



→ **About the Institute for Research in Immunology and Cancer**
Created in 2003 to shed light on the mechanisms of cancer and discover new, more effective therapies to counter this disease, the Institute for Research in Immunology and Cancer (IRIC) is an ultra-modern research hub and training centre located in the heart of the Université de Montréal. IRIC operates according to a model that is unique in Canada. Its innovative approach to research has already led to discoveries that, over the coming years, will have a significant impact on the fight against cancer.

→ **About the Université de Montréal** Deeply rooted in Montreal and dedicated to its international mission, the Université de Montréal is one of the top universities in the French-speaking world. Founded in 1878, the Université de Montréal today has 16 faculties, and together with its two affiliated schools, HEC Montréal and École Polytechnique, constitutes the largest centre of higher education and research in Québec and one of the major centres in North America. It brings together 2,600 professors and researchers and accommodates more than 65,000 students.

02	Cancer is...
04	IRIC: Unique and Ground-breaking
06	Statistics from 2013-2014
08	Messages from the Executive Committee
10	Scientific Affairs at the Heart of the Action
12	Multidisciplinary Team
14	Three Research Axes → Axis 1: Biology of Cancer → Axis 2: Leukemia and Stem Cells → Axe 3: Molecular Diagnostics and Targeted Therapies
26	Cutting-Edge Scientific Facilities
32	IRICoR: Integrated Development and Commercialization Unit
36	Next Generation of Scientists: Students are the Future
44	Philanthropy: Direct Impact of Every Donation
50	Outreach and Honorary Distinctions
58	Financial Profile in 2013-2014
64	Management Team

CANCER IS

76,600

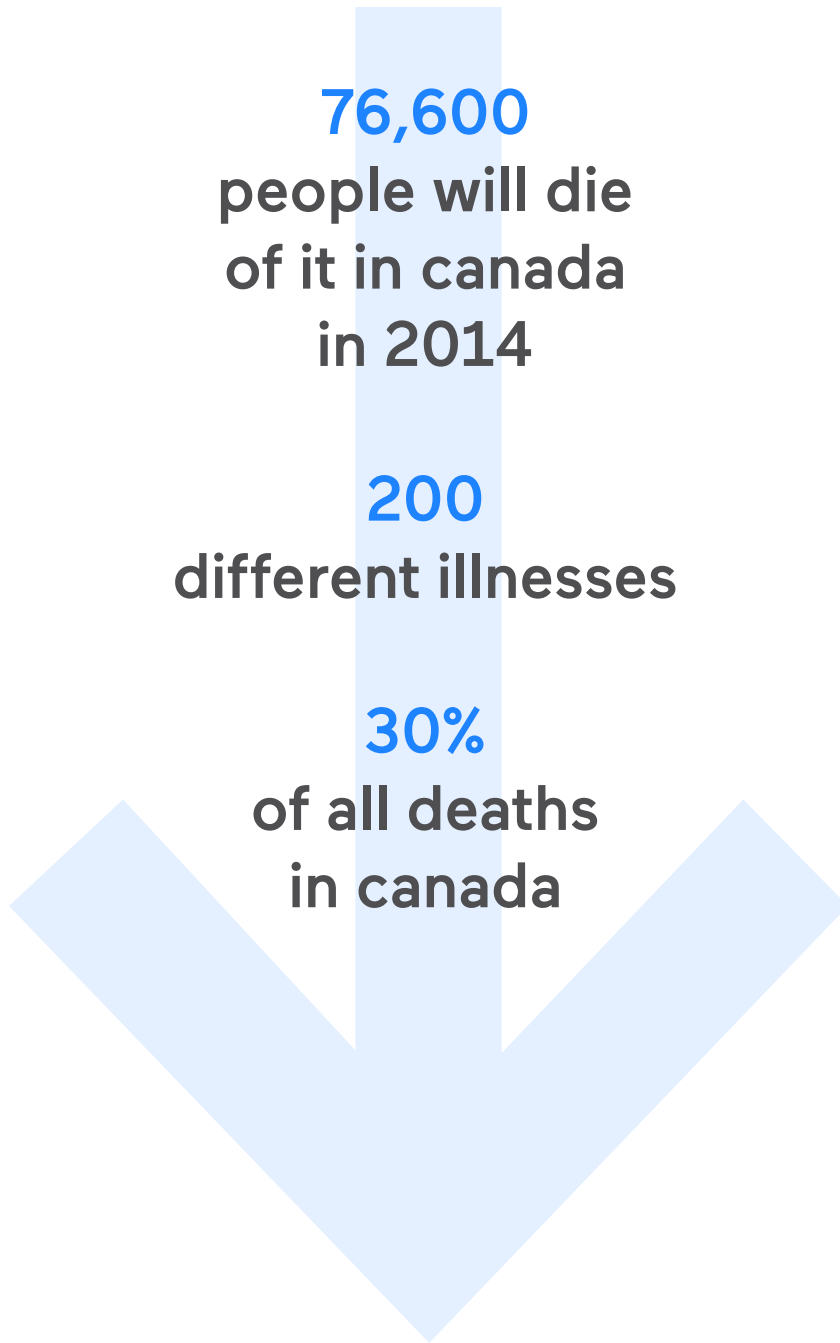
people will die
of it in canada
in 2014

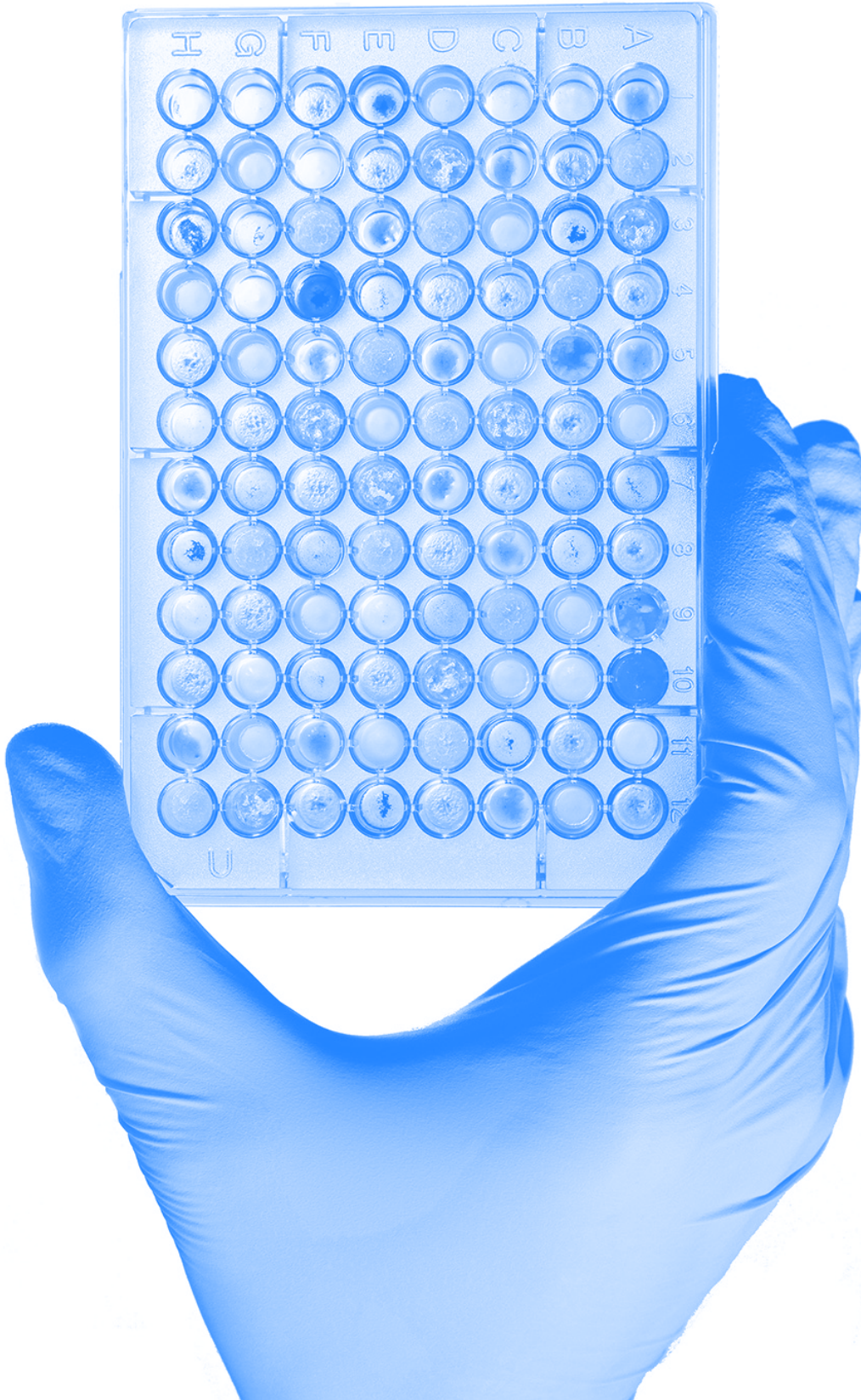
200

different illnesses


30%

of all deaths
in canada





IRIC IS



Concentration
of cancer researchers

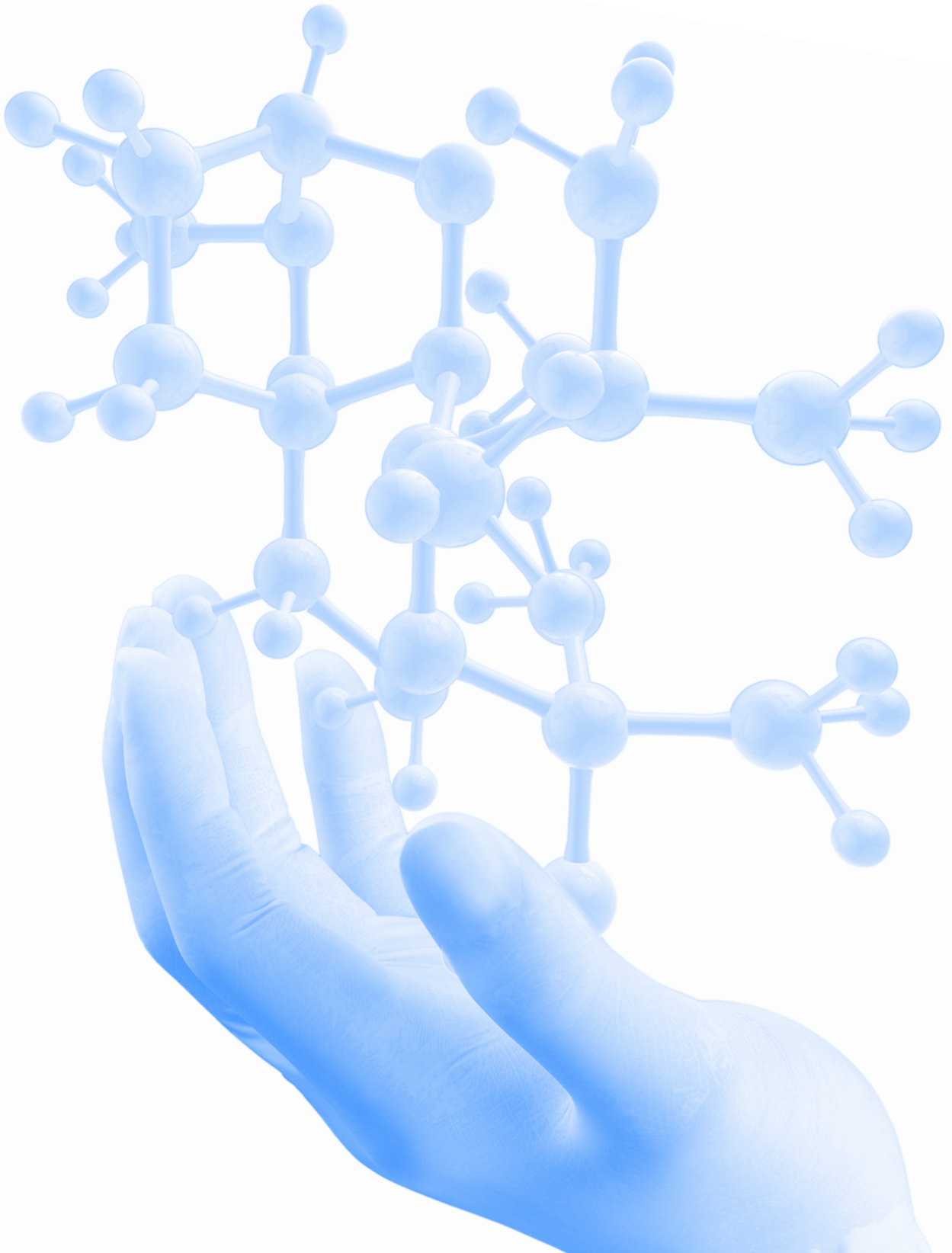
Complementarity
of areas of expertise

Drug discovery
chain

Multidisciplinary
training program

Ultramodern
technology park

Integrated development
and commercialization unit



Statistics from 2013-2014



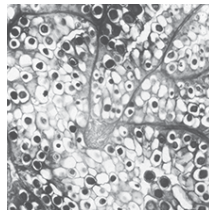
162

research
employees



13

cutting-edge
core facilities



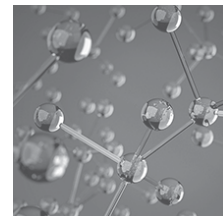
30

principal
investigators
and research
units

54

million
annual
budget

1 integrated
drug discovery
chain



495



people
including trainees

2

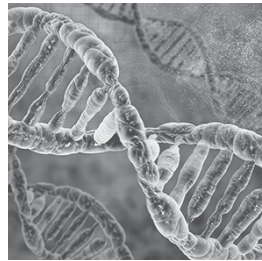
private research
chairs



1 graduate
program in
systems biology

43

professional and
administrative
employees



15 Canada
research
chairs

260

students



→ Message from the Chairman of the Board

Unique and ground-breaking



MARC-ANDRÉ BLANCHARD

Chairman of the Board of IRIC

Marc-André Blanchard

I am extremely proud of the development of the Université de Montréal's Institute for Research in Immunology and Cancer (IRIC) over these past 11 years. In a short period of time, the Institute has become a standout in its field and a one-of-a-kind ground-breaking cancer research centre in Canada.

