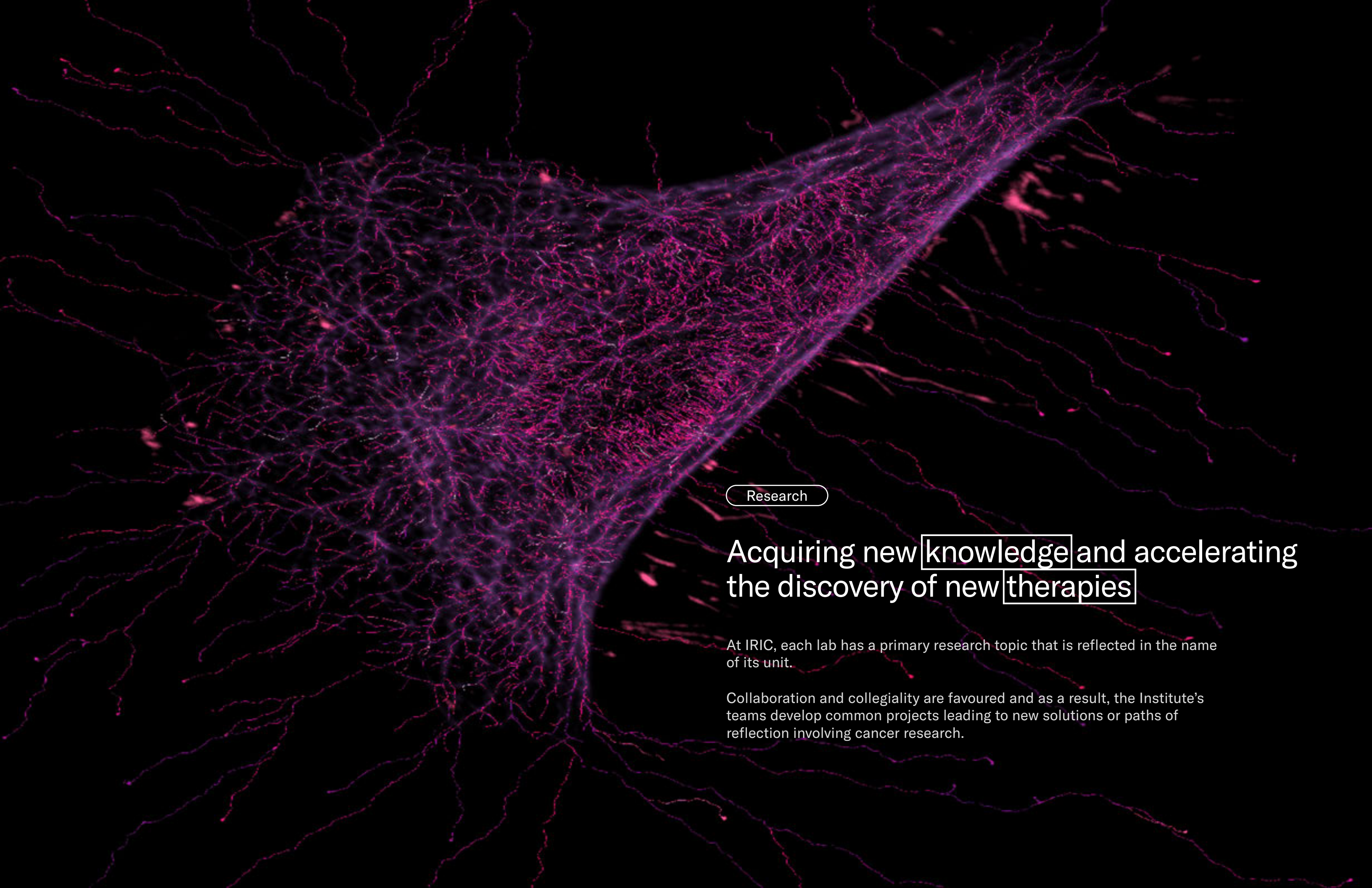
# IRIC

## 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.







Research

## 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.



## Principal Investigators

IRIC is home to 29 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.



