

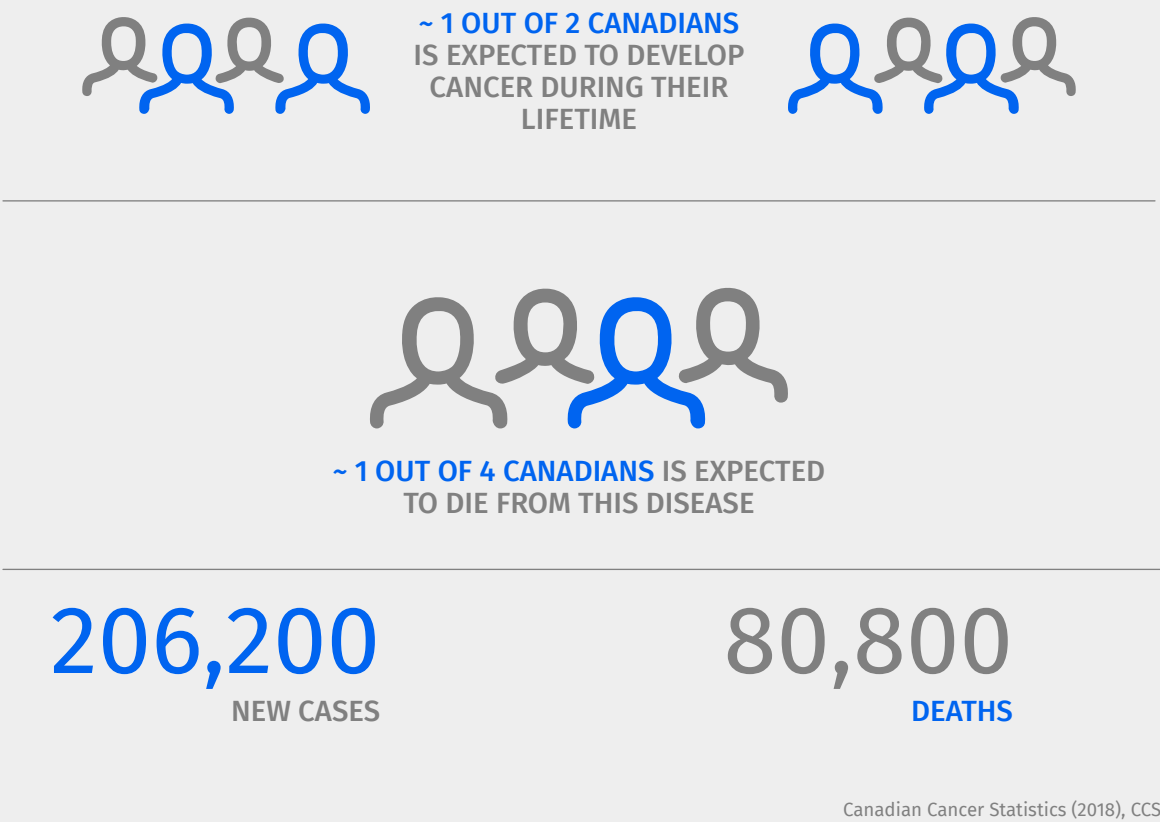
2018-2019 ACTIVITY REPORT

INSTITUTE FOR RESEARCH IN IMMUNOLOGY AND CANCER

A global standard bearer in basic and
applied research to vanquish cancer

CANCER, A SOCIAL ISSUE

Cancer is a devastating disease and a major social issue. It is the leading cause of death in Canada.



IRIC, A KEY PLAYER IN THE FIGHT AGAINST CANCER

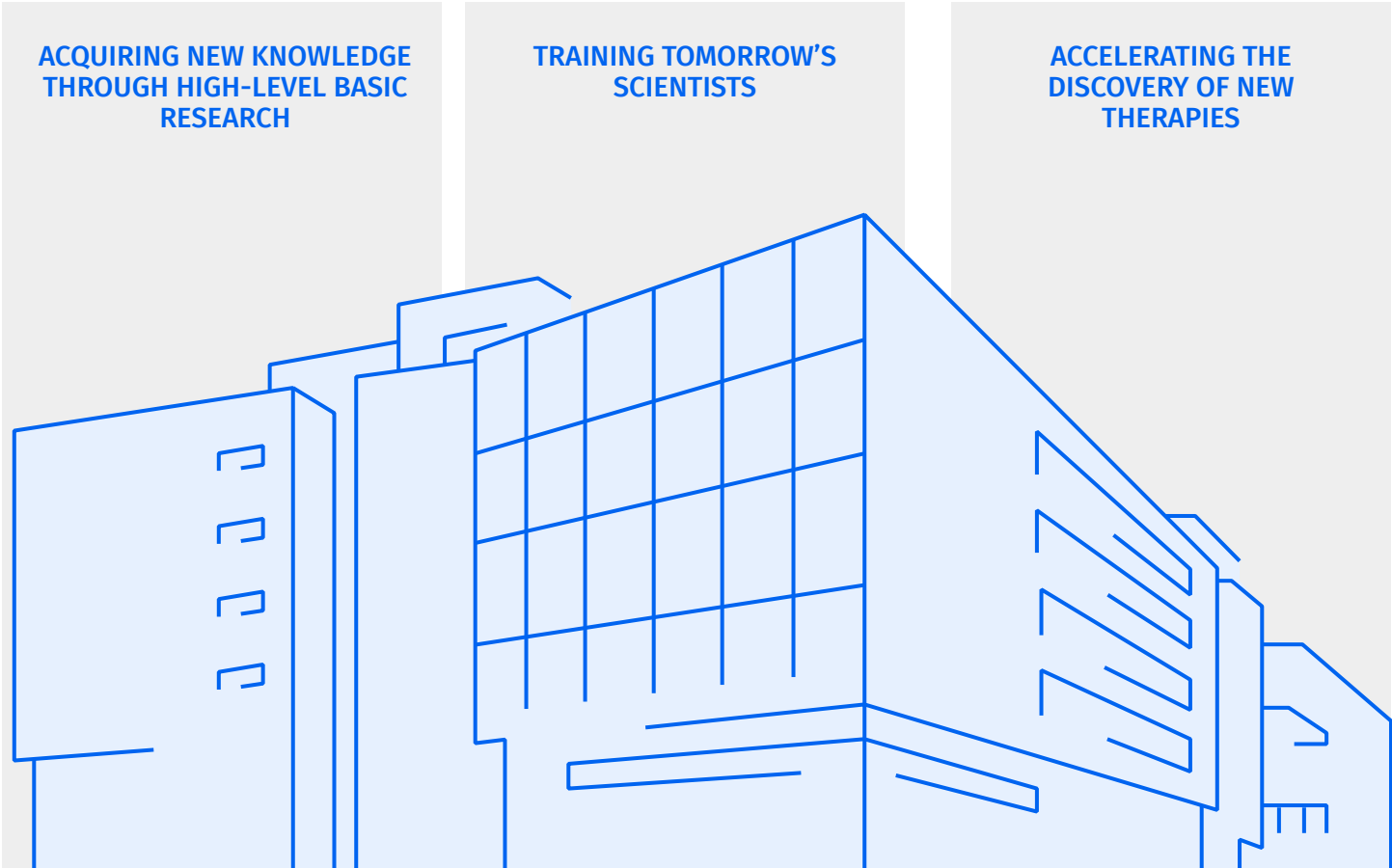
Research hub dedicated to the fight against cancer, IRIC strives to shed light on the mechanisms of the disease in order to discover more effective new therapies. Its multidisciplinary model and its innovative way of approaching research are based on the complementary expertise of its laboratories that contribute to the advancement of knowledge on a daily basis.

Cancer research provides hope. It has resulted in extraordinary advances over the last few decades: the mortality rate linked to cancer has decreased, prevention is omnipresent, there is earlier stage screening, and treatments are more and more conclusive.