Located in the Marcelle-Coutu Pavilion, IRIC brings together close to 500 passionate individuals who make up one of the most significant concentrations of researchers in the country. Recruited from around the world on the basis of the excellence of their research and the complementarity of their areas of expertise, they comprise a true incubator of concentrated talent in Québec. In addition, IRIC is distinguished by its implementation of a cancer drug discovery chain. The contribution of the more than 30 medicinal chemists as well as specialized biologists on the team is another singular feature of the Institute.

IRIC is also recognized as a first-class training centre and for its systems biology program. Roughly 260 students from over 15 countries benefit from multi-disciplinary, practical, and theoretical teaching that will make them world-calibre scientists. Moreover, IRIC's students and researchers have the most impressive biomedical-research technology park in Canada at their disposal.

I remain convinced that the development and commercialization of IRIC's discoveries carried out by IRICoR are the way of the future in the field of research. This integrated model, which cultivates partnership and collaboration agreements with the biopharmaceutical industry, makes for an undeniable acceleration in discoveries of cancer drugs and for speedier initiation of clinical trials.

Not unrelatedly, as a proud graduate of the Université de Montréal I would like to point out that the UdeM is rated among the finest 100 universities on the planet and ranks first in research in Québec. That status it owes to its teachers, researchers, students, and employees, and to generous donors.

In closing, let me say that I am concluding my three-year mandate as chairman of the board, but that I am staying on as a board member. I pass the chairmanship torch to my good friend Robert Tessier, a committed man of integrity and a pillar of the business community.

I take advantage of the opportunity to salute Robert Lacroix, former Rector of the Université de Montréal and my predecessor as Chairman of IRIC's Board of Directors, and Guy Sauvageau, IRIC's Chief Executive Officer. These two visionaries, along with all those actively involved in making a success of the Institute, can take pride in contributing on a daily basis to defeating cancer. ●

→ Message from the Chief Executive Officer

Mission accomplished



GUY SAUVAGEAU
M.D., PH.D., F.R.C.P.(C)

Chief Executive Officer of IRIC

Eleven years have already elapsed since, with the backing of the Université de Montréal, the first researchers (Katherine Borden, Trang Hoang, Sylvain Meloche, Claude Perreault, Marc Therrien, and Pierre Thibault) joined Pierre Chartrand and myself to create IRIC with the aim of transforming basic discoveries in therapeutic applications for cancer. Thanks to remarkable teamwork and above all hard effort and daring, we are now in a position to say "mission accomplished."

Since its inception, the Institute has enjoyed spectacular development: construction of the Marcelle-Coutu Pavilion; recruiting of productive researchers; launch of a new systems biology program under the responsibility of Trang Hoang, Sylvie Mader, and Martine Raymond; establishing the first Canadian cancer-drug discovery chain in a

university setting thanks to the recruiting of Daniel Lamarre, Michel Bouvier, and Anne Marinier; and creation of IRICoR, the research development and commercialization unit of IRIC and the Université de Montréal. These achievements and numerous other projects have enabled us to take giant steps toward obtaining concrete results that are likely to improve cancer treatments. I am also proud that over the years, IRIC has earned a reputation for excellence in the scientific community in Canada and abroad.

This success was made possible by the outstanding quality of the resources and facilities at our disposal and by a multidisciplinary approach that has created a true culture of collaboration among the various players, including researchers, government organizations, philanthropists, the pharmaceutical industry, clinical settings, equipment manufacturers, members of the business community, and donors from the general public. These dynamic partnerships are the key factors in our current and future success.

Personally, after more than 10 years as scientific director and seven years as chief executive officer, I now plan to devote more time to my primary passion, namely, my research at IRIC in the field of molecular genetics of stem cells.

I have every confidence that Marc Therrien will be brilliant in

the role of scientific director, and that Michel Bouvier, the new chief executive officer of IRIC, will succeed in bringing together the best and brightest of forward-thinking people.

I should also like to call attention to the contribution and involvement of the Coutu family and the members of the IRIC Board of Directors. These invaluable ambassadors have enabled us to become one of the principal cancer research centres in the country. And I would like to thank all the members of the Institute community, along with the deans and vice-rectors of the Université de Montréal, with whom I have had the opportunity to work so closely. A special word of appreciation to the rectors, notably, Robert Lacroix, who believed in this project when IRIC was no more than a parking lot off Chemin de Polytechnique; Luc Vinet; and more recently, Guy Breton, for their unwavering support despite the difficult financial context they have had to face. Together, dear friends, we have succeeded in making IRIC what it has become – a unique research centre that is now a source of pride for our university and around the world.

It fills me with considerable emotion to end this message by expressing my profound gratitude. IRIC, my long-held dream, would not exist without you, and neither would all the potential benefits for those among us who will have to face the terrible illness of cancer. ●

Scientific Affairs at the Heart of the Action

The mandate of IRIC's Scientific Affairs is to formulate recommendations on all the Institute's research and training activities.

→ [Highlights](#)

Marc Therrien named Scientific Director of IRIC



MARC THERRIEN PH. D.

IRIC Scientific Director
and Principal Investigator

In June 2013, the Board of the Université de Montréal approved the recommendation of IRIC's Board of Directors by appointing Marc Therrien to the position of scientific director. Dr. Therrien becomes the second scientific director in the history of the Institute. He replaces Dr. Guy Sauvageau, founding member of IRIC and scientific director, who also served as chief executive since 2007. Marc Therrien is a principal investigator and founding member of IRIC as well as a professor in the Department of Pathology and Cell Biology at the Université de Montréal's Faculty of Medicine, and holds the Canada Research Chair in Intracellular Signalling.

As scientific director, Marc Therrien is responsible for the Institute's strategic research plan and scientific programming. His role also includes coordination of research-facility development activities and major funding requests with granting agencies. He additionally coordinates the recruiting of principal investigators, whose scientific profiles will contribute to achieving IRIC's goals, and helps guide researchers in their academic careers. Dr. Therrien is assisted in his duties by Benoît St-Jacques, who coordinates IRIC's research activities. ●

Various activities of the Scientific Assembly

The Institute's Scientific Director is supported in his work by the Scientific Assembly. The assembly met on eight occasions during the past year to discuss questions related to the following elements:

- strategic plan and scientific programming
- recruiting and assessment of researchers
- recruiting and monitoring of graduate students and postdoctoral fellows
- institutional funding request strategies
- acquisition plan and usage policies of major research infrastructures.

All the Institute's principal investigators sit on various committees that manage academic and scientific affairs and the 13 technological core facilities. The various aspects of research at the Institute are thus managed collectively and through ongoing consultations with researchers.

In addition, the principal investigators were able to exchange ideas at a scientific retreat held on November 7 and 8, 2013. They took this opportunity to discuss recent technological advances in different areas and the possibility of acquiring

new equipment for IRIC's scientific programming. The retreat also allowed them to present innovative research projects in the early stages of development to evaluate their scientific potential and the possibility of creating collaborations within IRIC or with other institutions. Lastly, recruitment and retention of students and postdoctoral fellows was discussed, along with other issues related to communications and philanthropy. ●

Responsibilities of the various committees

Scientific Program Committee

→ Étienne Gagnon,
Principal Investigator

Fund Allocation Committee

→ Marc Therrien,
Scientific Director and
Principal Investigator

Mentoring Committee

→ Trang Hoang,
Principal Investigator

Principal Investigator Recruitment Committee

→ Marc Therrien,
Scientific Director and
Principal Investigator

Space and Equipment Committee

→ Jean-Claude Labbé,
Principal Investigator

Awards and Distinctions Committee

→ Vincent Archambault,
Principal Investigator

Strategic Projects Committee

→ Philippe Roux,
Principal Investigator

Scientific publications: an important impact factor for IRIC

This year, IRIC researchers and their collaborators published 69 articles in the finest scientific journals. A number of these articles benefited from the increased visibility offered by such prestigious journals as *Blood*; *Current Biology*; *Developmental Cell*; *Genes & Development*; *Nature Chemical Biology*; *Proceedings of the National Academy of Sciences of the United States of America*; and *The Journal of Cell Biology*.

These publications presented many of the discoveries made at IRIC that contribute in a major way to our understanding of cancer. In a number of cases, these discoveries have paved the way to developing more specifically targeted therapeutic solutions.

As is the case every year, close to one-third of these publications are the result of collaborations among principal investigators and/or associates of the Institute – a fact that reflects the collegiality, the complementarity of areas of expertise, and the pooling of resources that characterize the scientific research undertaken at IRIC. ●

Multidisciplinary Team

IRIC brings together renowned scientists from Canada, the United States, and Europe who engage in bold collaborations at the junction of complementary disciplines. The Institute boasts 30 Principal Investigators who are impassioned by their work and who are committed to the goal of discovering new therapies to defeat cancer.



Dr. Marc Therrien, IRIC Scientific Director and Principal Investigator

Principals Investigators 2013-2014

VINCENT ARCHAMBAULT PH.D.
Cell Cycle Regulation

KATHERINE BORDEN PH.D.
Structure and Function of
the Cell Nucleus

MICHEL BOUVIER PH.D., F.C.A.H.S.
Molecular Pharmacology

SÉBASTIEN CARRÉNO PH.D.
Cellular Mechanisms of
Morphogenesis during Mitosis
and Cell Motility

DAMIEN D'AMOURS PH.D.
Cell Cycle Regulation and
Chromosome Structure

GREGORY EMERY PH.D.
Vesicular Trafficking and
Cell Signalling

**LOUIS GABOURY
M.D., PH.D., F.R.C.P.(C), F.C.A.P.**
Histology and Molecular Pathology

ÉTIENNE GAGNON PH.D.
Cancer Immunobiology

LEA HARRINGTON PH.D.
Telomere Length Homeostasis
and Genomic Instability

TRANG HOANG PH.D.
Hematopoiesis and Leukemia

BENJAMIN KWOK PH.D.
Chemical Biology of Cell Division

JEAN-CLAUDE LABBÉ PH.D.
Cell Division and Differentiation

DANIEL LAMARRE PH.D.
Molecular Immunovirology

SÉBASTIEN LEMIEUX PH.D.
Functional and Structural
Bioinformatics

JULIE LESSARD PH.D.
Chromatin Structure and
Stem Cell Biology

PAUL MADDOX PH.D.
Mitotic Mechanisms and
Chromosome Dynamics

SYLVIE MADER PH.D.
Molecular Targeting in Breast Cancer

FRANÇOIS MAJOR PH.D.
RNA Engineering

ANNE MARINIER PH.D.
Medicinal Chemistry

SYLVAIN MELOCHE PH.D.
Signalling and Cell Growth

**CLAUDE PERREAULT
M.D., F.R.C.P.(C)**
Immunobiology

MARTINE RAYMOND PH.D.
Yeast Molecular Biology

PHILIPPE ROUX PH.D.
Cell Signalling and Proteomics

**GUY SAUVAGEAU
M.D., PH.D., F.R.C.P.(C)**
Molecular Genetics of Stem Cells

AMY SHAUB MADDOX PH.D.
Cytoskeletal Dynamics and
Cell Division

MARC THERRIEN PH.D.
Intracellular Signalling

PIERRE THIBAUT PH.D.
Proteomics and Mass Spectrometry

MICHAEL TYERS PH.D.
Systems Biology and
Synthetic Biology

ALAIN VERREAULT PH.D.
Chromosome Biogenesis

BRIAN WILHELM PH.D.
High-Throughput Genomics

Three Research Axes

→ **Axis 1: Biology of cancer**

Cell division is a strictly controlled process, and anomalies that affect it are often associated with the development and growth of tumours. A number of our researchers are therefore endeavouring to understand the slightest details of this extremely complex process. In so doing, they hope to open new avenues for the development of cancer therapies. The 16 research units in this focus are divided into two more specialized groups.

The first group studies the processes through which cells perceive the signals emanating from their environment and modulate the expression of their genes.

The second group studies the mechanics of cell division and the molecular mechanisms of its regulation.

RESEARCH UNITS

Signalling/Transcription

Cell Signalling and Proteomics
Chromosome Biogenesis
Intracellular Signalling
Molecular Targeting in Breast Cancer
Proteomics and Mass Spectrometry
Signalling and Cell Growth
Vesicular Trafficking and Cell Signalling

Cell Division Regulation and Mechanisms

Biology of Cell Division
Cell Cycle Regulation
Cell Cycle Regulation and Chromosome Structure
Cell Division and Differentiation
Chemical Cytoskeletal Dynamics and Cell Division
Mechanisms of Morphogenesis during Mitosis
Mitotic Mechanisms and Chromosome Dynamics
Systems Biology and Synthetic Biology
Telomere Length Homeostasis and Genomic Instability

PRINCIPAL INVESTIGATORS

Philippe Roux
Alain Verreault
Marc Therrien
Sylvie Mader
Pierre Thibault
Sylvain Meloche
Gregory Emery

Benjamin Kwok
Vincent Archambault
Damien D'Amours
Jean-Claude Labbé
Amy Shaub Maddox
Sébastien Carréno
Paul Maddox
Michael Tyers
Lea Harrington

IN 2013-2014



16
research
units



50
students



26
postdoctoral
fellows



36
publications



\$11,067,687
research
funding

ASSOCIATE INVESTIGATORS

Manfred Auer
The University of Edinburgh, Great Britain

Dr. André Robidoux
Centre hospitalier de l'Université de Montréal

→ Highlight

Acquisition of a high-performance mass spectrometer

Thanks to a generous donation from the Coutu Family Innovation Fund, IRIC was able to acquire a Q Exactive™ mass spectrometer from Thermo Fisher Scientific. This unit combines exceptional qualitative and quantitative performances unparalleled among other technologies on the market today. Its sensitivity, high resolution, and speed of operation will lead to significant advances in the understanding of cellular processes and signalling in cancer cells.