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



Louis Gaboury  
Histology and Molecular Pathology



Etienne Gagnon  
Cancer Immunobiology



Lea Harrington  
Telomere Length Homeostasis and  
Genomic Instability



Trang Hoang  
Hematopoiesis and Leukemia



David Knapp  
Cellular Engineering



Benjamin Kwok  
Chemical Biology of Cell Division



Jean-Claude Labbé  
Cell Division and Differentiation



Sébastien Lemieux  
Functional and Structural  
Bioinformatics



Julie Lessard  
Chromatin Structure and Stem  
Cell Biology



Sylvie Mader  
Molecular Targeting in Breast  
Cancer Treatment



François Major  
RNA Engineering



Anne Marinier  
Drug Discovery



Sylvain Meloche  
Signalling and Cell Growth



Claude Perreault  
Immunobiology



Philippe P. Roux  
Cell Signaling and Proteomics



Guy Sauvageau  
Molecular Genetics of Stem Cells



Matthew Smith  
Cancer Signalling and Structural  
Biology



Marc Therrien  
Intracellular Signalling



Pierre Thibault  
Proteomics and Mass Spectrometry



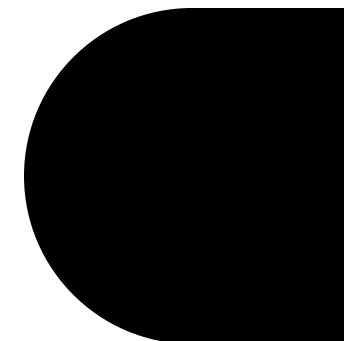
Michael Tyers  
Systems Biology and Synthetic  
Biology



Alain Verreault  
Chromosome Biogenesis



Brian Wilhelm  
High-Throughput Genomics





# Research topics

## ● Targeted Therapies & Diagnostics

Identification of biological markers of cancer and development of new diagnostic tools. Development of new targeted therapies and innovative drugs against cancer.

Borden, Bouilly, Bouvier, Carréno, Deblois, Gaboury, Gagnon, Hoang, Kwok, Lessard, Mader, Major, Marinier, Meloche, Roux, Perreault, Sauvageau, Therrien, Thibault, Wilhelm