IRIC IS:

- CLOSE TO 500 DEDICATED INDIVIDUALS** investigators, students, postdoctoral fellows, technicians, research professionals, support staff and administrative staff
- 27 PRINCIPAL INVESTIGATORS** in basic, translational and applied research; professors from 8 departments of the Université de Montréal
- 1,000+ SCIENTIFIC PUBLICATIONS** thus far, including a significant percentage published in the most prestigious journals
- 11 CORE FACILITIES** available to investigators from here and abroad
- 200+ STUDENTS**, part of the next generation of scientists
- A CENTRE OF EXCELLENCE** in Commercialization and Research specialized in drug discovery (**IRICoR**)

A PROMISING AND UNIQUE THREEFOLD MISSION





ROBERT TESSIER

MESSAGE FROM THE CHAIRMAN OF THE BOARD OF DIRECTORS, ROBERT TESSIER

For more than 15 years, IRIC's research teams have been striving to gain a better understanding of cancer. The Institute's innovative model, which leads research towards solutions of the future, provides IRIC with a position of choice on the national and international scene.

A veritable jewel in Quebec's life sciences ecosystem, IRIC is a model to be followed. As Chairman of the Board of Directors, I therefore have the pleasure of working with distinguished members of the scientific community and of the business community, and I am always excited about supporting IRIC in its projects, its activities, its visibility and its strategic orientations.

The Institute also relies on philanthropy and the vital support of donors who faithfully and generously encourage cancer research efforts. On behalf of myself and the Board members, I would like to thank all of the organizations and people who contribute, through their donations of time or money, to making a difference in the fight against cancer.

MESSAGE FROM THE CHIEF EXECUTIVE OFFICER, MICHEL BOUVIER, AND THE SCIENTIFIC DIRECTOR, MARC THERRIEN

As Chief Executive Officer and Scientific Director of the Institute, we get the chance to work with and support 27 research teams with complementary expertise that contribute, on a daily basis, to the advancement of science and the fight against cancer. We also get an opportunity to witness the fulfillment of IRIC's students who actively contribute to the research work carried out in its laboratories. IRIC also benefits from privileged access to a research valorization cluster specializing in drug discovery, IRICoR, and to cutting-edge infrastructures.

IRIC's unique model – linking research, training and discoveries – not only makes it distinctive, but also successful. Everyone is mobilized to achieve a common goal: developing new therapeutic pathways for treating cancer.

We proudly paint a portrait of this past year and take advantage of this opportunity to thank all of our partners and donors who take part in a significant way in IRIC's success.



MICHEL BOUVIER



MARC THERRIEN

BOARD OF DIRECTORS

CHAIRMAN

Robert Tessier

Chairman of the Board of Directors, Caisse de dépôt et placement du Québec

MEMBERS

Jacques Bernier

Managing Partner, Teralys Capital

Dr. Hélène Boisjoly

Dean, Faculty of Medicine, UdeM

Frédéric Bouchard

Dean, Faculty of Arts and Sciences, UdeM

Martin Godbout

*Chairman of the Board of Directors, IRICoR
End of mandate: November 21, 2018*

Jean-François Leprince

*Managing Partner, CTI Life Sciences Fund
Chairman of the Board of Directors, IRICoR
Start of mandate: March 1, 2019*

Michel Bouvier

Chief Executive Officer and Principal Investigator, IRIC

Marie-Josée Coutu

President, Marcelle and Jean Coutu Foundation

Dr. Marie-Josée Hébert

Vice-Rector of Research, Discovery, Creation and Innovation, UdeM

Lucie Rémillard

Philanthropist

Jean Royer

Vice-President, Distinction Capital

Me Robert Paré

*Strategic Advisor, Fasken Martineau DuMoulin
S.E.N.C.R.L., s.r.l.*

Marc Therrien

Scientific Director and Principal Investigator, IRIC

EXECUTIVE COMMITTEE

CHAIRMAN

Michel Bouvier

Chief Executive Officer and Principal Investigator, IRIC

MEMBERS

Nadine Beauger

Chief Executive Officer, IRICoR

Richard Martin

Director, Administration, IRIC

Marc Therrien

Scientific Director and Principal Investigator, IRIC

RESEARCH

IRIC's 27 research teams devote their work to understanding the mechanisms of cancer in order to develop new targeted and personalized therapies to fight the disease.

The investigators use a wide variety of approaches and experimental models. Their complementary expertise covers a broad spectrum of research areas and is at the heart of IRIC's multidisciplinary model. Mainly, these research areas are: cell division and migration, cell signaling and protein dynamics, computational analysis and modeling, targeted therapies and diagnostic tools, chemical and structural biology, genomics and epigenetics, as well as immunology and hematopoiesis.

The work of the investigators leads to important discoveries, most of which are presented in high-impact scientific journals that are often the fruit of a collaboration between several IRIC laboratories. Since the Institute was created, there have been over 1,000 publications authored by one or several of their members.

IRIC also relies on 11 core facilities, including the largest medicinal chemistry core facility in Canada in a university setting. The Institute can count on close collaborations with players in academia such as research institutes, universities and hospitals, as well as with industry partners.

To consult the profiles of IRIC's Principal Investigators and to learn more about their research topics: iric.ca (Research /Principal Investigators section).

PUBLICATIONS

WHEN THE GATEKEEPER DROPS HIS GUARD

J-C. LABBÉ - *MOLECULAR BIOLOGY OF THE CELL*



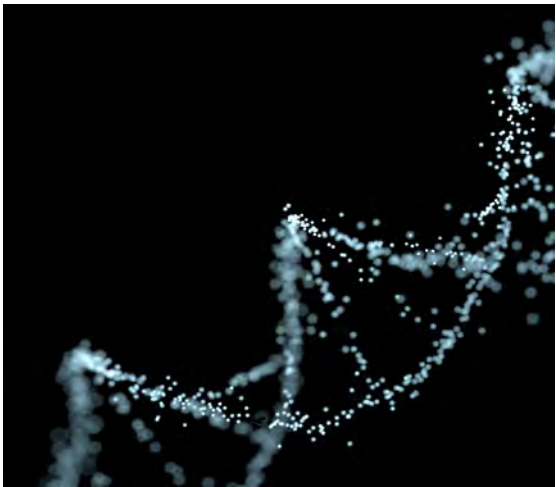
The “spindle assembly checkpoint”, or SAC, is an important regulatory system that prevents a cell from dividing as long as all the chromosomes are not properly aligned, thus preventing errors. Some anti-mitotic drugs used to treat cancers rely on the effectiveness of the SAC but treatments do not always have the same outcome. Cancer cells often bypass this “gatekeeper” of cell division to proliferate abnormally. To better understand the SAC, investigators from Jean-Claude Labbé’s team scrutinized the division of embryonic cells from a useful animal model: the nematode worm *Caenorhabditis elegans*. They discovered that the strength of the SAC varies depending on cell type. Understanding the mechanisms governing the relationship between the SAC and cell fate is important from both a fundamental and a clinical point of view and may pave the way to the development of better-targeted anti-mitotic drugs

THE SECRET LIFE OF MICRORNAS

E. GAGNON, F. MAJOR - *NUCLEIC ACIDS RESEARCH*



The teams headed by François Major and Etienne Gagnon, along with their collaborators in the laboratory of Gerardo Ferbeyre of the Department of Biochemistry and Molecular Medicine of the UdeM, have come to better understand how microRNAs (miRNAs) modulate the expression of genes. miRNAs are small RNAs of only approximately 22 nucleotides that can pair with the messenger RNA (mRNA) of a gene to prevent its translation into protein or lead to its degradation. They are therefore important regulators of gene expression. However, it remains difficult to predict precisely how much a gene will be affected by a given miRNA and what level of inhibition will be achieved. By studying the inhibition of the HIV tat gene by the microRNA miB, the investigators were able to identify the importance and the role played by the different parts of the miRNA and to develop a new algorithm that can accurately predict the level of inhibition that will be reached. This discovery improves the design of miRNA sequences that can simultaneously inhibit the expression of multiple target genes.



IDENTIFYING MORE PROTEINS TO BETTER UNDERSTAND CELLS

P. THIBAUT - *MOLECULAR & CELLULAR PROTEOMICS*



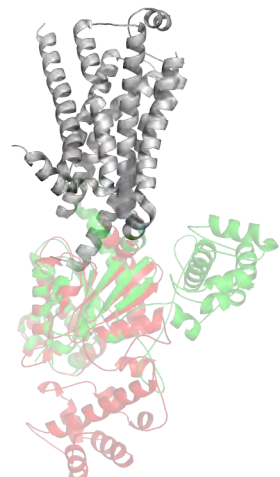
Mass spectrometry allows the identification of proteins present in cells and is an extremely useful approach to compare, for instance, the proteome of normal and pathological cells. The depth of proteomic analyses however is often limited by the overwhelming proportion of confounding background ions. To alleviate these limitations, the team led by Pierre Thibault and its collaborators at Thermo Fisher Scientific developed a new FAIMS (high field asymmetric waveform ion mobility spectrometry) interface that can be coupled to the Orbitrap Tribrid mass spectrometers and provides improved ease of operation, robustness and sensitivity. In their experiments, this module resulted in a 30% gain in unique peptide identification compared to experiments without FAIMS. Most notably, improvement in sensitivity facilitated the identification of low abundance peptides, and extended the limit of detection by almost an order of magnitude. This new device thus extends the depth and breadth of proteomic analyses and improves the precision of quantitative measurements.