This high-technology equipment will make it possible to describe novel anomalies of cancer cells proteins in detail. It will also significantly accelerate the discovery of proteins on the surface of cancer cells, which function as markers for the detection and destruction of these cells by the immune system. The new mass spectrometer is installed in IRIC's proteomics core facility. Backed by his team, Dr. Pierre Thibault will oversee operations of the equipment. ●



Éric Bonneil, Manager,
IRIC Proteomics core facility

→ Showcased Discovery

Towards more specific drugs thanks to the nematode worm *C. elegans*



Microtubules are filaments in the cell skeleton whose role is especially important during cell division. They make up the mitotic spindle, essential for chromosome separation. A number of cancer drugs, like paclitaxel (Taxol), target microtubules and prevent the growth of tumour cells. These drugs are effective but may cause devastating side effects because of how they act on the microtubules of non-cancerous cells. In order to develop a safer drug, it is important to have a better understanding of what distinguishes the microtubules of proliferating cells from those of non-proliferating cells.

Assisted by their collaborators at Duke University in North Carolina, the teams of Drs. Amy and Paul Maddox developed an innovative in situ experimental system that allows for high-resolution imaging of microtubules in a small model organism, the nematode worm *C. elegans*. Thanks to this experimental model, IRIC researchers were able to quantify all the parameters of microtubule dynamics and detect some unexpected behaviours in microtubules specific to proliferating cells. ●

Study cited: Lacroix, B., Bourdages, K.G., Dorn, J.F., Ihara, S., Sherwood, D.R., Maddox, P.S., Maddox, A.S. (2014). In situ imaging in *C. elegans* reveals developmental regulation of microtubule dynamics. *Developmental Cell*, 29, 203-216.

→ Showcased Discovery

Two new pieces in the cell-division jigsaw puzzle

Cell division, also called mitosis, is the process that permits the proliferation of cells. This is an extremely complex process, orchestrated in a precise manner by multiple enzymes. The teams of Drs. Archambault, Roux, and Thibault have joined forces in order to arrive at a better understanding of the regulation and role of one of these enzymes, the Greatwall kinase. Over the last few years, Dr. Archambault has demonstrated that Greatwall permits the cell to enter mitosis by inhibiting another enzyme, protein phosphatase 2A (PP2A), at a specific moment. Greatwall must however remain inactive at the end of the cell cycle to allow for mitotic exit. How is Greatwall activity controlled so precisely? By using the fruit fly as an experimental model and by combining the approaches of genetics, proteomics, molecular biology, biochemistry, and microscopy, IRIC researchers have determined that Greatwall is itself modified by two other kinases at the start of the cell cycle. This phenomenon induces the translocation of Greatwall from the cell nucleus to the cytoplasm, where it can temporarily inhibit PP2A activity. The team also identified the precise areas of the Greatwall protein that are targeted by the kinases and demonstrated that they are essential to the role of Greatwall in the regulation of the cell cycle. This finding reveals an important part of the mechanism that coordinates cell division.

The teams of principal investigators, Sébastien Carréno and Benjamin Kwok, meanwhile, tackled the role of ERM family proteins, certain members of which have been linked to the development of generalized cancers. These proteins link cell membranes to the cytoskeleton, a dynamic network of fibers contained within a cell. Dr. Carréno had already demonstrated that they play an important role in cell shape change during cell division. ERM proteins also play a significant role in the formation of the mitotic spindle, an ensemble of microtubules that ensures even DNA distribution in the two daughter cells. Their mechanism of action in this process was not however well understood until now. IRIC researchers discovered that moesin, a protein in the ERM family, binds to both the cytoskeleton and the spindle microtubules. It thus serves as a microtubule stabilizer while at the same time coordinating cell shape changes and chromosome separation, two key features of cell division. A deeper understanding of this process could open new avenues for the development of cancer therapies. ●

Studies cited : Wang P, Galan J.A, Normandin K, Bonneil É, Hickson G.R, Roux P.P, Thibault P, Archambault V "Cell cycle regulation of Greatwall kinase nuclear localization facilitates mitotic progression." *The Journal of Cell Biology*, 202(2): 277-93, 2013.

Solinet S, Mahmud K, Stewman S.F, Ben El Kadhi K, Decelle B, Talje L, Ma A, Kwok B.H, Carréno S "The actin-binding ERM protein Moesin binds to and stabilizes microtubules at the cell cortex." *The Journal of Cell Biology*, 202:251-260, 2013.



→ **Axis 2: Leukemia and stem cells**

Found in the bone marrow, hematopoietic stem cells give birth to all the types of blood cells throughout a person's life. The development of leukemia stems from a complex series of genetic alterations in a stem cell, creating abnormal cells that proliferate in an uncontrolled way. The six research units in this focus are at the leading edge of leukemia and stem cell research. Building on an internationally recognized expertise, they seek to elucidate the causes of leukemia, develop targeted therapies, and improve current treatments. A number of researchers in this focus work in close collaboration with partners from various clinical centres, in particular, Montreal's Maisonneuve-Rosemont Hospital and the Jewish General Hospital.

RESEARCH UNITS

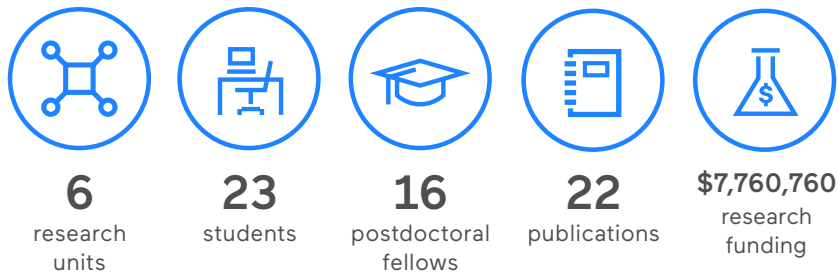
Signalling/Transcription

Molecular Genetics of Stem Cells
High-Throughput Genomics
Hematopoiesis and Leukemia
Immunobiology
Chromatin Structure and Stem Cell Biology
Structure and Function of the Cell Nucleus

PRINCIPAL INVESTIGATORS

Guy Sauvageau
Brian Wilhelm
Trang Hoang
Claude Perreault
Julie Lessard
Katherine Borden

IN 2013-2014



ASSOCIATE INVESTIGATORS

Frédéric Barabé
Université Laval

Dr. Josée Hébert
Centre de recherche de l'Hôpital
Maisonneuve-Rosemont

Dr. Denis-Claude Roy
Centre de recherche de l'Hôpital
Maisonneuve-Rosemont

→ Highlight

Health Canada approval for a new clinical trial in the treatment of acute myeloid leukemia

Earlier work by the team of Dr. Katherine Borden demonstrated that the use of ribavirin, an antiviral drug, could have highly beneficial effects for certain patients with acute myeloid leukemia (AML), one of leukemia's most fatal forms. Extremely encouraging results were obtained in a first clinical trial, but as is often the case in the use of a single drug, all patients later suffered a relapse. The team demonstrated that the patients developed a resistance to the drug following hyperactivation of the protein GLL1 in the leukemic cells. Fortunately, the drug vismodegib, which inhibits GLL1 activity, is currently available, and the researchers demonstrated that it could restore cancer cell sensitivity to ribavirin.

The team this year received the approval of Health Canada to undertake a new clinical trial designed to test the vismodegib/ribavirin combination in patients suffering from ALM. The study will be conducted, like the earlier ones, in collaboration with the Segal Cancer Centre at Montreal's Jewish General Hospital. If this new approach meets with success, it could have enormous applications, since it is estimated that ribavirin's mechanism of action could be effective against nearly 30 percent of all cancers, including certain types of breast, prostate, colon, stomach, head, and neck cancer. ●

Study cited: Zaheddine H.A, Culjkovic-Kraljacic B, Assouline S, Gendron P, Romeo A.A, Morris S.J, Cormack G, Jaquith J.B, Cerchietti L, Cocolakis E, Bergeron J, Leber B, Becker M.W, Pei S, Jordan C.T, Miller W.H., Borden K.L.B "The sonic hedgehog factor Gli1 imparts drug resistance through inducible glucuronidation." *Nature*, 511:90-3, 2014.

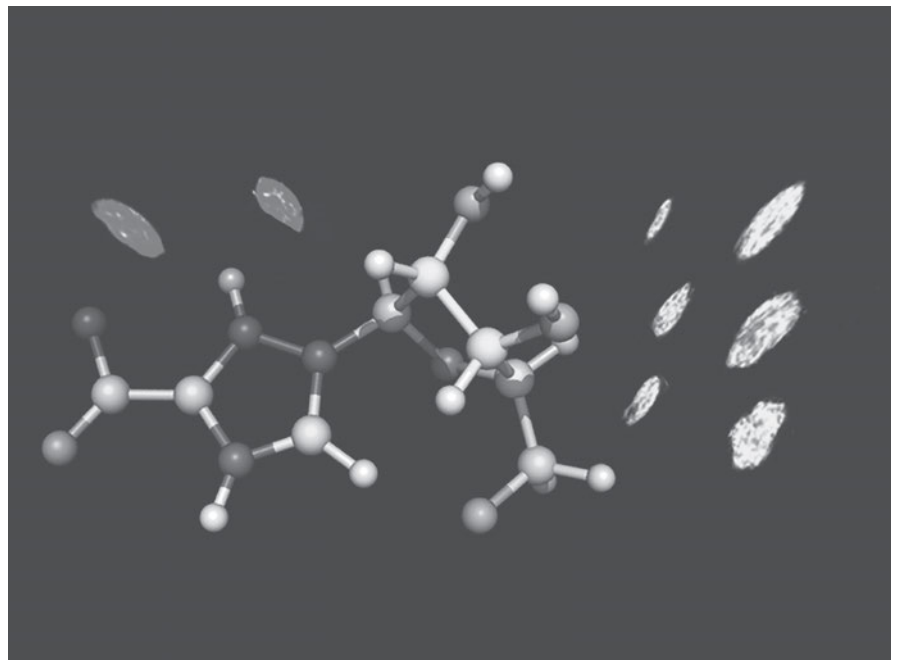


Image picture shows the ribavirin molecule and cells from Acute Myeloid Leukemia (AML) patients.

→ Showcased discovery

Trapping leukemic stem cells

The researchers in the Leucégène group, a team codirected by IRIC's Dr. Guy Sauvageau and Dr. Josée Hébert of Maisonneuve-Rosemont Hospital (MRH), succeeded in identifying two new chemical components that make it possible to maintain leukemic stem cells in culture when these are grown outside the body. Until now, it has been extremely difficult to study these cells, since they quickly lose their stem-cell character in standard growing conditions. To get around this difficulty, the team of researchers studied leukemic stem cells from patients with acute

myeloid leukemia (AML), supplied by the Québec Leukemia Cell Bank located at MRH. After thousands of tests, they identified two new chemical components that, when added to the culture medium, can keep the human leukemic cells functional for at least seven days in vitro. The ability to grow leukemic stem cells in the laboratory is a major breakthrough, since it opens the way to the identification of new cancer drugs to fight AML, one of the most aggressive forms of blood cancer. ●

Study cited: Pabst C, Krosl J, Fares I, Boucher G, Ruel R, Marinier A, Lemieux S, Hébert J, Sauvageau G "Identification of small molecules that support human leukemia stem cell activity ex vivo." *Nature Methods*, 11:436-442, 2014.

→ Showcased discovery

Promising new therapeutic target in the treatment of leukemia

Under the direction of Dr. Julie Lessard and her collaborators from Stanford University in California, an IRIC team identified a gene that is essential to the progression of leukemia. That gene, called Brg1, is a key regulator of leukemic stem cells at the origin of the disease, of resistance to treatments, and of relapses. "We demonstrated in an animal model that when we withdraw the Brg1 gene, leukemic stem cells are incapable of dividing, surviving,

and forming new tumours," says Julie Lessard. "In other words, the cancer is definitively halted." The study's co-author, Dr. Pierre Thibault, adds, "Surprisingly, our work showed that the Brg1 gene is not crucial to the function of normal blood stem cells, which makes it a promising therapeutic target in the treatment of leukemia." ●

Study cited: Buscarlet M, Krasteva V, Ho L., Simon C, Hébert J, Wilhelm B, Crabtree G.R, Sauvageau G, Thibault P, Lessard J.A "Essential role of BRG, the ATPase subunit of BAF chromatin remodeling complexes, in leukemia maintenance." *Blood*, 123:1720-1728, 2014.

→ **Axis 3: Molecular diagnostics and targeted therapies**

The researchers in this area possess a broad range of expertise, from bioinformatics to medical chemistry by way of pharmacology, molecular histopathology, tumour immunology and immunovirology, RNA engineering, and the study of pathogenic yeasts. Their efforts focus on the development of new diagnostic tools, targeted therapies, and innovative drugs. In supporting these approaches, IRIC is fulfilling an important feature of its mission, to have significant impact on the treatment of cancer.