## ● Cell Signaling & Protein Dynamics

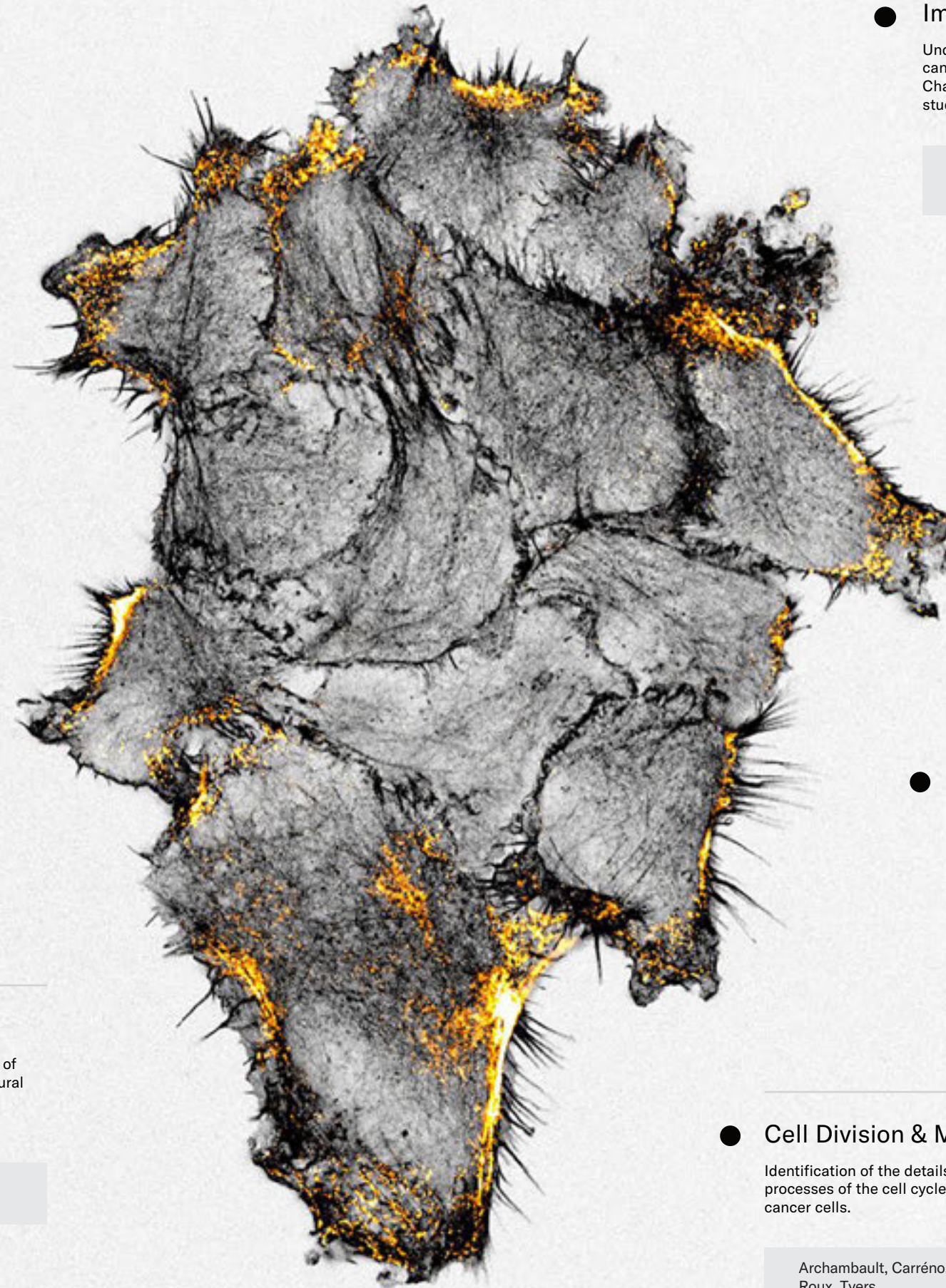
Study of how cells perceive and interpret stimuli from their environment and how those signals modify gene expression and the activity of the cell's regulatory proteins.

Bouvier, Carréno, Deblois, Gagnon, Emery, Kwok, Mader, Meloche, Roux, Smith, Therrien, Thibault

## ● 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.

Bouilly, Bouvier, Gaboury, Knapp, Labbé, Lemieux, Mader, Major, Marinier, Tyers, Wilhelm



## ● 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.

Borden, Gagnon, Hoang, Knapp, Lessard, Perreault, Sauvageau, Roux, Wilhelm

## ● 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.

Archambault, Borden, Bouilly, Bouvier, Kwok, Marinier, Smith, Therrien, Thibault, Tyers

## ● Genomics & Epigenetics

Study of how cells perceive and interpret stimuli from their environment and how those signals modify gene expression and the activity of the cell's regulatory proteins.

Deblois, Harrington, Knapp, Lemieux, Lessard, Mader, Major, Sauvageau, Verreault, Wilhelm