A SPECIFIC TARGET FOR TACKLING OBESITY

M. BOUVIER - *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*



Investigators from the University of Copenhagen and the team led by Michel Bouvier published a study suggesting a new avenue for developing drugs against obesity. This approach aims to interfere with the hormone ghrelin, which regulates appetite. Ghrelin activates cellular receptors that eventually trigger hunger but also affect other important biological processes. Blocking the interaction of ghrelin with its receptor could theoretically reduce the feeling of hunger in an individual, but risks causing many side effects. To overcome this problem, the investigators identified a cellular signaling pathway downstream of the receptor, the pathway involving the protein Gαq/11, as being responsible for hunger. By specifically blocking this pathway, without harming others, a drug could therefore effectively fight obesity, while limiting side effects. The task now is to identify the Holy Grail of the fight against obesity: a molecule capable of blocking the signaling pathway of the Gαq/11 protein without harming others. Through their work, the investigators have taken a step further in this direction.



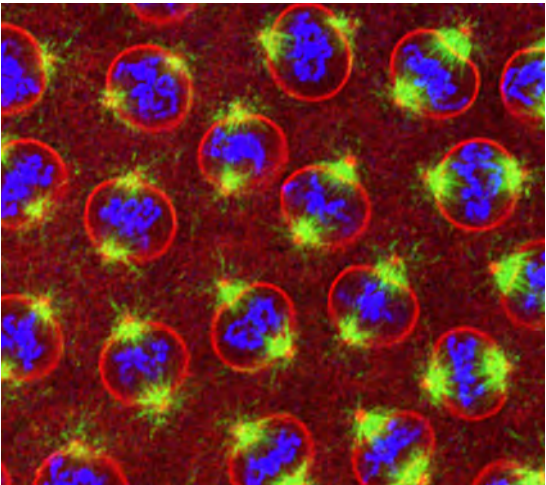
PUBLICATIONS

SHAPING A CELLULAR NUCLEUS AFTER MITOSIS

V. ARCHAMBAULT - *JOURNAL OF CELL BIOLOGY*



The envelope of the cell nucleus is an essential and very dynamic structure. It dissolves during cell division to allow the separation of chromosomes and then reassembles around the chromosomes segregated in the daughter cells at the end of division. The team led by Vincent Archambault and its collaborators at the University of Windsor and at the University of North Carolina, used the fruit fly *Drosophila melanogaster* to study the role of the phosphatase enzyme PP2A-B55 in this process. Using an approach combining genetics, biochemistry, molecular biology and imaging, they found that several genes coding for nuclear envelope proteins interact with PP2A-B55. In particular, they showed that PP2A-B55 must dephosphorylate BAF, a small protein that binds DNA after mitosis and helps to initiate assembly of the nuclear envelope. An understanding of such mechanisms is of interest from a fundamental point of view, but also from a clinical point of view, because the anomalies of the nuclear envelope are associated with various diseases, including some cancers.

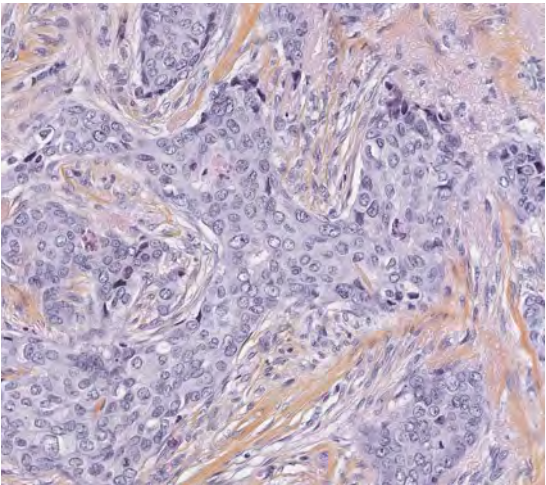


A DRUG REVEALS ITS SECRETS

S. MADER – *ONCOGENE*



About 70% of breast cancers proliferate under the action of the hormone estrogen. Estrogen acts by entering the cells and binding the ERα receptors (Estrogen Receptor alpha) that stimulate a series of genes that eventually lead the cell to multiply. Drugs belonging to the group of anti-estrogens prevent this action. To understand the mechanism of action of these drugs, the team led by Sylvie Mader studied the effect of pure anti-estrogens such as fulvestrant. They demonstrated that the receptors, once bound by the drug, undergo a transformation called “sumoylation” and bind only transiently (20 to 40 minutes) to the DNA, which is then compacted, preventing the pro-cancer genes from being activated. They also showed that a type of ERα receptor resistant to hormonal therapies did not undergo sumoylation and remained associated with DNA for a longer period, thus partially inducing genes that estrogen normally stimulates. This work provides a better understanding of how certain drugs used to treat breast cancer work and of the mechanisms of resistance to these drugs.



ONE STEP CLOSER TO DEVELOPING A THERAPEUTIC CANCER VACCINE

S. LEMIEUX, P. THIBAUT, C. PERREAU – *SCIENCE TRANSLATIONAL MEDICINE*



To present their identity to the immune system, our cells expose on their surface a collection of peptides, also called antigens, generated by the degradation of their proteins. Knowing that cancer cells produce some abnormal proteins, their ID card will contain some abnormal antigens. The goal of the teams led by Sébastien Lemieux, Pierre Thibault and Dr. Claude Perreault was therefore to identify the complete repertoire of the antigens presented exclusively by the cancer cells, and that could constitute the basis of a vaccine to train our immune system to recognize and eliminate these cells. They developed an approach combining genomics, bioinformatics and proteomics that allowed them to demonstrate that the majority of tumor-specific antigens are produced by the non-coding portion of our DNA! In addition to being present in great numbers, these antigens do not carry any mutations, which considerably increases their chances of being shared by several patients. The study also brought to light the key factors that can influence the ability of these antigens to induce strong antitumor responses.



THE EIF4E FACTOR REVEALS ITSELF IN A NEW WAY

K. BORDEN - *CELL REPORTS*



Before being used to produce a protein, the information contained in a gene first transits by way of a messenger RNA (mRNA). A multitude of proteins act as mentors for these mRNAs. eIF4E is one of the factors essential for this process. It was already known that eIF4e acts in at least three ways to accelerate the movement of information: by increasing the translation rate of the mRNA, by increasing its stability in the cytoplasm, and by participating in its export from the nucleus. Katherine Borden's team discovered a fourth mechanism. eIF4E drives the production of certain proteins involved in the cleavage of mRNAs, a vital step in their maturation. They also discovered that eIF4E directly binds the protein CPSF3, the enzyme responsible for 3'-end cleavage of mRNAs. Since eIF4E is an oncoprotein, understanding its mechanisms of action could accelerate the development of cancer therapies.

AWARDS AND DISTINCTIONS



**MARC THERRIEN AND KATHERINE BORDEN
ARE AWARDED A NEW CANADA RESEARCH
CHAIR (CRC)**

Marc Therrien obtained a CRC in Intracellular Signaling allowing him to pursue his research on the Ras/ MAPK signaling pathway that is involved, among other things, in the control of cell proliferation and differentiation. It is often hyperactivated in several types of human cancers. Studies on these mechanisms of oncogenesis will help develop new types of drugs that can slow down the progression of several cancers.

Katherine Borden was awarded the CRC in Molecular Biology of the Cell Nucleus. As a result, she will continue to study how perturbations in the function of the eIF4E protein of the cell nucleus lead the cells to become cancerous and to develop new therapeutic strategies to counter these effects in several types of cancer.