RESEARCH UNITS

Cancer Immunobiology
Functional and Structural Bioinformatics
Histology and Molecular Pathology
Medicinal Chemistry
Molecular Immunovirology
Molecular Pharmacology
RNA Engineering
Yeast Molecular Biology

PRINCIPAL INVESTIGATORS

Étienne Gagnon
Sébastien Lemieux
Louis Gaboury
Anne Marinier
Daniel Lamarre
Michel Bouvier
François Major
Martine Raymond

IN 2013-2014



8

research
units



25

students



7

postdoctoral
fellows



11

publications



\$11,295,260

research
funding

ASSOCIATE INVESTIGATORS

Jacques Archambault
Institut de recherches cliniques de Montréal

Olivier Lichtarge
Baylor College of Medicine, Houston, Texas

→ Highlight

The Quebec government awards \$13.9 million for the development of new drugs

Left to right: Dr. Steven Klein, Vice-president, Business Development at IRICoR; Dr. Edward Ruediger, Research Associate and Project Leader of the Medicinal Chemistry Core Facility at IRIC; Dr. Nadine Beauger, Vice-president, Scientific Liaison at IRICoR; Dr. Michel Bouvier, President and CEO at IRICoR and Principal Investigator at IRIC; Dr. Anne Marinier, Director of Medicinal Chemistry at IRIC and Principal Investigator; Dr. Sylvain Meloche, Principal Investigator at IRIC; Dr. Marc Therrien, Scientific Director and Principal Investigator at IRIC



IRIC received an award of \$13.9 million from the Fonds de partenariat pour un Québec innovant et en santé (FPQIS) to develop new drugs for cancer and other medical conditions, in collaboration with biopharmaceutical companies Bristol-Myers Squibb and Merck. The award was announced by the Minister of Finance and the Economy at the “International Symposium on Genomics and Personalized Prevention Health,” held on February 14, 2014. In accordance with FPQIS criteria, which are targeted towards collaborative initiatives in personalized healthcare and drug discovery with industry, IRIC will undertake over the next four years a series of projects aimed at maximizing economic benefits for Québec and for the Institute. ●

→ Highlight

Clinical trials initiated for a new molecule jointly identified by IRIC and Bristol-Myers Squibb

In February 2014, IRIC and the UdeM announced the start of clinical trials of a new drug molecule acting on a novel therapeutic target, thanks to funding from Bristol-Myers Squibb and with the support of the UdeM and IRICoR. This new molecule, targeting a receptor in the G protein-coupled receptor family, was identified by medicinal chemists and biologists on the team

of Dr. Anne Marinier and Dr. Michel Bouvier, as well as other researchers at IRIC and Bristol-Myers Squibb. The start of these clinical trials marks an important step in this project, in addition to bringing with it a milestone payment from Bristol-Myers Squibb that will be invested in new IRIC research programs. ●

→ Showcased discovery

Better understanding the activation of cellular receptors for the development of drugs without side effects

→ Showcased discovery

Important breakthrough in the understanding of the mode of action of certain anticancer agents

A research team from IRIC, led by Dr. Marc Therrien and his colleagues from the Samuel Lunenfeld Research Institute at Mount Sinai Hospital in Toronto, elucidated the molecular mechanism limiting the action of inhibitors of an enzyme called RAF involved in many cancers. The RAF inhibitors, developed by drug companies, met with certain clinical success, but these inhibitors tend generally to stimulate the enzymatic activity of RAF in cancer cells instead of reducing it. The researchers therefore developed biosensors that would directly measure the activation of RAF in living cells. They found that RAF inhibitors block the protein in a “closed” conformation

that looks just like an active form. They also discovered that this conformation induces the formation of a stable complex with another RAF protein not bound to the inhibitor, forcing it in turn to adopt an active conformation. Understanding this mechanism is a first step in the development of new anticancer drugs. Medicinal chemists may now go back to the drawing board to design new inhibitors capable of overcoming this complication. ●

Study cited: Lavoie H, Thevakumaran N, Gavory G, Li J.J, Padeganeh A, Guiral S, Duchaine J, Mao D.Y, Bouvier M, Sicheri F, Therrien M “Inhibitors that stabilize a closed RAF kinase domain conformation induce dimerization.” *Nature Chemical Biology*, 9:428-436, 2013.

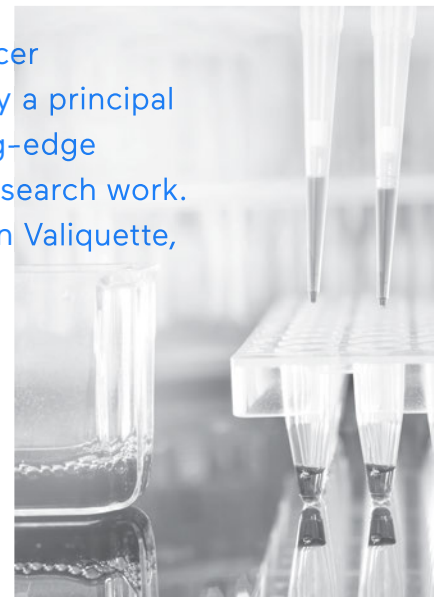
The G protein-coupled receptors (GPCR) transmit the signals coming from outside the cell to different intercellular effectors thus enabling the generation of an appropriate response. They are involved in a great number of illnesses, and constitute the biggest class of molecule targeted by the pharmaceutical industry. However, since a given receptor may activate more than one signalling pathway in the cell, drugs targeting the receptor often have serious side effects by modulating all these pathways instead of affecting only those responsible for the disease. In studying the receptor CXCR4, whose role in the development of many cancers and in the formation of metastases is well known, Dr. Bouvier’s team discovered, in collaboration with researchers from Anchor Therapeutics, that a new class of therapeutic agents, called pepducins, could demonstrate functional selectivity by modulating in a specific way only one of the three pathways downstream of the receptor CXCR4. Pepducins are therefore powerful tools for the study of signalling via the GPCR and could have an enormous impact on the development of drugs with fewer side effects. ●

Study cited: Quoyer J, Janz J.M, Luo J, Ren Y, Armando S, Lukashova V, Benovic J.L, Carlson K.E, Hunt S.W, Bouvier M “Pepducin targeting the C-X-C chemokine receptor type 4 acts as a biased agonist favoring activation of the inhibitory G protein.” *Proceedings of the National Academy of Sciences of the United States of America*, 110: E5088-5097, 2013.

Cutting-Edge Scientific Facilities

The highly qualified professionals of IRIC's 13 core facilities have access to an equipment park at the leading edge of technology, allowing them to offer high-level specialized services to researchers at the Institute, the Université de Montréal, and elsewhere in academia and in industry. These core facilities constitute one of the few integrated drug discovery chains in a university setting in Canada.

At the heart of the basic integrative research in immunology and cancer carried out at IRIC, each facility has an advisory committee chaired by a principal investigator. Core facilities managers oversee the operation of cutting-edge equipment and offer an advisory service for the implementation of research work. The activities of the facilities as a whole are coordinated by Dr. Manon Valiquette, head of scientific platforms.





→ Highlights:

The team of Dr. Michael Tyers began to make use of an institutional grant of more than \$10 million awarded by the Canada Foundation for Innovation and the Québec Ministry of Economics, Innovation and Exports. This assistance made it possible to acquire a number of high-technology instruments now integrated into IRIC's core facilities and to maintain expertise in breakthrough-oriented research. Particularly worthy of mention are an IntelliCyt iQue® high-throughput flow-cytometry screener and a Malvern isothermal titration calorimeter used for quantifying the thermodynamic parameters of molecular complexes. This state-of-the-art equipment is made available to the scientific community both internally and externally.

In addition, for the current year, revenues have grown significantly by \$1.1 million due to an increase in genomics and personalized medicine projects by the teams of Drs. Claude Perreault and Guy Sauvageau, funded by Genome Canada and a grant from the Fonds de partenariat pour un Québec innovant et en santé to the teams of Drs. Michel Bouvier, Anne Marinier, Sylvain Meloche, and Marc Therrien. Dr. Louis Gaboury, principal investigator with the research unit in Histology and Molecular Pathology,

also received international funding, in this case from the Laboratoire d'hématocancérologie expérimentale and the Centre de protéomique clinique public de la santé, both located in Luxembourg.

It should be noted that, from January 28 to 31, 2014, an assessment team from the Canadian Council on Animal Care (CCAC) conducted an evaluation of all the animal facilities at the Université de Montréal's, which include the Animalerie des pavillons Jean et Marcelle Coutu (AJMC).

We are extremely proud that no observation of non-compliance was noted for the AJMC, which moreover received commendations, in large part thanks to the animal facility team and the teams of the Institute's laboratories. The certification in question is a prerequisite for the use of funds for research involving animals. ●



→ Overview of the Scientific Core Facilities

Animalerie des pavillons Marcelle et Jean Coutu

IRIC houses one of Canada's largest animal facilities, which include a specific pathogen-free area, a conventional area, and a separate quarantine area. In addition to managing the facilities and providing technical and veterinary support for animal research and health, IRIC's animal facility offers pharmacokinetics, bioanalysis, and toxicology services in collaboration with the biopharmacy core facility of the Faculty of Pharmacy at the Université de Montréal.

Bio-imaging

Cutting-edge optical microscopy equipment and image analysis stations.

Bioinformatics

Innovative tools for analyzing, integrating, and consulting biological databases with the use of high-performance computing clusters.

Biophysics

State-of-the-art solutions in NMR spectroscopy for experiments on the structure of proteins, protein-ligand interactions, and characterization of small molecules.

Medicinal Chemistry

Synthesis of small, original, and specific molecules, leading to the discovery of chemical entities that can serve as pharmaceutical tools and that have therapeutic potential.

High-throughput Screening

Portfolio of over 110,000 molecules, as well as integrated robotic systems, used in a wide variety of biochemical and cell-based studies in various biological systems and models.

Cytogenetics

Chromosomal analysis of human and mouse cells through traditional cytogenetic techniques and spectral karyotyping.

Flow Cytometry

Use of FACS equipment to analyze various physical property of cells in, among other things, immunophenotyping, and the study of both the cell cycle and apoptosis.

Genomics

Consulting services and access to cutting-edge technologies in next-generation sequencing, capillary sequencing, and real-time PCR.

Histology

Histology, immunohistochemistry, image acquisition, laser microbeam microdissection, and generation of tissue microarrays.

Recombinant Proteins and Antibodies

Mid- and large-scale protein expression and purification from *E. coli* and insect cells.

Proteomics

Identification and quantification of proteins and their post-translational modifications based on cell extracts, tissue, or biological fluid.

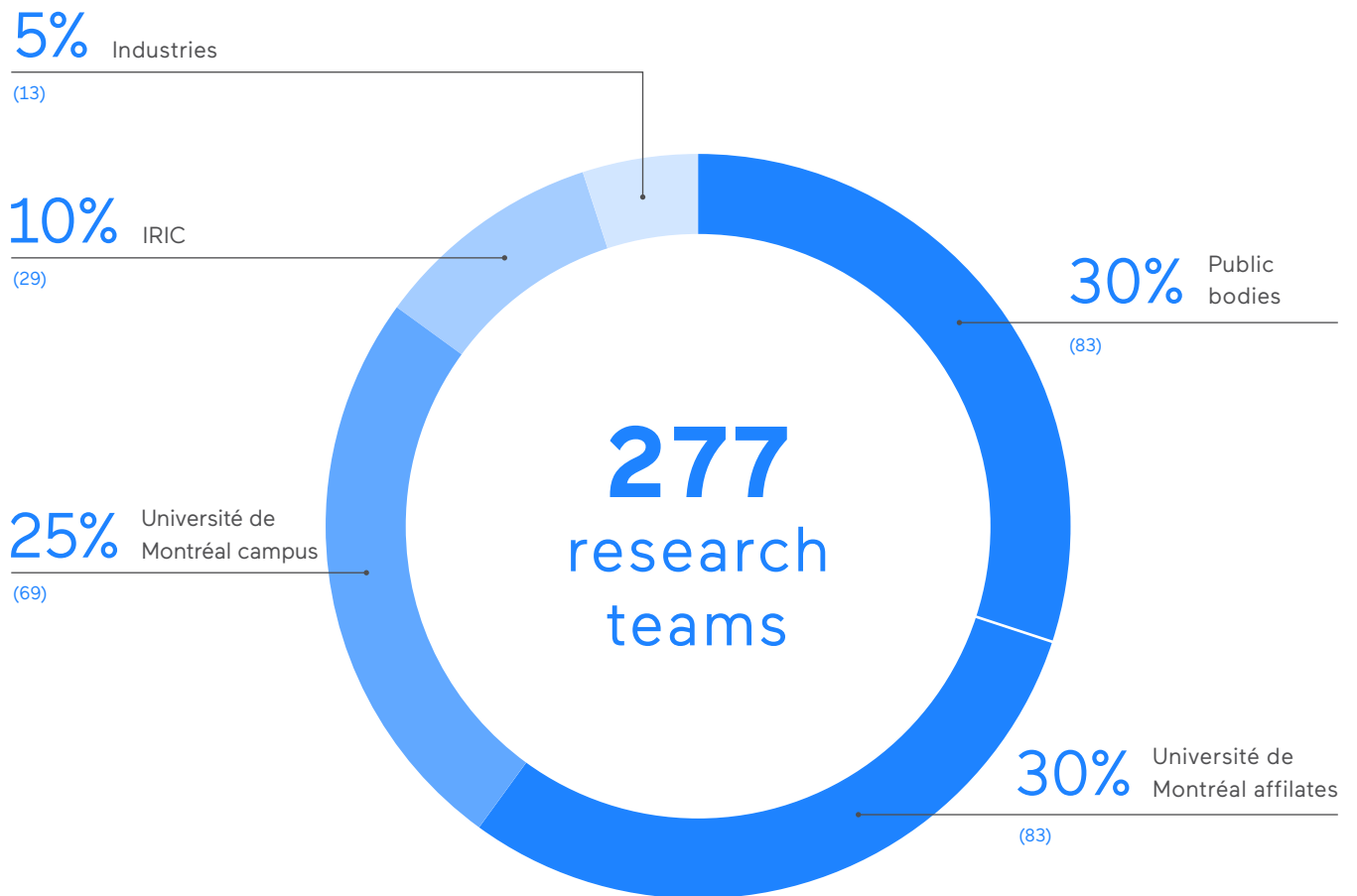
Transgenesis

DNA microinjection, directed gene targeting, ES cell injection into blastocysts, embryo and sperm cryopreservation, mouse line rederivation, and in vitro fertilization.