## ● 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.

Archambault, Carréno, Emery, Kwok, Labbé, Meloche, Roux, Tyers



# 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

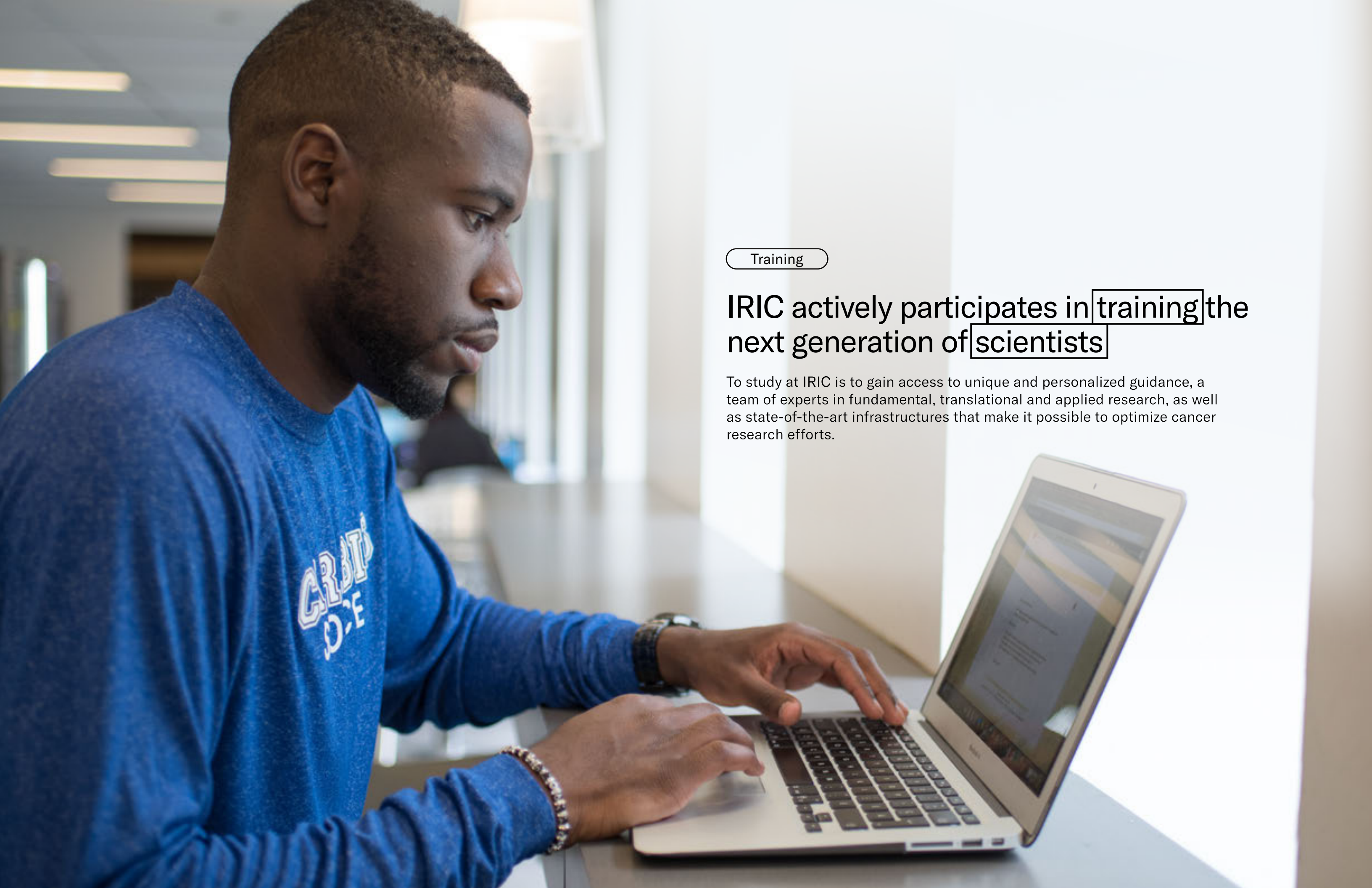
Chromosomal structure analysis of normal cells and cancer cells

## Biophysics/NMR

Molecular structure and interaction analysis using nuclear magnetic resonance (NMR)