**MICHAEL TYERS RECEIVES A RENEWAL OF HIS
CANADA RESEARCH CHAIR**

In November of 2018, the Honourable Kristy Duncan, Minister of Science and Sport, announced significant investments as part of the CRC Program. Michael Tyers obtained a renewal of his CRC in Systems and Synthetic Biology. His laboratory has developed a platform for discovering natural product-like molecules as novel chemical probes and as early stage candidates for drug development.



**PIERRE THIBAUT IS AWARDED THE 2018 PRIX
ACFAS URGEL-ARCHAMBAULT**

Pierre Thibault received this award during the 74th Gala of the Association francophone pour le savoir, which celebrates research excellence in our society and in the Francophonie in various disciplines. This recognition highlights the scope of his work in the fields of physics, mathematics, computer science and engineering.

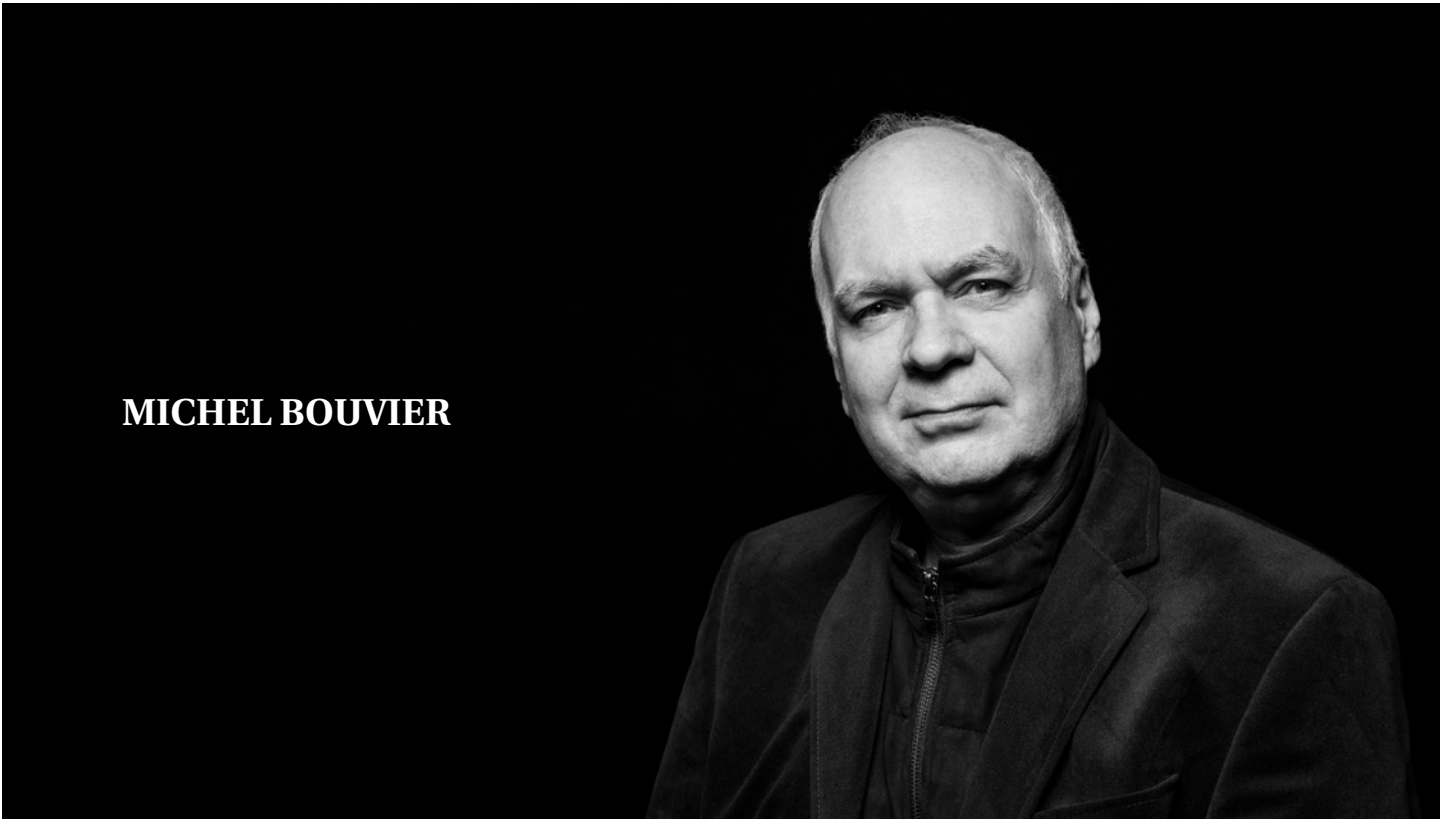
His expertise in mass spectrometry and proteomics are put to good use in a number of multidisciplinary projects carried out at IRIC. The work of his laboratory has also led to the development of tools that provide a greater understanding of the molecular mechanisms involved in immunity and signalling in cancer cells.



**KATHERINE BORDEN AND MARC THERRIEN
RECEIVE A GRANT FROM THE CANADIAN
INSTITUTES OF HEALTH RESEARCH (CIHR)**

The two investigators respectively received a grant of \$784,126, over five years, and of \$3,273,064 over 7 years, for the projects titled “A novel form of alternative polyadenylation” (Project Grant, Spring 2018 competition) and “RAS-MAPK signal transduction in normal and cancer cells” (Foundation Grant, 2017-2018 competition).

NOMINATIONS



MICHEL BOUVIER

RENEWAL OF MANDATE AS CHIEF EXECUTIVE OFFICER

Following a meeting of the Executive Committee, held on June 12, 2018, the University announced the renewal of Michel Bouvier’s mandate for a four-year term.

Along with operating his laboratory and serving as a mentor to his students, he has the responsibility of ensuring the success of IRIC. He will also continue to lead the Institute and manage its personnel in such a way as to achieve its strategic goals, while at the same time acting as its representative with the University and other organizations. While he has been at the helm, the Institute’s reputation has continued to grow, along with its scientific excellence, making it a key player in the fight against cancer.



DR. GUY SAUVAGEAU

ELECTED TO THE ACADEMY OF SCIENCE OF THE ROYAL SOCIETY OF CANADA

This honor is the highest distinction that can be awarded to an academic working in the fields of the Arts, Humanities and Sciences. Founded in 1882, the Royal Society of Canada aims to foster innovation and showcase outstanding contributions to the country’s intellectual culture.

Dr. Sauvageau is one of the founders of the Institute and co-founder of the Quebec Leukemia Cell Bank, the Centre of Excellence for Cellular Therapy of the Maisonneuve-Rosemont Hospital Research Centre, as well as ExCellThera, a biotechnology company. He was honored, notably, for the excellence of his work involving normal and leukemia hematopoietic stem cells.



SÉBASTIEN LEMIEUX

APPOINTED ASSOCIATE PROFESSOR IN THE DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR MEDICINE OF THE UDEM

This appointment is part of Des données à l’action en santé, a major initiative of the University, in conjunction with IVADO, of the federal government’s Canada First Research Excellence Fund program, for his research work in the fields of artificial intelligence applications and machine learning in healthcare.

He will contribute to the valorization of data stemming from chemical screening, transcriptomic and proteomic experiments carried out at IRIC and will strengthen the link created with IVADO’s fundamental development team.

10 YEARS OF SUCCESS IN MEDICINAL CHEMISTRY

June 2018 marked the 10th anniversary of IRIC's Medicinal Chemistry Core Facility, the largest of its kind in a university setting in Canada.

The core facility brings together a team of 42 chemists and biologists working to design and synthesize new chemical entities possessing biological or therapeutic activity. This collaborative work led to the discovery of the UM171 molecule, which has the capacity to multiply by 10 the number of hematopoietic stem cells present in a unit of umbilical cord blood.



Credit : Dominick Gravel



CORE FACILITIES

IRIC's research teams benefit from access to 11 cutting-edge core facilities, including the largest medicinal chemistry core facility in Canada in a university setting.