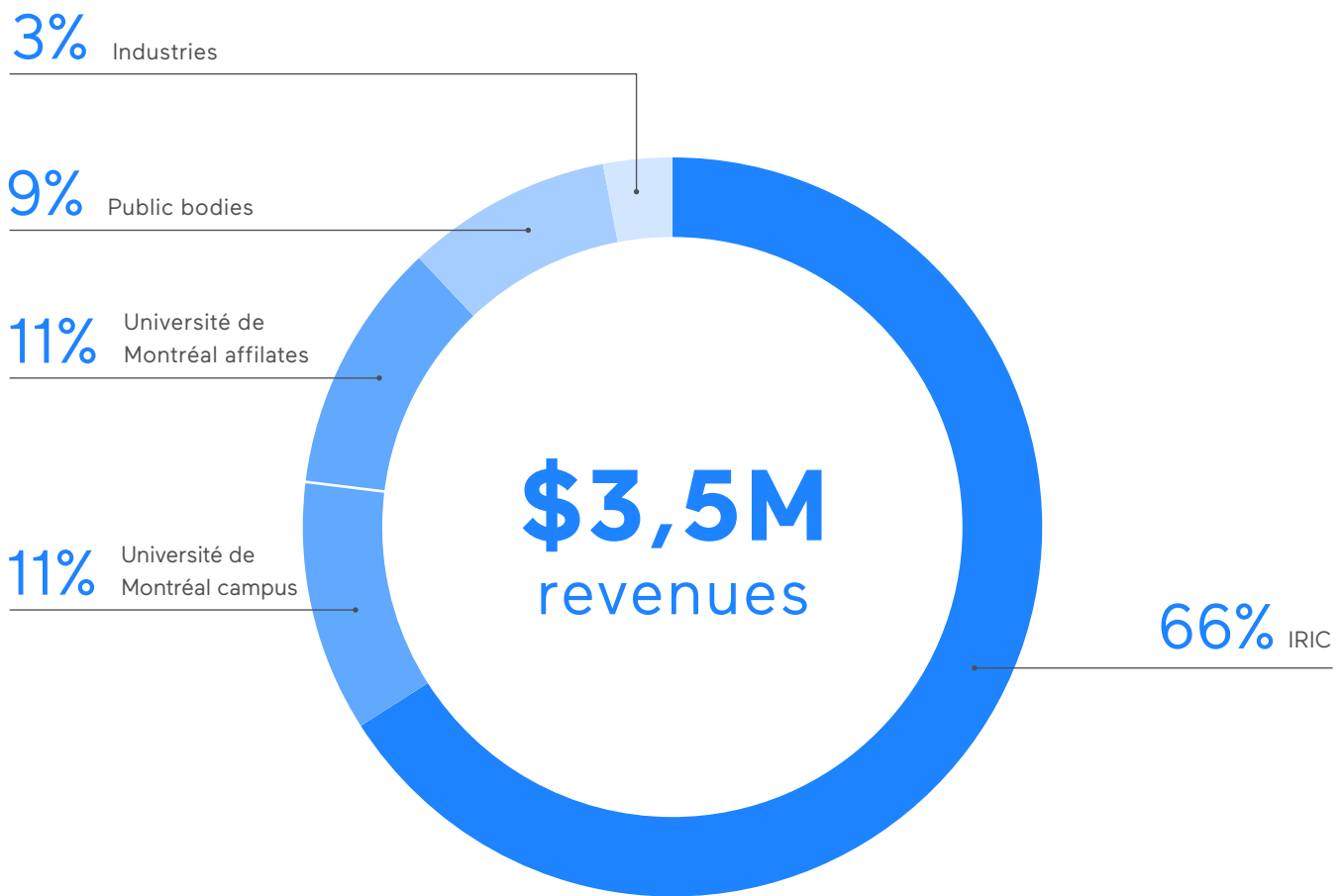
Statistical data →

→ **Statistical data**
Source of users of IRIC's
scientific core facilities
in 2013-2014



→ Statistical data

Source of revenues of IRIC's scientific core facilities in 2013-2014



IRICoR: Integrated Development and Commercialization Unit

The Institute for Research in Immunology and Cancer – Commercialization of Research (IRICoR) is a not-for-profit organization focusing on the discovery, development, and commercialization of drugs.

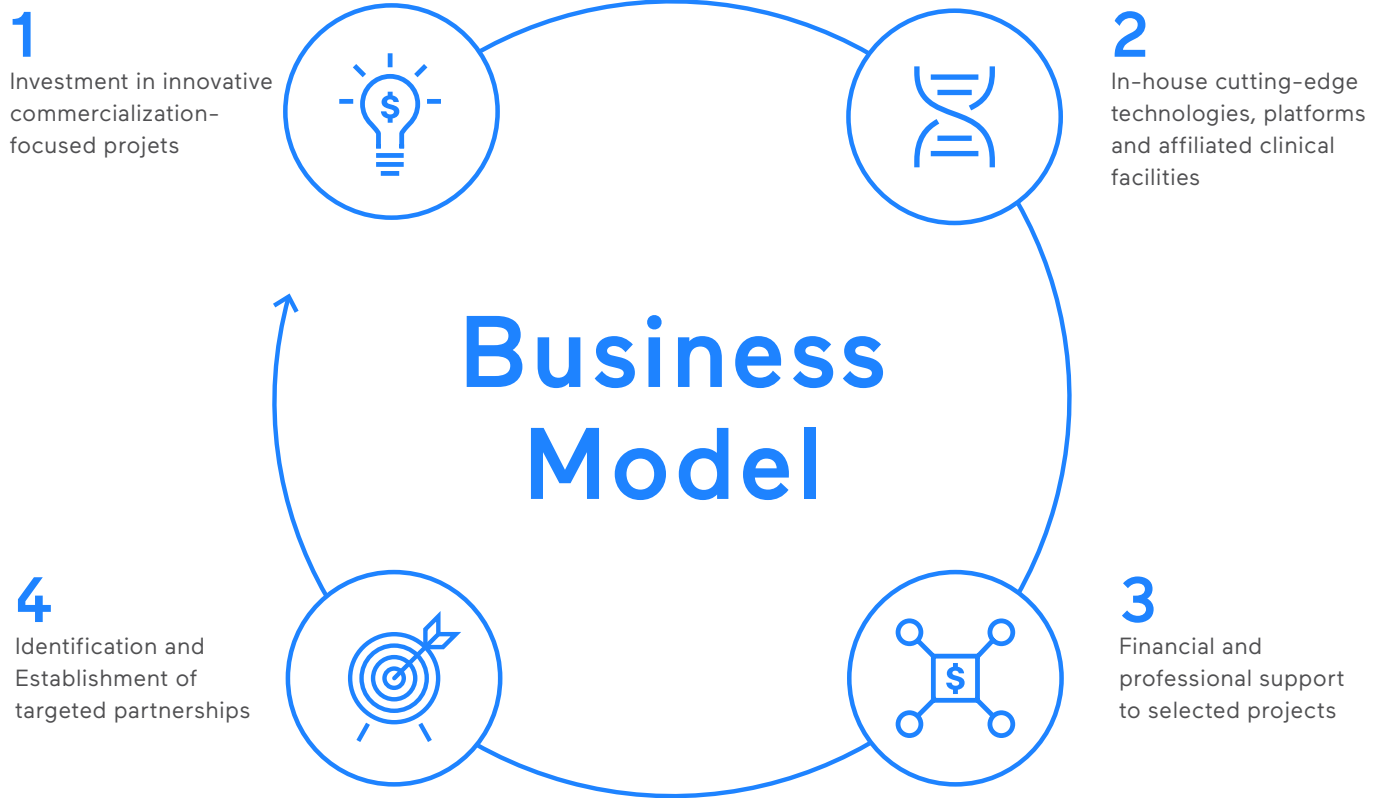
Created in 2008, IRICoR's objective is to rapidly translate cutting-edge research projects into innovative and highly valuable therapies. The mission of this unit is to promote the development of partnerships with the private sector and the creation of new firms to accelerate the transfer of university research innovation to patients.

Under the direction of Dr. Michel Bouvier, IRICoR relies on a team with solid experience in drug discovery, business development, risk capital,

protection of intellectual property, and project management. Integrated into IRIC, the IRICoR professionals have an in-depth knowledge of the Institute's technological capacities and those of its partners, while keeping abreast of the Institute's most recent discoveries. Note that IRIC houses one of Canada's largest academic units in medicinal chemistry, the majority of whose chemists are from the pharmaceutical industry. These experienced chemists and biologists lend the Institute a unique added value.

IRICoR is based on a versatile business model, tailored to the needs of both the academic and private sectors. Its goal is to bridge the traditionally observed gap between basic research and biopharmaceutical industrial research. The IRICoR model ensures the mitigation of risks connected with the discovery and commercialization of new therapeutic approaches. It is built around the four main pillars presented in the diagram opposite.

→ IRICoR



Project portfolio

IRICoR selects its projects on the basis of their scientific excellence and their commercial potential. The objective is to support these projects strategically and financially with a view to moving them rapidly towards commercialization.

At the conclusion of this year, the IRICoR portfolio consisted of 22 projects covering the entirety of the drug discovery chain, reaching from the identification of therapeutic targets right through to clinical trials. Support of projects ranges from funding, to the negotiation of partnerships and licenses, by way of special access to IRIC's scientific core facilities, to project management, to the protection of intellectual property, and to the creation of companies. IRICoR-supported projects this year led to the filing of 19 patent applications, representing 15 patent families.

Projects supported by IRICoR have led to the development of three drug candidates that are currently at the clinical evaluation stage, while a fourth will enter clinical trials during the coming year. ●

Partnerships

To help in its mission of drug discovery, development, and commercialization, IRICoR will benefit from a grant of \$13.9 million from the Fonds de partenariat pour un Québec innovant et en santé. This public-private partnership fund will allow for the development of major innovative projects with biopharmaceutical companies Bristol-Myers Squibb and Merck. IRICoR's expertise also made

possible the implementation of joint projects with the Centre for Drug Research and Development in Vancouver and MaRS Innovation in Toronto.

In addition, IRICoR activities gave rise to a drug development program in rare diseases, which led to an initial payment by Pfizer for a license and an investment in research and development at IRIC.

Collaboration with the Montreal biopharmaceutical company Pharmascience and the Leukemia and Lymphoma Society in the United States is continuing with a Phase II clinical trial in acute myeloid leukemia. A partnership agreement with the risk-capital firm Amorchem was also concluded for the funding of two projects as part of Genome Canada's and Génome Québec's Large Scale Applied Research Project Competition in Genomics and Personalized Health. These projects, which are aimed at developing new diagnostic tests and new therapies based on genomics results, are benefiting from several million dollars' worth of funding, stretching over four years.

Furthermore, IRICoR and NEOMED Institute have signed a strategic collaboration agreement between the academic community and the biopharmaceutical industry to accelerate the development and transfer of promising drugs. The organizations involved will share their complementary capacities and facilities.

IRICoR has also been a key player in the creation of Domain Therapeutics, North America (Domain Therapeutics NA), a spinoff company of Domain Therapeutics, France. Located in

Montreal on the premises of NEOMED Institute, Domain Therapeutics NA is a biopharmaceutical company specializing in the research and development of new drug candidates targeting G protein-coupled receptors (GPCRs). The firm runs BioSensAll™, a technology initially supported by IRICoR and the Quebec Consortium for Drug Discovery's Focus program. This technology was developed by researchers at IRIC, the CHU Ste-Justine Research Centre affiliated with the Université de Montréal, McGill University, and the Université de Sherbrooke.

In 2013, IRICoR also announced that the Maisonneuve-Rosemont Hospital would be an academic member of the Institute, giving concrete form to the alliance between the two bodies. Through this agreement, the MRH becomes the second academic member of IRICoR after the Université de Montréal. ●

Outreach

The IRICoR team was invited to present its business model and project portfolio at 12 national and international gatherings and to help organize two meetings on drug discovery, one at the national level and the other at the international level. In addition, the results of IRICoR projects were the subject of 29 presentations at national and international forums in the course of the year. ●

→ Statistical data
From 2008 to April 30, 2014

\$15,3M	in direct R & D funding from private partners
\$32M	in direct R & D funding from public partners
\$1,1M	in license and milestone revenues
\$1 M	in research contract revenues
125	patent applications
125	direct full-time jobs in science and in management created and maintained
84	projects (funding / management / intellectual property / granting)
29	patent families developed at IRIC and IRICoR
17	research centres with access to the services of IRIC and IRICoR
15	companies with access to the services of IRIC and IRICoR
15	students and interns in training (master's / doctoral / postdoctoral)
9	partnership projects and licenses with industry
7	partnerships (Bristol-Myers Squibb, Domain Therapeutics NA, Merck, Pfizer, Pharmascience, Amorchem)
2	spinoff companies
2	patents granted
1	spinoff company in the creation process

Next Generation of Scientists: Students are the Future

Whether they join IRIC with a view to a master's degree, Ph.D., postdoctoral fellowship, or research internship, the rising generation of scientists benefit from an exceptional training environment and unparalleled supervision that fosters learning, scientific creativity, and the raising of personal bars. In addition to being able to choose from numerous research projects related to various aspects of cancer, students have access to all the Institute's ultramodern research facilities and can rely on the support of the members of the Office of Academic Affairs, headed by Dr. Martine Raymond, Principal Investigator and in charge of systems-biology training.

→ A wide variety of study programs

The Université de Montréal offers assorted study programs covering all disciplines in the areas of health sciences and biomedical research. Thanks to the wide-ranging expertise of IRIC'S principal investigators and their affiliation with various departments of the Université de Montréal, students at the Institute can take advantage of the wide variety of programs offered.

In 2013–2014, 62 percent of master's and Ph.D. students were registered in the systems biology training program developed by IRIC researchers. Integrated with the molecular

biology programs of the Université de Montréal's Faculty of Medicine, this training offers an accelerated one-year master's degree and a doctorate in four years. With a unique and innovative teaching approach based on a close integration of the theoretical and the practical, the systems biology training program incorporates a rich series of theoretical and laboratory courses dealing with the most recent advances in cellular and molecular biology, immunology, biochemistry, genetics, bioinformatics, biophysics, and drug development, as well as the more

clinical aspects of cancer research. The program also introduces students to the most recent experimental approaches and leading-edge technologies in the area of biomedical research.

The other study programs represented at IRIC are the master's and doctoral programs in molecular biology, biochemistry, bioinformatics, computer science, chemistry, pharmacology, immunology and microbiology, and pathology and cell biology. ●

→ Summer school in systems biology

For the current year, 27 students pursuing their graduate studies at IRIC or at other research centres in the greater Montreal area attended the various courses offered at the summer school to deepen their knowledge and improve their technical skills in the field of cancer research. Under the direction of Sylvie Mader, principal investigator at IRIC, the school offers students representing the next generation of researchers multidisciplinary training that is geared toward understanding the mechanisms involved in the development of cancer and the resulting immune reactions, and developing therapeutic strategies.

Thanks to the expertise and the support of its team made up of some 30 professor-investigators from IRIC, the UdeM, the CHUM Research Centre,

and the Maisonneuve–Rosemont Hospital Research Centre, the Systems Biology Summer School can offer theoretical courses covering a variety of subjects associated with cutting-edge cancer research. Courses deal with such themes as the cell cycle, gene expression, signalling pathways, the molecular genetics of eukaryotes, the use of model organisms, the mechanisms of immune defense, drug development, bioinformatics, the therapeutic use of stem cells, and immunotherapy.