## Bio-Imaging

State-of-the-art microscopy for research

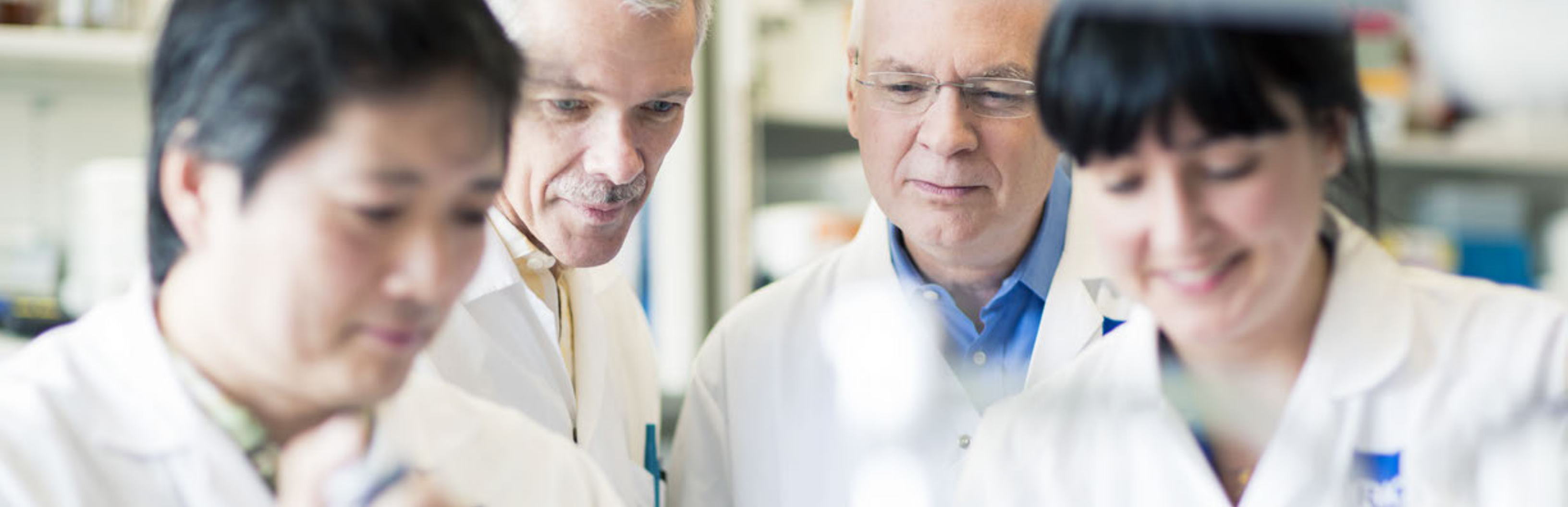


Training

## 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.





Training

# 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.

## Programs offered

- Bioinformatics
- Biochemistry
- Molecular Biology
- Chemistry
- Biomedical Engineering
- Informatics
- Microbiology and Immunology
- Pathology and Cell Biology
- Pharmacology
- Physics
- Pharmaceutical Sciences

## Competitive financial support

Yearly base scholarship for all enrolled students.

\$21,350 M.Sc.

\$23,375 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

Molecular Genetics of Eukaryotes

Approaches in Systems Biology

Immuno-oncology: from the lab to the clinic

### Practical in-laboratories courses

Practice in Molecular Biology

Genetic Models of Cancer

Bioinformatic Analysis

Functional Genomics

Biochemistry of Proteins





Student life

## 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.

### 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



# 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.



## Academic and scientific activities

Integration nights for new students

Mental health awareness workshops

Scientific research popularizing events

“Tech-talks”

## Social activities

Happy hours and BBQs

Pizza lunch

Bowling nights

Sugar shack outings

Halloween parties

Université   
de Montréal **The University of Montreal**  
and of the world.