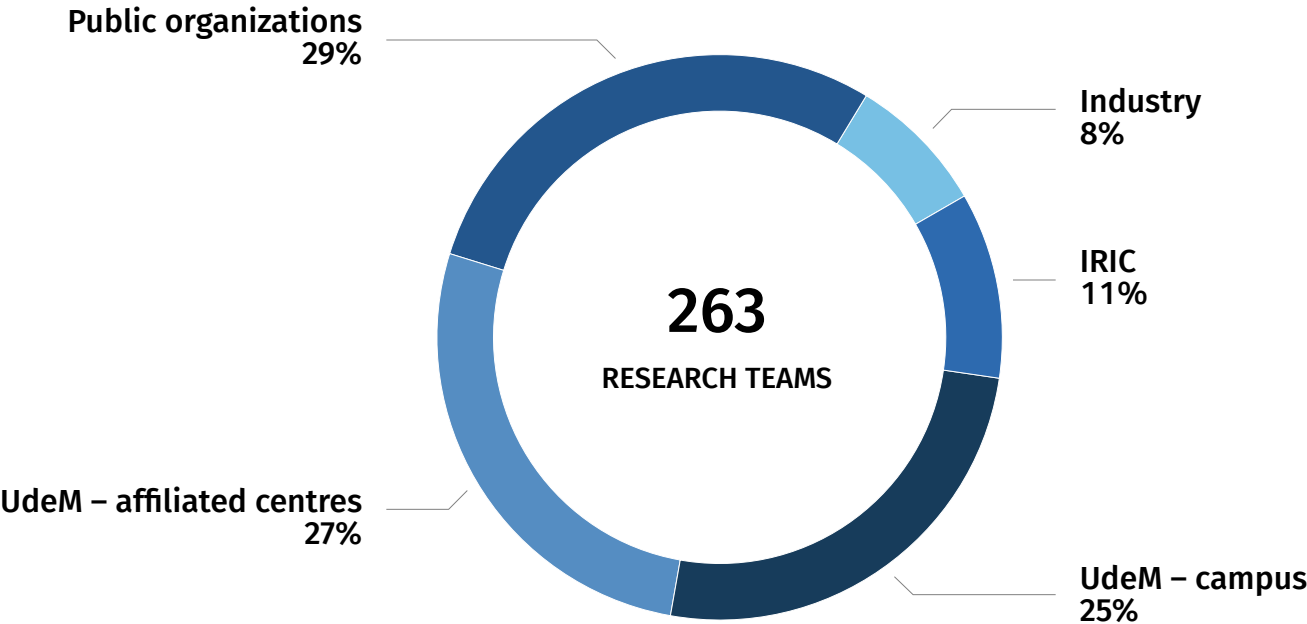
Operated by highly qualified professionals, the core facilities offer an impressive range of expertise, such as in vivo biology, genomics, bioinformatics, high-throughput screening, histology and proteomics, while also significantly contributing to the advancement of knowledge.

In conjunction with the Maisonneuve-Rosemont Hospital, the Institute operates the Cytogenetics Core Facility of the Quebec Leukemia Cell Bank. These core facilities are also made available to the entire UdeM scientific community, other public organizations including multiple universities, as well as pharmaceutical companies and industries that are part of the life sciences ecosystem.

To learn more about IRIC's core facilities and infrastructures and the services offered: iric.ca (Research/Platforms and infrastructures section).

SOURCE OF USERS

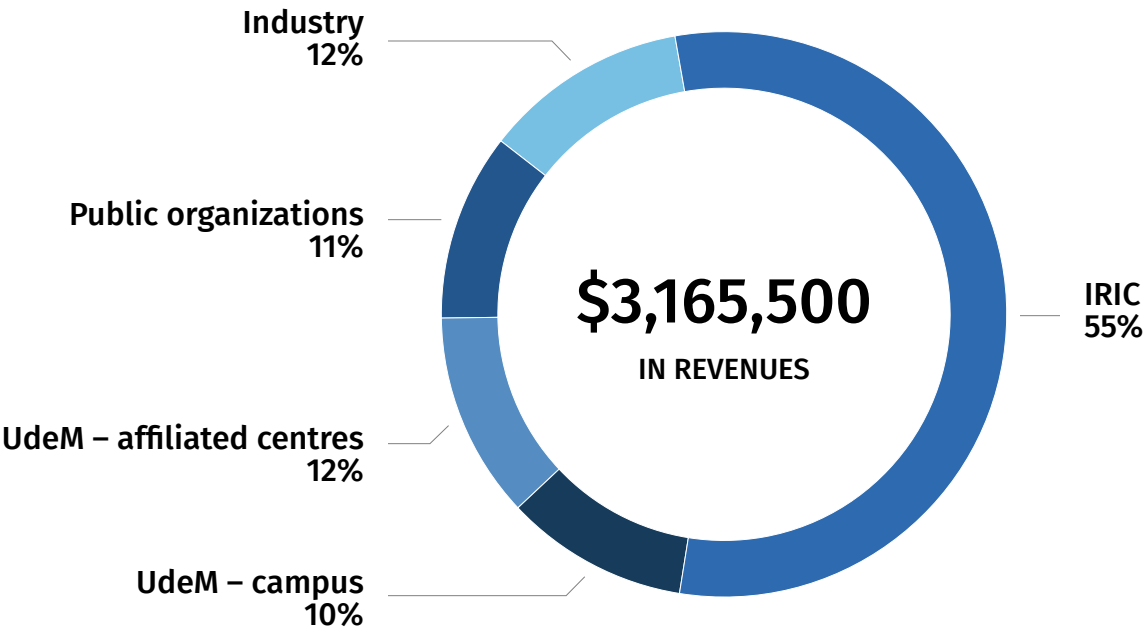
OF IRIC'S CORE FACILITIES (2018-2019)



IRIC: 27
UDEM – CAMPUS: 67
UDEM – AFFILIATED CENTRES: 71
PUBLIC ORGANIZATIONS: 76
INDUSTRY: 21

SOURCE OF REVENUE

OF IRIC'S CORE FACILITIES (2018-2019)



IRIC: \$1,750,413
UDEM – CAMPUS: \$331,772
UDEM – AFFILIATED CENTRES: \$373,188
PUBLIC ORGANIZATIONS: \$339,475
INDUSTRY: \$370,652

This data excludes the revenues from grants and industry contracts allocated to the Medicinal Chemistry Core Facility.

NEXT GENERATION OF SCIENTISTS

The some 200 scientists of the next generation trained annually at IRIC receive multidisciplinary training and benefit from the varied expertise of its research teams.

The Academic Affairs team assists these young scientists along their path, from their arrival at the Institute right up to their graduation, providing them with personalized support.

IRIC offers a unique Master's and Ph.D. program in Systems Biology. The training involved in both cases, which is part of the UdeM's Molecular Biology Program, focuses on close integration between theory and practice, which encompasses, among other things, cell and molecular biology, immunology, biochemistry, genetics, bioinformatics, proteomics, drug development and the more clinical aspects of cancer research.

The other programs represented at IRIC are the Master's and Ph.D. programs in the following fields of study: bioinformatics, biochemistry, molecular biology, chemistry, informatics, microbiology and immunology, pathology and cell biology, pharmacology, as well as physics.





IRIC ON THE ROAD 2018

During its 2018 fall tour, IRIC took part in 15 higher education fairs organized at various Canadian universities located in Quebec, in Ontario and Western Canada.

These recruitment activities provide students with an opportunity to meet representatives of educational institutions and research centres to learn more about study programs, available internships, admission criteria and scholarship possibilities.