Courses offered as part of the summer school since 2006 are part of the UdeM's master's and doctorate program in molecular biology, systems biology option. The courses are also accessible to all UdeM graduate students who meet the prerequisites. ●



Left to right: José Kitenge Mateso, Haytham Mehzen, Tatiana Traboulsi, Arturo Papaluca Zalazar, Salwa Haidar, Maude Dumont-Lagacé, Kevin Dumarterey, Amell El Korbi, Charles St-Pierre, Jérôme Roger, Audrey Connolly, Bridget Gagné, Guillaume Laflamme, Stéphanie Lavallée, Catherine Descôteaux, Antoine Méant, Sahana Shankar, Roméo Blanc, Forum Bhanshali, Yacine Niang, Magalie Tardif, Saeideh Torabi Dalivandan, Arthur Jacob, Dhanaraman Seetharaman Thillai-Villalan, Qin Jiang. Absent from the photo: François Guité-Vinet, Nassr Nama, Khedidja Senouci

→ IRIC Next Generation Awards program

In the summer of 2013, IRIC welcomed the winners of the IRIC Next Generation Awards program for the fourth consecutive year. In recognition of their deep interest in cancer research and their excellent academic records, 18 of the brightest Canadian undergraduate students were offered a research grant of \$4,250, which comes with a 12-week summer internship at IRIC. With 111 applications received from some 20 Canadian universities, and a record number of grants awarded, the 2013 edition of the program once again confirms the interest that IRIC sparks in the younger generation of researchers right across the country.

Thanks to its IRIC Next Generation Awards program, IRIC offers students a unique opportunity to experience complete immersion in the research field in an academic setting. Besides being entrusted with projects that allow them to be actively involved in the Institute's research activities, the grant-funded interns are invited to take part in all the activities organized at IRIC, which include attending lab meetings, summer school courses in systems biology, the numerous scientific lectures, and the social activities organized by the IRIC student association. The grants in the IRIC Next Generation Awards program are offered thanks to the generous contribution of donors to IRIC's Perseverance Challenge Fund and of the Fondation Famille Gosselin. ●

Institute for Research in Immunology and Cancer Student Association

The Institute for Research in Immunology and Cancer Student Association (AEIRIC) is also highly active in the academic life of the Institute. Among other things, this year it organized the first edition of a professional development and career opportunity workshop on the theme "Project Management for Scientists." Intended for postdoctoral fellows and employees of the Université de Montréal and other universities, the activity was designed to provide students and staff with the tools they need to face the many challenges that await them in research, either in an academic setting or privately. The president of AEIRIC in 2013 was Céline Laumont. ●

Left to right: Margarita MacAldaz, Aaron Shifman, Shivani Kamdar, Julie-Nathalie Vallée-Trudeau, Marc-Olivier Boily, Vritika Batura, Abera Surendran, Florence Mailhot-Léonard, Aditya Varambally, Dhiya Hassan, Brendan Camellato, Nicoleta Macovoz, Christine Cameron, Mikael Barj, Kaitlyn Latawicz, Philippe Malric, Émilie Bélanger, Catherine Lapointe.



Increase in the number of students

In 2013-2014, 104 recruits joined IRIC's research teams to receive high-level training in the field of cancer research, an increase of 14 percent compared to the previous year. The recruits came from 41 academic institutions located in 13 different countries from the four corners of the world. Figures like these are powerful evidence of the growing visibility and renown of IRIC at the provincial, national, and international levels.

For the current year, 260 young researchers undertook research activities at IRIC as part of their training, including 33 master's students, 84 doctoral students, 69 postdoctoral fellows, and 74 research fellows at all university levels. This amounts to an increase of 3 percent compared to 2012-2013.

Finally, 110 young researchers completed their training at IRIC, an increase of 37.5% compared to last year. ●



104 recruits in 2014

14%

increase
in the number
of recruits



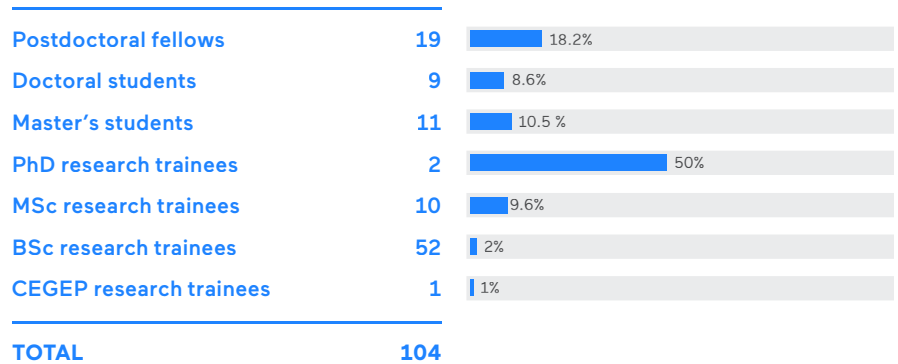
110 students who graduated in 2014

37.5%

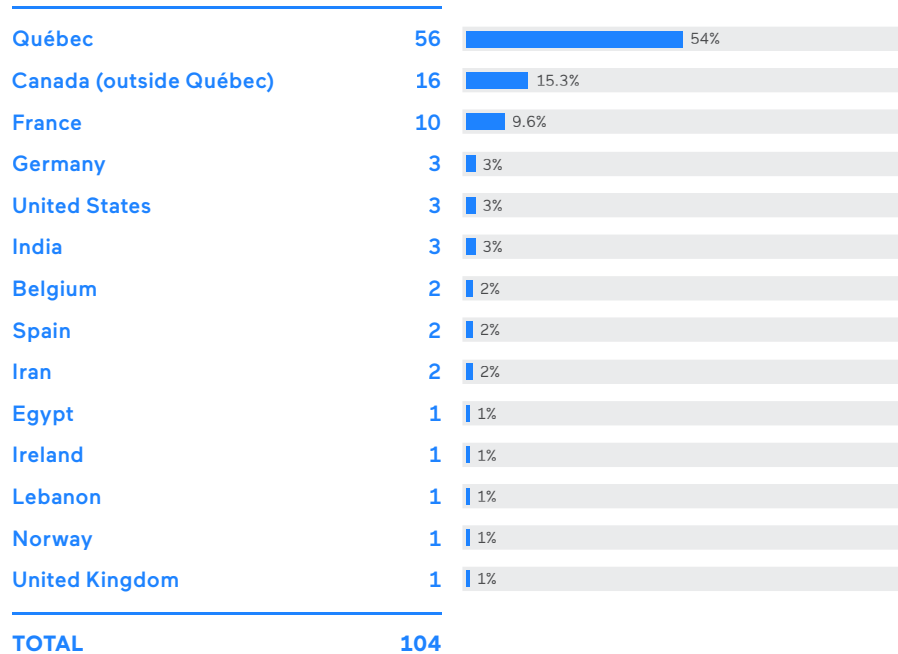
increase
in the number
of students who
graduated

→ Statistical data

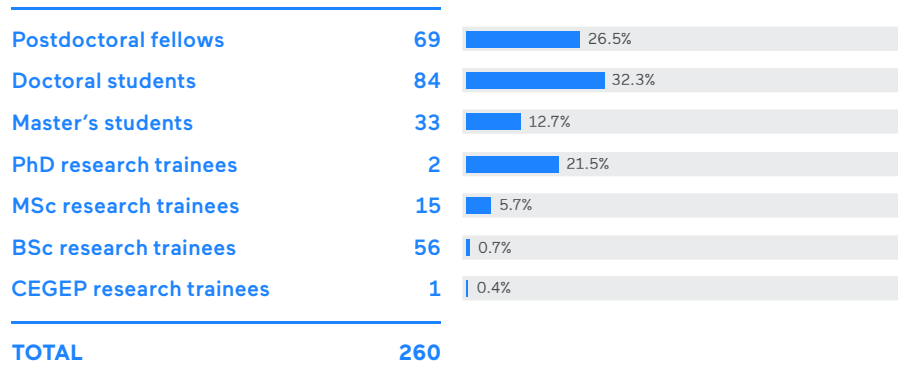
Distribution of new IRIC recruits by degree in 2013–2014



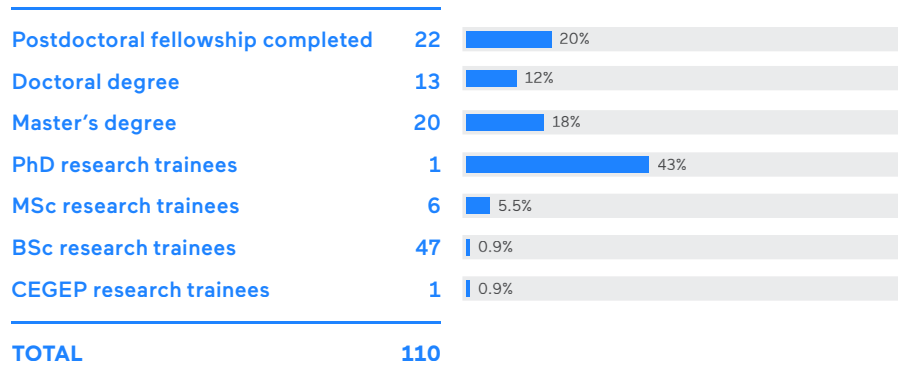
Country of origin of new IRIC recruits in 2013–2014



Distribution of active students at IRIC by degree in 2013-2014



Distribution of IRIC graduates by degree in 2013-2014



→ Grants and nominative awards from granting agencies and private foundations in 2013-2014

Québec

Cole Foundation

Doctoral

Camille Simon
Hiba Zahreddine

Postdoctoral

Magalie Celton
Bastien Gerby
Jean-Philippe Guégan
Arhamatoulaye Maiga
Diogo Troggian Veiga

Fonds de recherche du Québec – Santé

Doctoral

Khaled Ben El Khadi
Vincent Boudreau
Marie Cargnello
Anne-Marie Ladouceur
Carl Laflamme
Marc-André Roy
Tatiana Traboulsi
Nicolas Tremblay
Valérie Villeneuve
Peng Wang

Postdoctoral

Jeremy Brégeon
Jacob Galan
Bastien Gerby
Jean-Philippe Guégan
Caroline Lemieux
Damien Ramel

Fonds de recherche du Québec – Santé/Étudiants-chercheurs étoiles

Postdoctoral

Hugo Lavoie

Fonds de recherche du Québec – Nature et technologies

Doctoral

Charles St-Pierre

Canada

Association francophone pour le savoir

Doctoral

Danielle de Verteuil
1^{er} prix de la finale canadienne du concours
« Votre soutenance en 180 secondes »

Natural Sciences and Engineering Research Council of Canada

Postdoctoral

Francis McManus

Natural Sciences and Engineering Research Council of Canada – CREATE Program

Doctoral

Julie Pelloux

Canadian Institutes of Health Research

Doctoral

Fanny Bergeron-Labrecque
Maude Dumont-Lagacé
Alexia Rabilotta-Faure
Alexandre Rouette
Krystel Vincent

Postdoctoral

Jacob Galan
Hugo Lavoie
Bernhard Lehnertz
Bianca Plouffe
Daniel St-Cyr
Nathanael Weill
Jonathan Yeh

Étranger

China Scholarship Council (China)

Doctoral

Xiaocui Zhang

National Council for Scientific Research (Lebanon)

Doctoral

Mohamed El Ezzy
Hiba Zahreddine

Egyptian Supreme Council (Égypte)

Doctoral

Einas Yousef

Fondation Bettencourt Schueller (France)

Postdoctoral

David Kachaner

Fondation recherche médicale (France)

Postdoctoral

Jean-Philippe Guégan

Leukemia and Lymphoma Society (United States)

Postdoctoral

Meztli Arguello

→ Grants and nominative awards

Perseverance Awards

Master's

Marine Blackman
Roméo Blanc
Audrey Connolly
Kevin Dumarterey
Arthur Jacob
Guillaume Laflamme
Stéphanie Lavallée
Francis Lussier
Antoine Méant
Haytham Mehzen
Laura Rivest-Khan
Magalie Tardif
Saeideh Torabi Dalivandan

Molecular biology program awards

Master's

Marine Blackman
Audrey Connolly
Guillaume Laflamme
Laura Rivest-Khan
Saeideh Torabi Dalivandan

Doctoral

Yahya Benslimane
Karine Bourdages
Mohamed El Ezzy
Gwenaëlle Gavory
Salwa Haidar
Houssam Ismail
Justine Paradis
Roshan Rajan
Éric Vaillancourt Jean

IRIC Next Generation Awards

Undergraduate Intern Students

Mikael Barj
Vritika Batura
Émilie Bélanger
Marc-Olivier Boily
Brendan Camellato
Christine Cameron
Dhiya Hassan
Shivani Kamdar
Catherine Lapointe
Kaitlyn Latawiec
Margarita MacAldaz
Nicoleta Macovoz
Florence Mailhot-Léonard
Philippe Malric
Aaron Shifman
Abera Surendran
Julie-Nathalie Vallée-Trudeau
Aditya Varambally

Molecular Biology Programs Writing Award

Doctoral

Abbas Padeganeh

Faculty of Graduate and Postdoctoral Studies – Dean's Honour List

Doctoral

Martin Audet
Danielle De Verteuil
Diana Paola Granados

Faculty of Graduate and Postdoctoral Studies – Award for best thesis in the health sciences sector

Doctoral

Éric Deneault

19th Molecular Biology Programs Scientific Day – Award for poster presentation

Doctoral

Dariel Ashton-Beaucage
Diana Paola Granados
Fadi Hariri
Houssam Ismail
Anne-Marie Ladouceur
Krystel Vincent

19th Molecular Biology Programs Scientific Day – Award for oral presentation

Doctoral

Marie Cargnello

30th Scientific Day of the Department of Pathology and Cell Biology – Award for poster presentation

Doctoral

Gwenaëlle Gavory
Yoghita Thattikota

Postdoctoral

Sarah Tsao

30th Scientific Day of the Department of Pathology and Cell Biology – Award for oral presentation

Doctoral

Xiaocui Zhang

Philanthropy: Direct Impact of Every Donation

Philanthropy has an enormous impact on IRIC's ability to conduct its research projects and to accelerate the discovery of more effective cancer drugs and treatments. It is a crucial element in creating synergy among government organizations, industry, and private donations. It is also a concrete gesture in contributing to help patients with the disease and ensure the sustainability of the organization.