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

# 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.

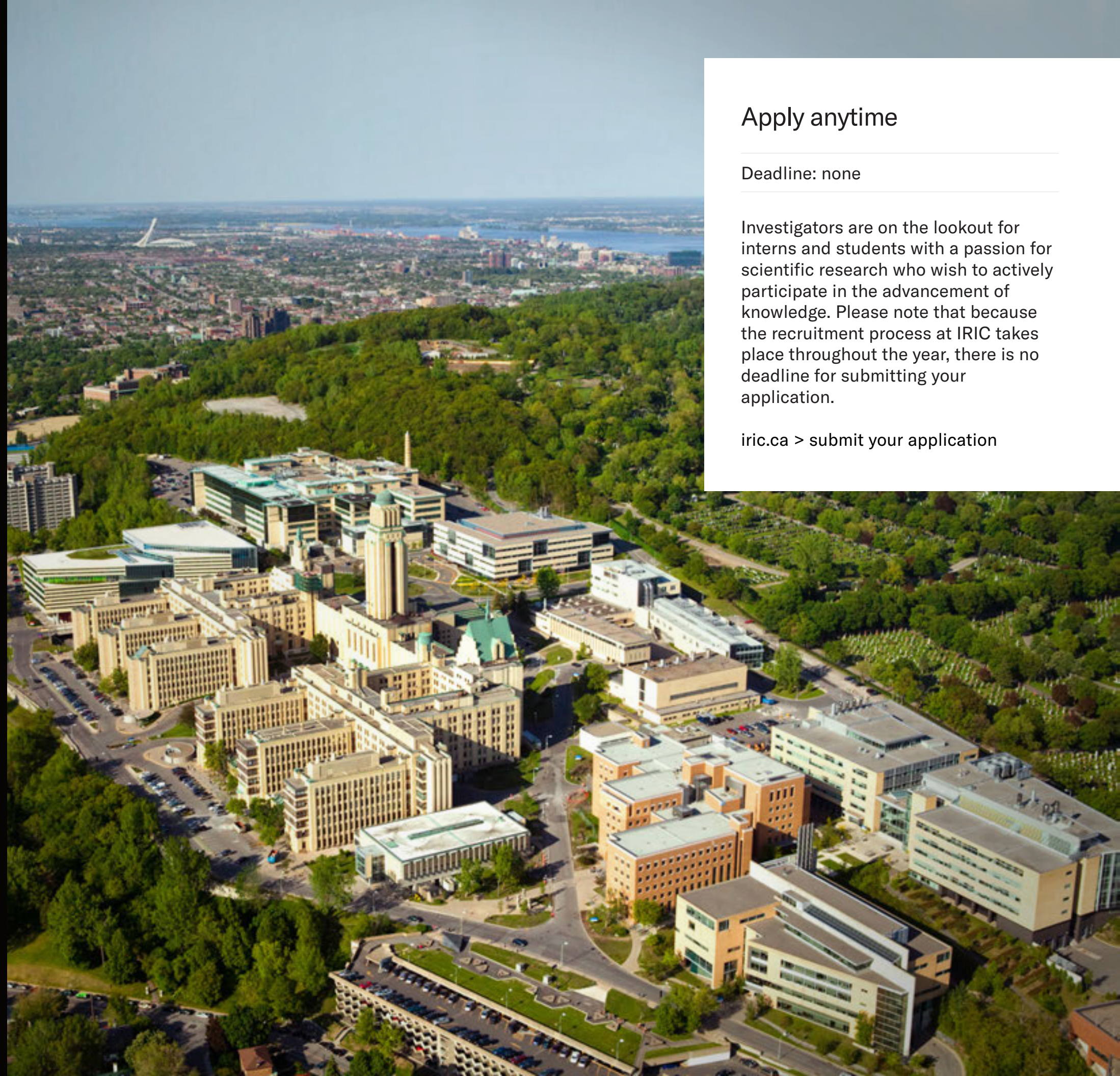
[iric.ca](http://iric.ca) > student recruitment event

## 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](http://iric.ca) > submit your application





[iric.ca/en](http://iric.ca/en)

Office of Academic Affairs

[academicaffairs@iric.ca](mailto:academicaffairs@iric.ca)




1 (514) 343-6111, ext 0612

IRIC - Université de Montréal

Marcelle-Coutu Pavilion

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# IRIC