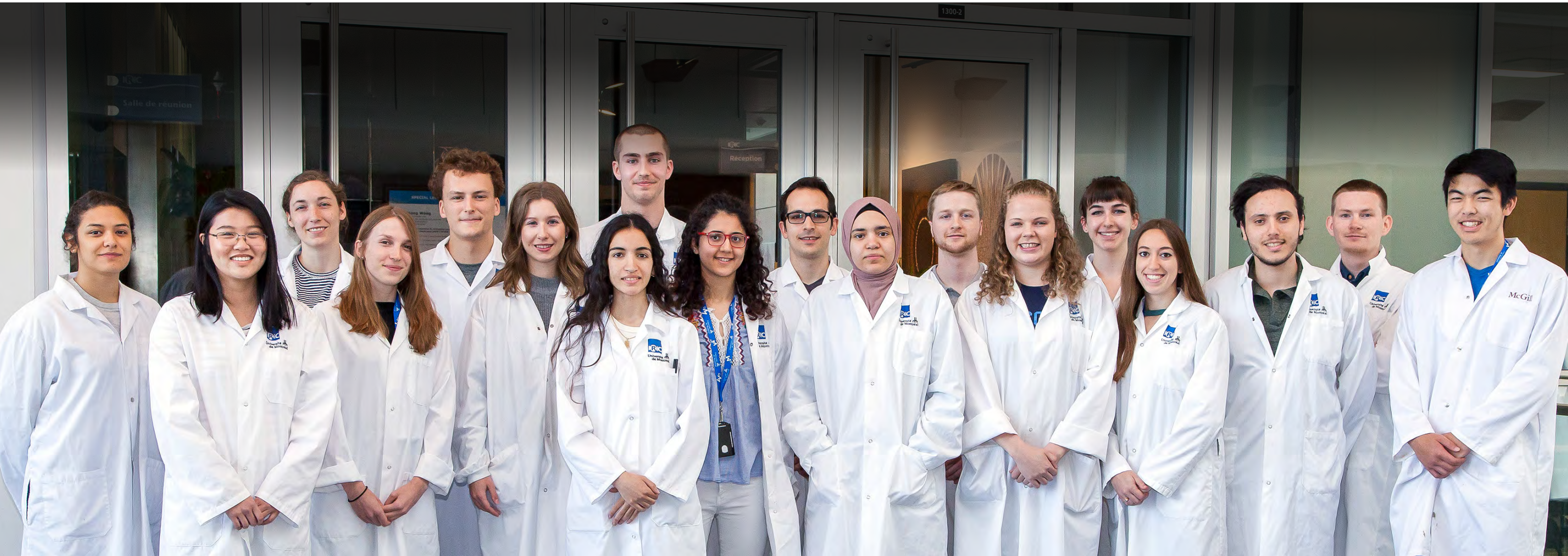
2018 STUDENT RECRUITMENT EVENT

The 5th edition of the event, aimed at recruiting the finest prospects in the field of biomedical research, received over 161 applications. 30 candidates from 23 universities spread over 7 countries were selected to take part in the three days of activities.

This stay allows participants to visit IRIC's laboratories and core facilities, to meet and discuss with investigators and students and to learn about the study programs offered at the Institute. More than 150 interviews were held during the course of the event and 16 students joined an IRIC research team.

2018 SUMMER SCHOOL IN SYSTEMS BIOLOGY

The School's objective is to provide top-notch training in cancer research. It offers a series of theoretical courses covering a variety of themes such as cell and molecular biology of cancer. It also offers practical laboratory courses in which students carry out several small-scale research projects requiring the use of IRIC's core facilities. In 2018, 39 students took part.



Credit: Christian Charbonneau

2018 IRIC NEXT GENERATION AWARDS

Offered for an 8th year, this program enabled 18 Canadian students at the undergraduate level with an outstanding academic record to receive a scholarship in order to carry out a research internship with an IRIC team during the summer of 2018. The awards are worth \$4,250 for a 12-week internship or \$5,670 for a 16-week internship.

2018 IRIC AWARDS COMPETITION

The Master's and Ph.D. Scholarship Competition aims to support students with an outstanding academic and research record, but who do not benefit from any other substantial scholarships. IRIC handed out 5 Master's half-scholarships worth \$10,000 each and 12 Ph.D. half-scholarships worth \$11,250 each (the second half being provided by the investigators).

The Travel Awards Competition aims to support Master's and Ph.D. students, as well as postdoctoral fellows, who wish to present their research findings at scientific conferences outside Quebec. IRIC awarded 9 scholarships worth \$1,000 each.

The awards are offered thanks to the support of IRIC's vast community: its employees and investigators, its Young Philanthropists, and its generous donors and partners, including the Fondation Famille Gosselin.

STUDENT MOBILIZATION



AÉIRIC – IRIC STUDENT ASSOCIATION

The AÉIRIC’S mandate is to represent Master’s and Ph.D. students, postdoctoral fellows and postdoctoral researchers in institutional matters.

The AÉIRIC contributes to IRIC’s development and to maintaining the quality of student life through active participation in institutional projects and by fostering interactions between the members it represents and IRIC’s teams, through various organized university, scientific and social activities.



THE STUDENTS, RESEARCH AMBASSADORS

IRIC students took part in the 2018 edition of the Eureka! Festival, the largest celebration of science in Quebec. The event, organized by L’île du savoir and carried out in partnership with the Montreal Science Centre, is intended to promote science, technology and innovation with children and families from the Greater Montreal region. The Institute’s ambassadors held a series of interactive workshops involving the secrets of DNA.

STUDENT MOBILIZATION



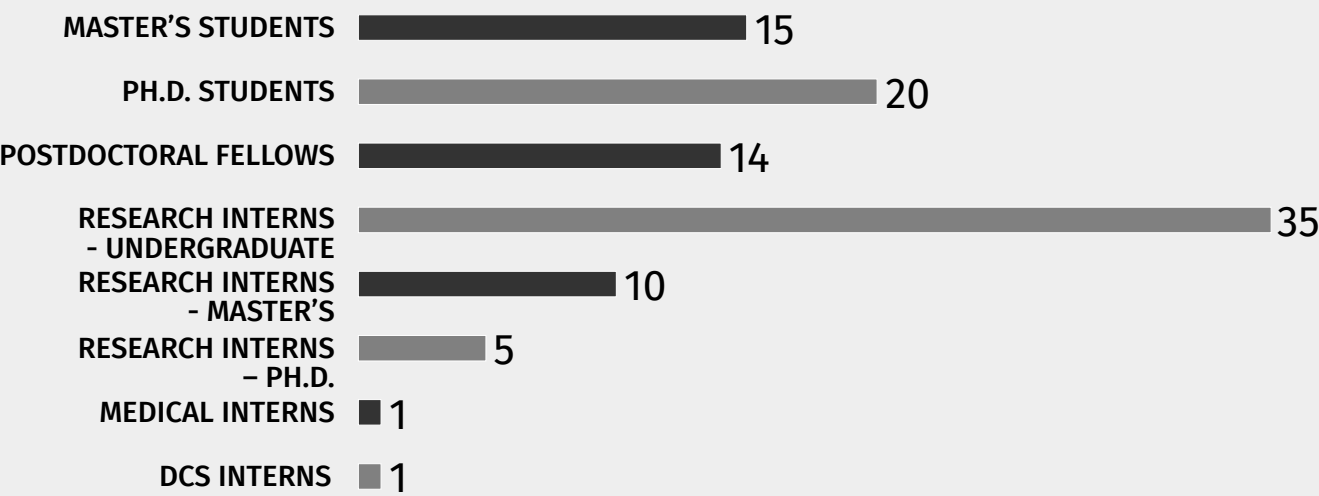
The AÉIRIC organized the 2nd edition of the scientific outreach event Behind the Scenes of Cancer Research. The 16 students representing 11 different laboratories presented their work in the form of rotating interactive workshops. Over 150 people were on hand. The event was hosted by Yanick Villedieu, journalist, author, lecturer and also host of the radio program Les années lumière on Radio-Canada for almost 35 years.