In this light, IRIC's mandate is to create and implement fundraising activities and to solicit funds to support the students, researchers, and innovative research projects on which its reputation for excellence is based. Dr. Pierre Thibault occupies the position of Deputy Director, Philanthropy. The Institute's Development Director is Robert Turgeon. They are supported in these duties by Anne Lebel, Development Officer with the Université de Montréal's Office of Development and Alumni Affairs.

→ Highlight

B2Découverte

Solid support for our high-potential discovery projects

IRIC established B2Discovery in 2010, a program that brings together donors from the business community. The program also funds high-potential ground-breaking projects for cancer drug and therapy discovery.

For help in selecting these projects, IRIC relies on a Strategic Priorities Committee made up of five of the Institute's researchers. Its mandate is to determine projects that, based on their scientific value and originality, are promising but that are not normally eligible for the programs of traditional granting agencies.

For the current year, \$140,000 in donations have been received from our donors. The following initiatives have benefited from funding in this way: a project on the regulation of the kinesin-13 protein for cancer treatment; a project on the genetic modification of immune-system cells for the treatment of leukemia; a project on the inhibition of the activity of the protein Plk1, required for the division of cancer cells; and a project on the modulation of immune-system cells to eliminate cancer cells.

In the last four years, nearly \$400,000 has been allotted to various projects. ●

→ Highlight

Blais Family Fund Golf Tournament



Left to right: Dr. Pierre Thibault, Deputy Director, Philanthropy at IRIC; Dr. Guy Sauvageau, Chief Executive Officer of IRIC; Pierre Blais; Robert Lemieux, President of Joroma Construction and Chairman of the Golf Tournament Organizing Committee.

The fourth edition of the Outaouais Golf Tournament / Blais Family Fund raised a record amount of more than \$40,600 for the benefit of IRIC.

Over 200 participants contributed to this resounding success. The fundraiser, which is an initiative of Pierre Blais and his family, will enable IRIC to underwrite innovative research projects and the development of new cancer treatments.

Mr. Blais is living proof that investing in medical research contributes to saving lives. Diagnosed a few years

ago with chronic leukemia, he survived thanks to a then experimental treatment suggested by Dr. Guy Sauvageau, IRIC's Chief Executive Officer.

Since its creation in 2010, the tournament has contributed more than \$120,000 to IRIC. All monies have gone to the Blais Family Fund to subsidize innovative high-impact projects geared toward developing new cancer treatments at IRIC. ●

→ Highlight

Perseverance Challenge – 100 study grants and \$1 million in donations

Led by Dr. Robert Patenaude, IRIC spokesman and captain of IRIC's Perseverance Challenge, close to 200 cyclists and runners took part in the fourth edition of this annual fundraiser as part of the Défis du Parc national de la Mauricie (Mauricie National Park Challenges). A total of \$320,000 was raised on the occasion. Part of that amount went to awarding 13 Perseverance Grants to master's students in the molecular biology program (systems biology option) and offering 18 IRIC Next Generation Awards to undergraduate students wishing to participate in summer internships.

For a second consecutive year, 112 participants from the Équipe féminine du Parc national de la Mauricie took part in the event at the initiative of Marie-Josée Gervais, founder of Défis du Parc national de la Mauricie, and Dr. Chantal Guimont, emergency physician and columnist at La Presse.

Participants not only met the challenge of getting in shape but also generated more than \$67,000 for cancer research at IRIC. At a cocktail reception for participants, donors, and grant recipients, Dr. Patenaude saluted the involvement of the Équipe féminine

du Parc de la Mauricie and the generous contribution of all those participating in research to fight cancer.

IRIC wishes to thank the volunteers, participants, donors, and sponsors, including National Bank, Uni-Select, MBA Research, and Labatt Breweries. A heartfelt thanks also goes out to the organizers of the Défis du Parc national de la Mauricie. Last but not least, we thank the Fondation Famille Gosselin for their extraordinary support and on-going contribution.

As of April 30, 2014, the Perseverance Challenge Fund has awarded 106 grants totalling more than \$1 million. ●



Front row (from left to right): Dr. Martine Raymond, Academic Affairs Director at IRIC, Dr. Robert Patenaude, IRIC Spokesperson and Captain of the Perseverance Challenge, Dr. Chantal Guimont, Captain of the Équipe féminine du Parc de la Mauricie – Défi 105 km, Dr. Guy Sauvageau, Chief Executive Officer at IRIC, Marie-Josée Gervais, Founder of the Défis du Parc national de la Mauricie and grant recipients.

→ Campus Montréal: seeing the way forward

HEC Montréal, Polytechnique Montréal, and the Université de Montréal are jointly conducting a major fundraising campaign under the name Campus Montréal.

The goal is to support promising projects for the design and development of innovative solutions to complex issues. We also strive to create the right conditions for training and knowledge transfer. Finally, Campus Montréal seeks to connect with the community by generating partnerships that are both creative and productive. For this ambitious social project to be successful, we hope to raise \$500 million.

To reach this goal, the CM3 campaign is launching an appeal to the generosity

and sense of commitment of the major players in Québec society. Be they business personalities or philanthropists from other sectors, all are invited to participate in this collective project.

As part of Campus Montréal, the IRIC team hopes to achieve the following four major priorities by raising over \$25 million in Québec:

→ \$15 million in research funds to recruit eminent researchers and provide equipment for their laboratories;

→ \$3.5 million in student training funds to offer more competitive research grants for master's, doctoral, and postdoctoral

programs, attract the best researchers of tomorrow, and meet the growing demands of the student body;

→ \$2.5 million in strategic project and B2Discovery funds allowing for the funding of research projects that cannot be subsidized by traditional granting agencies but that show great potential for cancer drug and therapy discovery;

→ \$4 million in capital project funds to acquire and maintain cutting-edge equipment for the scientific core facilities. ●

→ 10 ways of helping beat cancer

→ Make an annual donation

→ Match your donation to your company's donation

→ Make a donation in memory or honour of a loved one

→ Create a fund, scholarship, or award that will bear the donor's name or the name of a loved one

→ Make a gift of market securities

→ Donate material or equipment

→ Plan a legacy gift

→ Donate a life insurance policy

→ Donate a charitable annuity

→ Take part in IRIC fundraising activities

Making a donation to IRIC means helping support research efforts that may have an impact on the lives of thousands of people. It is also essential for IRIC that donations have a leverage effect to ensure the sustainability of the organization.

There are several options available for donating to the Institute, and donors can choose the option that best suits them best. The team at IRIC's Philanthropic Development Service can provide information on the broad range of methods for maximizing donations while taking advantage of interesting tax benefits.

Donors can make sporadic or annual donations, take part in activities, or set up a planned gift. ●

→ List of donors

IRIC management wholeheartedly thanks all the individuals, foundations, and companies who believe in the unique and innovative model of the Institute and who contribute generously to the advancement of cancer research.

The following table lists cumulative donations of \$1,000 or more at April 30, 2014. Entries in each section are in alphabetical order.

Donations of \$5 M or more

Marcelle and Jean Coutu Foundation

Donations of \$1 M to \$4,999,999

Anonymus (2)

Donations of \$100,000 to \$999,999

Canam Group
Gosselin Family Foundation
Laporte, Roger M.
Merck Canada Inc.
Métro Inc.
National Bank of Canada
Pomerleau Inc.
Sauvageau, Monique and Guy Sr.
Wood Family Foundation

Donations of \$10,000 to \$99,999

Anonymus (2)
3249531 Canada inc.
Agilent Technologies Foundation
Bisson, André
Blais, Pierre
Bouchard, Yves
Bouvier, Michel
CAE inc.
COGIR Management Corporation
Fournier, Daniel
Goldring, C. Warren
Hoang, Trang

J.-Louis Lévesque Foundation
Jean Coutu Group (PJC) Inc.
Katelyn Bedard Bone Marrow Association
Lacroix, Chantal and Sauvageau, Guy Lamarre,
Lacroix, Robert
Lamarre, Bernard
Lavigne, Robert
MacIntosh, Alan G.
McCarthy Tétrault Foundation
Mader, Sylvie
Major, François
Manulife
Maxwell Cummings Family Foundation
Meloche, Sylvain
Panet-Raymond, Robert
Perreault, Claude
Pfizer Canada Inc.
Plessis-Bélair, Michel
Provencher, France
SNC-Lavalin Inc.
Transat A.T. Inc.
Transcontinental Inc.

Donations of \$1,000 to \$9,999

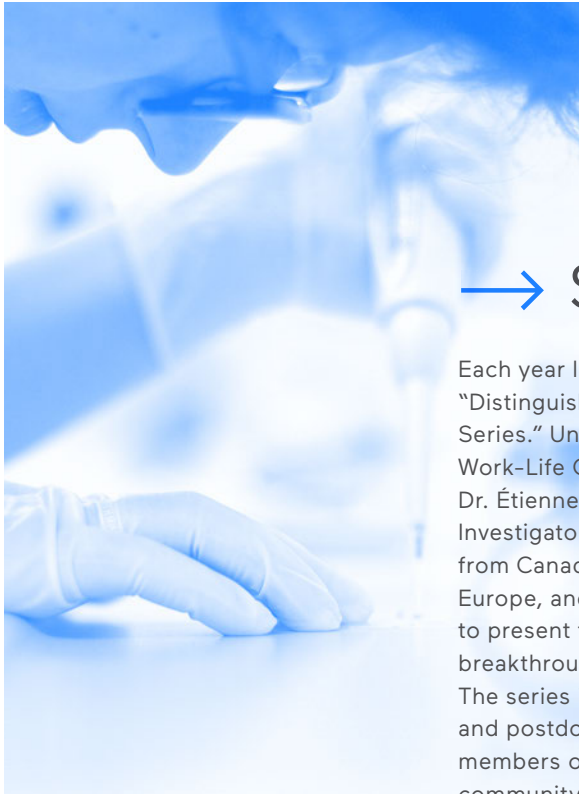
Anonymus (28)
2699222 Canada Inc.
4518080 Canada Inc.
Acciona Infrastructures Canada Inc.
AIM Holdings LP
Amaya Gaming Group
Aon Reed Stenhouse Inc.
Atelier de menuiserie Allaire & fils Inc.
Barnes & Thornburg LLP

Bell Canada
Benoit-Ianiri, Claire
Berthiaume, Guy
Bertrand, Luc
Bérubé, Dominique
Bérubé, Josée
Blais, Michel
Blanchard, Marc-André
Blondin, Bruno
Boisvert, Yves
Boivin, Pierre
Bonneil, Éric
Borden, Katherine
Boucher, Fernand
Bougie, Jacques
Bourque, Nathalie
Boyle, Pierre
Brake Parts inc.
Brock, William
Britton Electric Ltd.
Brookfield Renewable Power inc.
Brunet, Jocelyn
Buono, Elvio
Caillé, Alain
Caisse populaire Desjardins de la Basse-Lièvre
Carréno, Sébastien
Chagnon, Pierre
Chaput, Sylvianne
Chartrand, Jean
Chartrand, Pierre
Chevalier de Colomb conseil 8515
Chevrier, Robert
Chiasson, Réjean
CIMA+
Cliche, Yvan
Climatisation Bâti-Vac inc.
Colin, Patrick
Concept D.S. Itée
Côté, Pierre-Paul
Dansereau-Trahan, Stéphanie
Delisle, Jean-Sébastien
Demers, Marie-Ève
Desgens, Daniel
Dion, Réal
Ducharme, Daniel
Duchesneau, François
Dupuis, Charles
Emery, Gregory
Équipements Poirier et fils
Fabi, Jean-François
Fidelity Investments Canada ULC
Filteau, Éric
Fondation communautaire du grand Québec
Fonds de charité des employés de la CUM
Fortin, Jacques
Fox, Francis
Gaumont, Jacques
George, Valérie Anne
Gestion IPM
Girard, Robert
Gironne, Claude
Gravel, Jacques
Gravel, L.-Pierre
Gravel, Yvan M.
Gresset, Jacques
Groupe Cardinal Hardy inc.
Groupe DCB inc.
Groupe Deschênes inc.
Groupe Maurice Denis et fils inc.
Haviernick, Martine
Hébert, Josée
Héroux Devtek
Honeywell
Huberdeau, Diane
Inspec-Sol inc.
Intact Assurance
Jalbert, Pierre
Janvier, Kevin
Jet Equipment & Tools Ltd
Jodoin Lamarre Pratte et associés Architectes
Jodoin, Vivianne
Kesler, Brenda
Kwok, Benjamin
Labelle, Robert
Laberge, Jean
Lachance, Silvy
Lalande, Sylvie
Lamarre, Daniel
Lapointe, Josée
Larose, Jacques
Lavoie, Gilles
Le Groupe Québec Amérique
Le Groupe Vespo
Lê, Phu-Tao
Lebel, Anne
Leboeuf, Jean-Marc
Legault, François M.
Lemmel, Albert
Lépine, Yves
Les métaux Tremblay inc.
Lespérance, Michel
Lessard, Julie
Lortie, Lucie
Maddox, Paul
Maheu, Louis
Malo, Jocelyn
Malo, Michel
Marchand, Claude Françoise
Marier, Guy
Marinier, Anne
Martin, Fernand
Martin, Richard
McCollough, Robert
McNeil, Jean
Ménard, Marie-Christine
Menkès Shooner Dagenais
LeTourneux Architectes
Métro Richelieu inc.
Mevotech inc.
Miller Thomson L.L.P.
Milot, Éric
Ministère des Finances du Québec
Mongeau, Nathalie
Motulsky, Bernard
Murphy, Glen
Normandeau, Michel
Ogilvy Renault
Optimal Payments
Osler, Hoskin & Harcourt S.E.N.C.L./s.r.l.
Painchaud, Gisèle
Pasquin St-Jean et associés
Patenaude, Robert
Pepin, Manon
Perreault, Daniel
Placement Gabriel Gagnon inc.
Plomberie Outaouais
Pro-Jet Démolition inc.
Prologue inc.
Prudon, Delphine
Racette, André
Ratelle, Francine
Raymond Chabot Grant Thornton
Raymond, Martine
Raymond, Réal
RBC Capital Markets
Rinfret-Raynor, Maryse
Riou, Céline
Rogers Group of Companies
RONA inc.
Rousseau, Henri-Paul
Roy, Denis-Claude
Roy, Jean
Roy, Louise
Roy, Martine
Roy, Sébastien
Sabbatini, Luc
Sabourin, Thomas
Samson Bélair/Deloitte &
Touche Canada Foundation
Saine, François
Savoy, Jacqueline
Shaub Maddox, Amy
St-Jacques, Pierre
T. D. Smith Transport
TD Commercial Banking
Tessier, Robert
The Guarantee Company of North America
Théoret, Daniel
Thibaudeau, Line
Thomas, Chantal
Trahan, Michel
Turgeon, Robert
Turgeon-Hénault, Claire
Tyers, Michael
Unibéton
Uni-Select inc.
Vachon, Louis
Verreault, Alain
Vibien, Anne
Vignault, François
Wallingford-Blais, Gail
Wilson, Rénald
Yelle, Marcel
Zumwalt, Michael

Outreach and Honorary Distinctions

IRIC members contribute to the advancement of knowledge and, in so doing, to the Institute's prominence. Moreover, in the course of the year, some members received awards for their research work or for their contribution to the community. Such visibility is indispensable for further solidifying the Institute's reputation for excellence and its ability to attract the finest talents. This approach helps remind people of the importance of science and provides exposure to the Institute. Raising awareness of IRIC and carrying out various media-relations projects are under the direction of Manon Pepin.