NEW IRIC RECRUITS

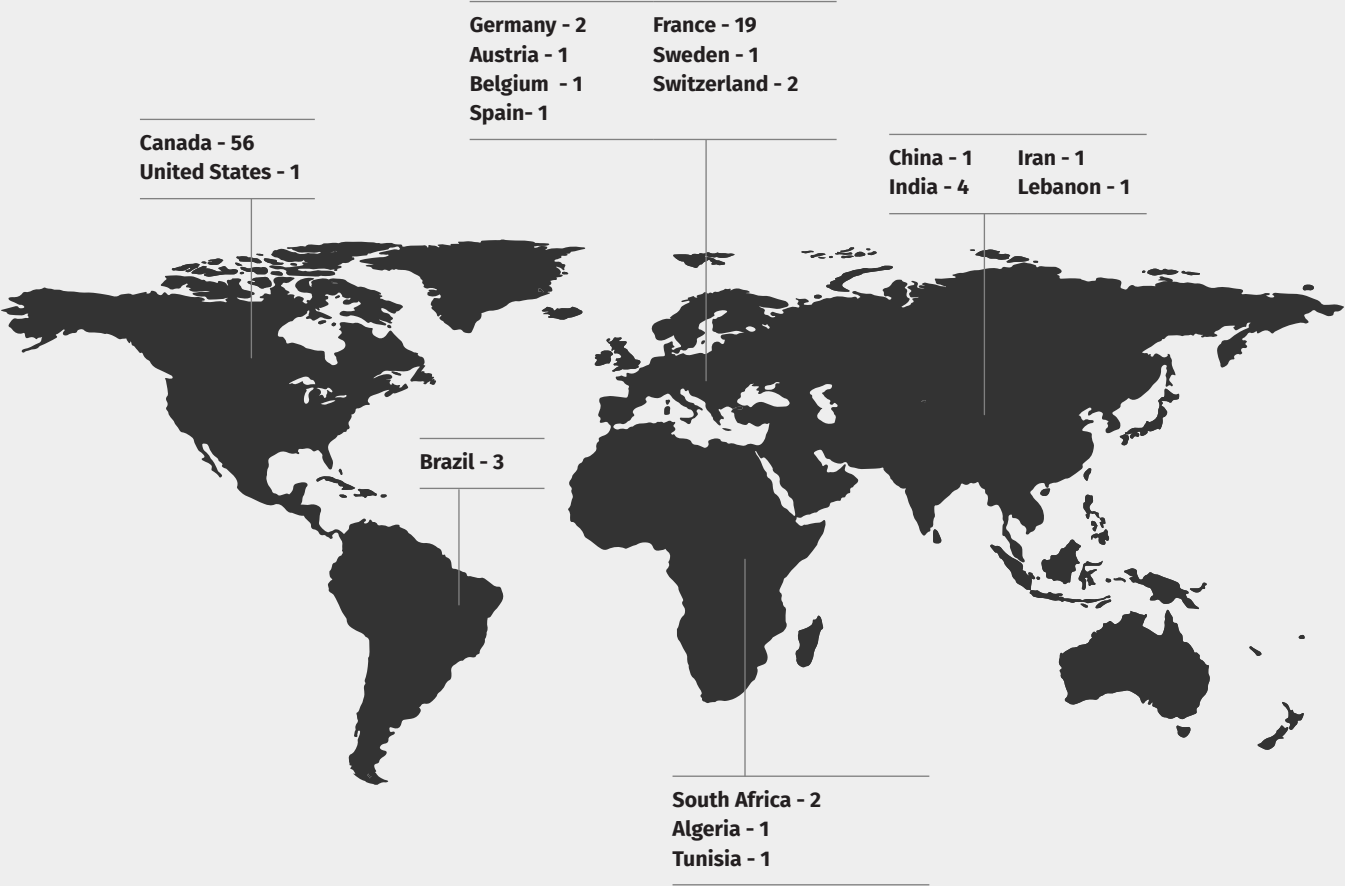
— 101 NEW RECRUITS

BREAKDOWN OF NEW RECRUITS BASED ON LEVEL*

Some students are included in more than one category
(e.g., in the same year, an intern becomes a student).



COUNTRIES OF ORIGIN OF THE NEW RECRUITS



VALORIZATION

IRICOR, A PROVEN MODEL IN THE TRANSFORMATION OF ACADEMIC RESEARCH INTO THERAPEUTIC SOLUTIONS

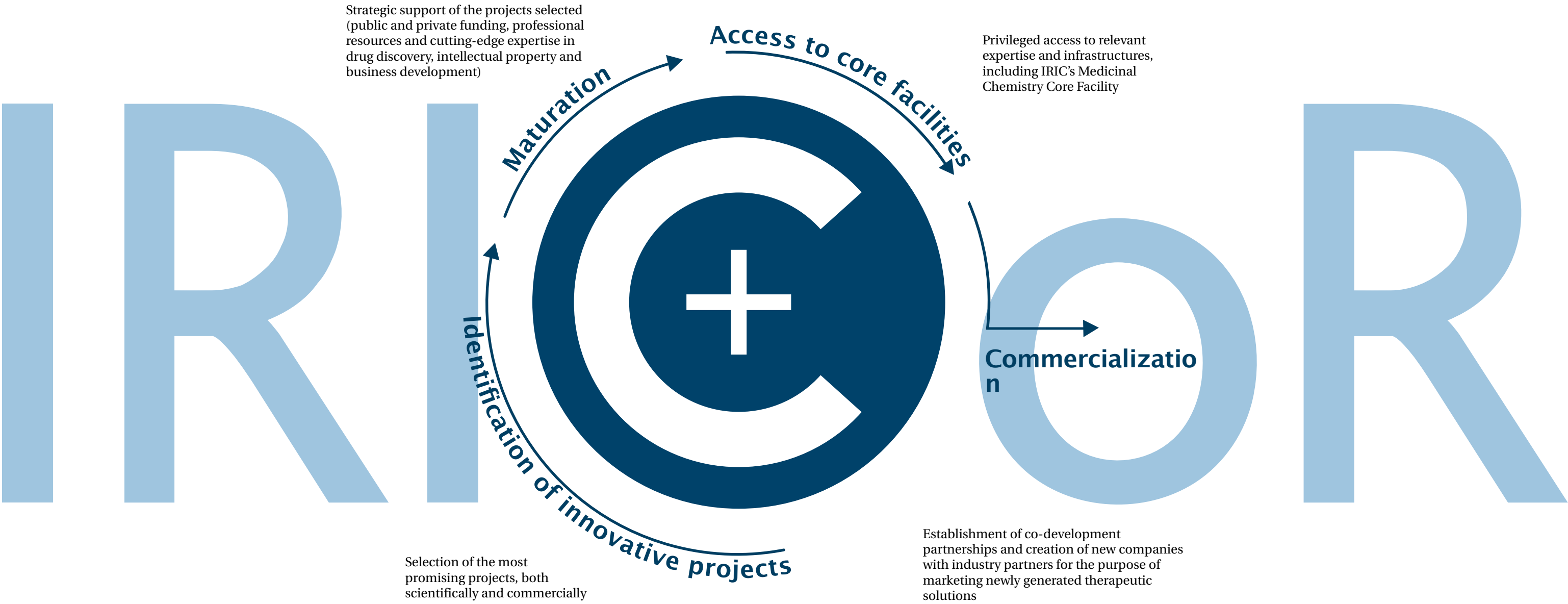
Drug discovery innovation centre, IRICoR focuses mainly on cancer and rare diseases. Its activities are pan-Canadian; its visibility is international.

Its principal mandate is to bring together research in academia and the biopharmaceutical sector in order to accelerate the transformation of drug discovery projects into new therapies, for the benefit of patients.

IRICoR strategically invests in the projects selected in order for them to migrate from academia to the market. A dedicated commercialization team takes care of reaching agreements with the best development and funding partners for each project.

IRICoR's major sources of funding include contributions from the provincial and federal governments, as well as from key partners in the biopharmaceutical industry.

CUSTOMIZED STRATEGIC SUPPORT



IRICoR

HIGHLIGHTS – 2018-2019

FUNDING AND REVENUES

- The number of projects in IRICoR’S portfolio reached 39, with 6 new financings.
- The projects supported by IRICoR led to the filing of 41 patent applications belonging to 14 active patent families and the development of 2 drug candidates currently at the clinical evaluation phase.
- Funding for IRICoR’s activities totalled \$5 M from private partners and \$6.7 M from public funds.

VISIBILITY

- IRICoR presented its business model and its project portfolio as part of 23 national and international events.
- IRICoR also took part in the first edition of EFFERVESCENCE – The future of life sciences event, as an organizing partner. In concert with IRIC and Oncopole, a friendly debate about the advances and issues related to cancer research was presented.
- In October of 2018, IRICoR celebrated 10 years of success in drug discovery.

For the occasion, IRICoR organized the event Symposium: Artificial intelligence + Drug Discovery, which included Pierre Côte, Therence Bois, Sébastien Lemieux and Jean-Sébastien Cournoyer and was hosted by Sophie Cousineau. The panel was followed by a cocktail celebrating a major grant from the Centres of Excellence in Commercialization and Research Program and the MESI.



Credit: Dominick Gravel

COMPETITIONS

- Launch of the LeadAction-Onco Competition, in conjunction with Oncopole and in partnership with the FRQS, aimed at accelerating the transformation of research projects in oncology and immuno-oncology, into novel therapies for the benefit of patients.
- Launch of the LeadAction|Breast Cancer du Sein Competition, in partnership with the Quebec Breast Cancer Foundation, aimed at funding innovative breast cancer research projects in order to accelerate the discovery of new treatments that are accessible to patients.

SUPPORTING THE NEXT GENERATION OF SCIENTISTS

9 grants were awarded by IRICoR and Oncopole as part of the 2nd edition of the Scholarship Competition – Entrepreneurship in Oncology (CEO) to fund the participation of the winners in the Life Sciences Entrepreneurship Development Program.

NEW PARTNERSHIPS AND COLLABORATIONS

Completion of a research collaboration with AbbVie to identify tumor-specific neoantigens based on a novel proprietary platform developed by Dr. Claude Perreault and Pierre Thibault.

HIRING

Violetta Dimitriadou joined the team as Vice-President, Scientific Operations.

GOVERNANCE

Jean-François Leprince, Managing Partner, CTI Life Sciences Fund, was named Chairman of the Board of Directors.



HIGH IMPACT ACHIEVEMENTS
— THUS FAR



PHILANTHROPY

The generous donors who support IRIC’s activities directly contribute to its threefold mission of research, training the next generation of scientists and accelerating the discovery of new cancer therapies. Their support is all the more vital, because it enables the Institute’s laboratories to continue to push the boundaries of research by providing them with the boldness to chart unknown territory.

Each year, IRIC organizes several benefit-events in which many philanthropists and key partners take part. Through their unwavering support, these ambassadors actively participate in making a difference in the fight against cancer.

The entire IRIC community extends its heartfelt thanks!

To consult the complete list of IRIC donors: iric.ca (Make a donation/Our donors section).

**AUDACIOUS 2018:
CELEBRATING MAJOR BUILDERS**



Close to 400 guests were on hand at the Caisse de dépôt et placement du Québec for the 5th edition of the Audacious fundraising event, hosted by Stéphan Bureau. A record amount of \$1,335,000 was raised.

The edition's Honorary Co-chairs, present at the event, Nathalie Palladitcheff, President of Ivanhoé Cambridge, and Jean La Couture, President and Founder of Huis Clos ltée and Chairman of the Board of Pomerleau, paid tribute to two great builders: Mr. Pierre Pomerleau and Dr. Claude Perreault.

Along with operating a large construction company, Pierre Pomerleau is a great philanthropist and has been a partner of IRIC ever since ground was broken for the Marcelle-Coutu Pavilion. What began as a business relationship evolved, over time, into a true commitment to the Institute. Mr. Pomerleau is proud to invest in research and innovation and to give back to Quebec society.

Dr. Claude Perreault is responsible for discoveries that have had a major impact on understanding the mechanisms of cancer. His team is currently working on developing a cancer vaccine. His mandate as both a professor and an Investigator enables him to apply his passion for teaching, while at the same time transposing discoveries from his laboratory to the clinic.

An event of that magnitude, and a fundraising campaign that produced such remarkable results, would not have been possible without the contribution of many partners and sponsors. IRIC would like to thank the donors, Co-chairs, members of the Financing Committee and the many volunteers.



Credit: Dominick Gravel



Credit: Mike Redmond

2018 BLAIS FAMILY GOLF TOURNAMENT: \$70,000 FOR CANCER RESEARCH

IRIC is fortunate to be able to count on loyal donors who are passionate about research. That's the case with the Blais family. This year, they organized the 9th edition of their traditional golf tournament. The event is especially significant because the driving force behind the tournament, Mr. Pierre Blais, is himself a cancer survivor thanks to an experimental treatment offered by Dr. Guy Sauvageau.

IRIC would like to thank the President of this edition, Anik Maisonneuve, the Organizing Committee led by Cyntia Plouffe and all Blais family members and friends.

So far, more than \$400,000 has been raised by the Blais Family Fund, benefiting cancer research.



Credit: Gregory Emery

KO CANCER 2018: \$125,000 RAISED BY THE IRIC YOUNG PHILANTHROPISTS

Created in 2016, the IRIC Young Philanthropists group brings together approximately twenty young professionals from Montreal's business community who feel strongly about supporting cancer research.

This year, they organized the 2nd edition of the KO Cancer benefit-event, a boxing gala that brought together 400 fans and 12 amateur boxers who underwent three months of intensive training for the cause. IRIC extends their warmest thanks to them for their outstanding contribution and wants to emphasize the devotion of Caroline Stephens and Benjamin Raynauld, co-leaders of this edition.

So far, the mobilization of these ambassadors has resulted in raising \$210,000.



IRIC benefits from many other opportunities to provide visibility for its activities with the community, while also mobilizing new donors.

This year, we should point out the Défis du Parc and the Grands Prix cyclistes de Québec et de Montréal. A dozen or so ambassadors proudly wore IRIC's colours at the Parc de la Mauricie and raised close to \$10,000 for the cause. Also, for each Club des Leaders des GPCQM package sold, an amount went to IRIC.



Credit: Christian Brault

2019 WORLD CANCER DAY: BREAKFAST-CHAT ON THE LEUCEGENE PROJECT

More than 80 participants were on hand to discuss the hope generated by the Leucegene project, which focuses mainly on acute myeloid leukemia (AML). More than 50,000 AML cases are diagnosed each year in Canada, the United States and Europe. It's one of the leading causes of death among young adults, and most patients suffering from the disease die within the space of a few years.

The event provided an opportunity for IRIC's donors and partners and the general public to get together and address the work of the Leucegene team, structured around improving the prognosis of patients, discovering new therapies, creating a web portal making it possible to transfer knowledge into clinical application, and assessing the socioeconomic impact of such a project.

To bring attention to the Day, IRIC also led a fundraising campaign with its donors.



2019 SCOTIABANK CHARITY CHALLENGE: A TEAM OF IRIC RUNNERS ON HAND TO TAKE PART

17 runners laced up their running shoes to support cancer research. The money raised made it possible to award a Bourse Happier to an IRIC Ph.D. student.

FINANCES

IRIC is fortunate to be able to rely on several sources of revenue and funding from a variety of organizations. That support is vital to the pursuit of its mission, laboratory operations, equipment, salary support for the investigators and their teams, the development of research programs and the awarding of scholarships to the next generation of scientists.

REVENUES 2018-2019

— TOTAL OF \$44,710,021

	Operating	Research	Total
Université de Montréal	\$5,913,282	\$3 523,777	\$9,437,059
Grants	\$3,977,591	\$21,472,545	\$25,450,136
Student and postdoctoral awards		\$1,283,045	\$1,283,045 ¹
Chairs and salary awards		\$1,437,258	\$1,437,258
Contracts with industry		\$3,940,869	\$3,940,869
Core facilities – external clients	\$1,571,958		\$1,571,958 ²
Donations and sponsorships	\$274,715	\$1,276,896	\$1,551,611 ³
Other	\$38,084		\$38,084
TOTAL	\$11,775,630	\$32,934,391	\$44,710,021

EXPENSES 2018-2019

— TOTAL OF \$37,560,662

	Operating	Research	Total
Salaries and employee benefits	\$6,353,976	\$19,181,326	\$25,535,302 ⁴
Supplies and services	\$2,079,158	\$5,290,125	\$7,369,283
Maintenance and repairs	\$3,417,854	\$602,861	\$4,020,715
Scientific equipment	\$246,226	\$389,137	\$635,363
TOTAL	\$12,097,214	\$25,463,448	\$37,560,662

¹ Includes the IRIC Great Challenges Against Cancer scholarships, IRIC members Ph.D. awards, IRIC Next Generation Awards, and IRIC Awards.

² Excludes the amounts from IRIC investigators (\$2,052,715.32), these being included in research grant revenues.

³ Solely donations and sponsorships received. Excludes the IRIC Great Challenges Against Cancer scholarships, IRIC Members Ph.D. awards, IRIC Next Generation Awards, and IRIC Awards.

⁴ Includes Principal Investigator salaries paid by the Unviversité de Montréal.

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

Legal deposit

Bibliothèques et Archives nationales du Québec, 2020
Library and Archives Canada, 2020

Editorial committee

Cristina Annunzi, Catherine Cardinal, Charlène Kouao,
Anne Lebel, Julie Mantovani, Richard Martin, Alix Molinier,
Manon Valiquette, Benoît St-Jacques

Graphic design: Mobula Design

English translation: Robert Mann

Credit - official portraits of the investigators: Justine Latour

Institute for Research in Immunology and Cancer (Université de Montréal)

2950, chemin de Polytechnique
Pavillon Marcelle-Coutu
Montreal (Quebec) H3T 1J4
CANADA

This document is also available in French (iric.ca)