→ Science à la carte

Each year IRIC presents the “Distinguished Scientists Lecture Series.” Under the direction of the Work-Life Committee, chaired by Dr. Étienne Gagnon, Principal Investigator, well-known researchers from Canada, the United States, Europe, and elsewhere are invited to present their most recent scientific breakthroughs as part of this program. The series is intended for graduate and postdoctoral students and members of Montreal’s biomedical community. During the period of this activity report, some 30 lecturers came to report their findings at the Institute.

The eighth edition of IRIC’s International Symposium, entitled “Epigenetics, Genome Integrity, and Stem Cell Biology,” was

organized by Dr. Alain Verreault, Principal Investigator with the Chromosome Biogenesis Research Unit. Held in Montreal on June 29 and 30, 2013, the event drew leading international experts hailing from three communities of researchers who rarely have the opportunity to come together. The goal of this event is to promote fruitful exchanges among researchers whose complementary areas of expertise are essential to a better understanding of epigenetic reprogramming. Such interdisciplinarity is a prerequisite to the success of regenerative medicine. With this in mind, 20 renowned researchers, studying DNA and histone modifications, genomic instability, and stem cell biology, presented their work and recent discoveries in the presence of over 180 participants. ●

→ Mobilisation of the IRIC’s community

We must also recognize the contribution of IRIC’s Social Committee, which throughout the year promotes the visibility and involvement of the IRIC community through a series of social activities. The committee is coordinated by Marie-Christine Ménard, Head of Human Resources. ●



→ Highlight

Danielle de Verteuil wins the Canadian final of Acfas' "Votre soutenance en 180 secondes" competition

Danielle de Verteuil, a doctoral student in molecular biology, under the supervision of Dr. Claude Perreault at IRIC's Immunobiology Research Unit, took first prize at the finals of the 2013 "Votre soutenance en 180 secondes" national competition (Your Thesis Defense in 180 Seconds), organized by Acfas (Association francophone pour le savoir). Students had to give a three-minute presentation and offer a convincing picture of their research project. The event brought together participants from 17 universities who had to present the subject of their doctorate in French and in simple

terms to a diverse audience. Our first-prize winner, whose thesis is entitled "The immunoproteasome: producer of MHC-I peptides and regulator of gene expression," received her doctorate in 2014 with a mention of excellence. She is currently undertaking postdoctoral training at Monash University in Melbourne, Australia. ●



Danielle de Verteuil, IRIC doctoral student



Hugo Lavoie,
postdoctoral fellow at IRIC

→ Highlight

Hugo Lavoie is elected winner of the Étudiants-chercheurs étoiles competition

Hugo Lavoie was the winner of the Fonds de recherche du Québec's Étudiants-chercheurs étoiles competition in the health sector for the month of October 2013. He is a postdoctoral fellow in molecular biology under the supervision of Marc Therrien at IRIC's Intracellular Signalling Research Unit. Rewarded for the excellence of his research work and for his publication "Inhibitors that stabilize a closed RAF kinase domain conformation induce dimerization" in the journal *Nature Chemical Biology*,

Lavoie studies cell signals that cause the growth and development of a great number of tumours in humans. His work aims to define new therapeutic targets and to open new roads for the development of cancer treatments. ●

Study cited: Lavoie H, Thevakumaran N, Gavory G, Li J.J, Padeganeh A, Guiral S, Duchaine J, Mao D.Y, Bouvier M, Sicheri F, Therrien M "Inhibitors that stabilize a closed RAF kinase domain conformation induce dimerization." *Nature Chemical Biology*, 9:428-436, 2013.

→ Highlight

Six of ten Cole Foundation grants presented to young researchers at IRIC

IRIC graduate students and post-doctoral fellows received six of the ten 2013-2015 study grants awarded by the Cole Foundation and won three prizes for the best poster presentations.

The Cole Foundation was created in 1980 by John N. Cole as a private family foundation in memory of his daughter, Penny Cole, who had succumbed to leukemia over ten years earlier. The foundation funds health-care services focusing on pediatric care and research and discovering a cure for leukemia and related diseases. In particular, the Cole Foundation offers training grants to clinical researchers, post-doctoral researchers, and graduate students to support their research. ●



Left to right: Bastien Gerby, Hiba Zahreddine, Magalie Celton, Jean-Philippe Guégan, Camille Simon, Arhamatoulaye Maiga.
Absent from the photo: Dariel Ashton-Beaucage, Véronique Lisi, Xavier Robellet

→ Highlight

Éric Deneault receives the award for best Health Sciences thesis at the Université de Montréal

A doctoral student in the molecular biology program under the supervision of Dr. Guy Sauvageau at IRIC's Molecular Genetics of Stem Cells Research Unit, Éric Deneault received the award for best Université de Montréal thesis in the Health Sciences sector at a ceremony organized in the fall of 2013 by the Faculty of Graduate and Postdoctoral Studies (FESP). He was presented with the award for his thesis entitled "Activité des cellules souches: identification de nouveaux effecteurs dans le système hématopoïétique." Deneault earned his doctorate in 2014 with a mention of excellence. He is currently undergoing postdoctoral training at Toronto's Hospital for Sick Children. ●



Éric Deneault, doctoral student at IRIC



David Kachaner,
postdoctoral fellow at IRIC

→ Highlight

David Kachaner receives a prestigious award from the Bettencourt Schueller Foundation

A postdoctoral fellow in biochemistry under the supervision of Dr. Vincent Archambault in IRIC's Cell Cycle Regulation Research Unit, David Kachaner received the prestigious award from the Bettencourt Schueller Foundation, which recognizes the

outstanding contribution of young researchers in science and medicine. The distinction, which comes with a grant of 25,000 Euros (\$37,700 CAN), allows French citizens to carry out postdoctoral research abroad. ●

→ Highlight

Marc-André Blanchard and Guy Sauvageau are honoured by the Université de Montréal Alumni Association

The Université de Montréal Alumni Association paid tribute to Mr. Marc-André Blanchard, President and Chief Executive Officer of McCarthy Tétrault and Chairman of the Board of IRIC, and Dr. Guy Sauvageau, Chief Executive Officer and Principal Investigator at IRIC.

The event, which took place on November 1, 2013, celebrated the 25th anniversary of their graduation from the Université de Montréal, HEC Montréal and Polytechnique Montréal. The Association took the opportunity to call attention to the professional achievements of eight graduates from the class of 1988, whose remarkable careers have contributed in a significant way to the renown of the Université de Montréal. ●



Mr. Marc-André Blanchard, Chairman of the Board of IRIC; Dr. Guy Breton, Rector of the Université de Montréal; and Dr. Guy Sauvageau, IRIC Chief Executive Officer and Principal Investigator

→ Promoting IRIC

In the course of the year, IRIC benefited from a record number of publications of our researchers' work in the information media thanks to the appearance of nearly 30 separate articles in various media outlets and the distribution of 34 press releases.

IRIC also benefited from a television advertisement produced by Campus Montréal entitled "Pourquoi d'éminents chercheurs viennent-ils chez-nous?" (Why Do Eminent Researchers Come to Work Here?). Such media visibility was part of the Université de Montréal fundraising campaign aimed at supporting higher education and scientific research.

These activities contributed considerably to increasing the number of subscribers to IRIC's Facebook, Twitter and YouTube accounts.



POURQUOI D'ÉMINENTS CHERCHEURS VIENNENT-ILS CHEZ NOUS ?

Parce qu'ici, à l'Institut de recherche en immunologie et en cancérologie (IRIC), ils travaillent ensemble et augmentent ainsi les chances de trouver des médicaments contre le cancer.

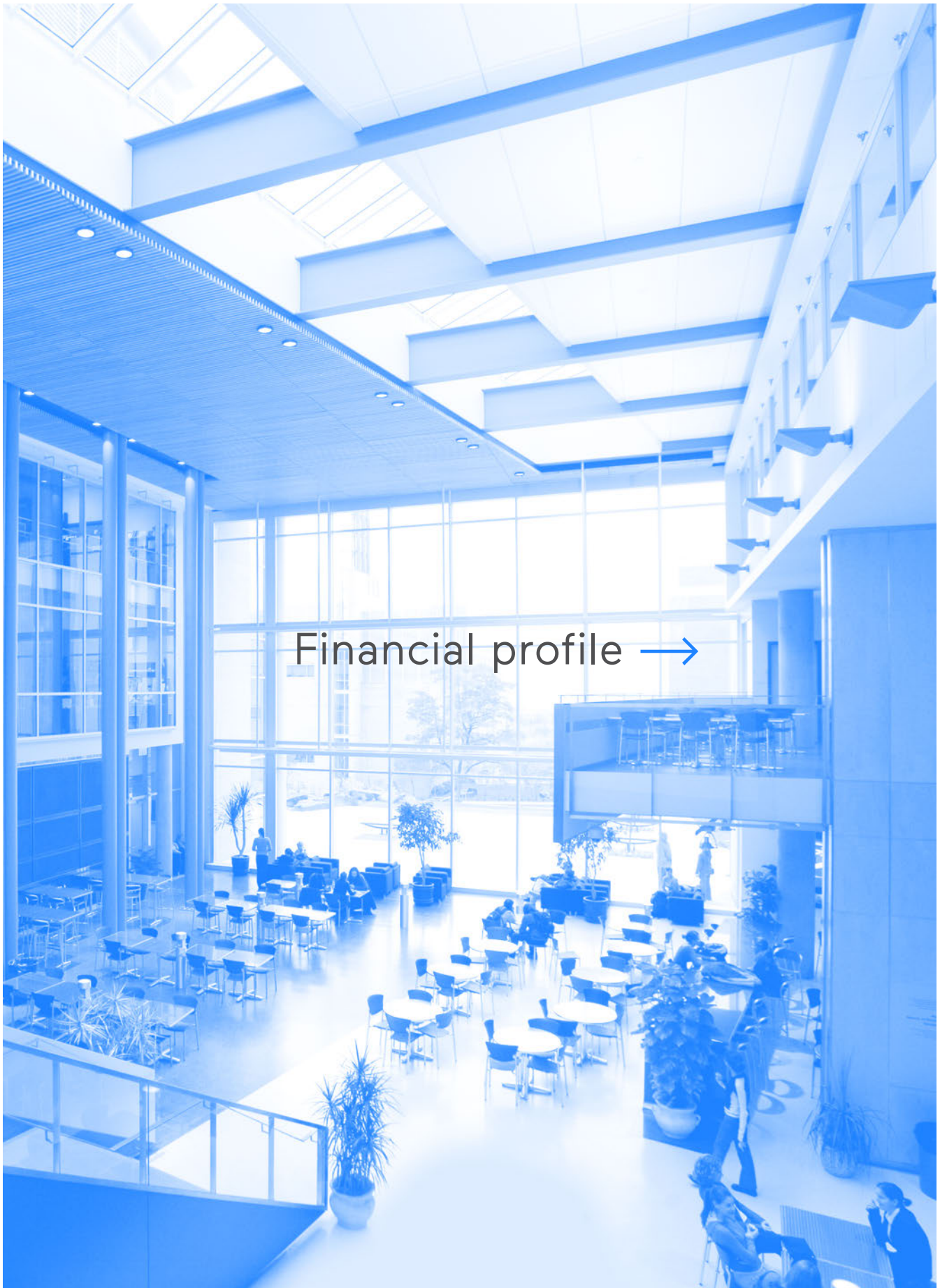
				
Gregory Emery Biologie cellulaire	Benjamin Kwok Biochimie	Brian Wilhelm Génomique Étienne Gagnon Système immunitaire	Sylvain Martel Génie biomédical Trang Hoang Leucémie	Julie Lessard Cellules souches

UN OBJECTIF 500 M\$ Campus Montréal est la plus grande campagne de financement de notre histoire. Elle vise à soutenir l'enseignement supérieur et la recherche scientifique dans tous les domaines.

Des talents. Une planète.

campus **montréal** HEC Montréal
Polytechnique Montréal
Université de Montréal

campus-montreal.ca



Financial profile →

Financial Profile in 2013-2014

May 1, 2013 to April 30, 2014

Government agencies are indispensable sources of funding for IRIC's research activities. These funds are granted mostly on the recommendation of peer committees. The contribution of the private sector by way of diverse partnerships with the pharmaceutical industry and philanthropic donations are essential levers for achieving the objectives of the Institute's mission.

→ Multiple sources

These multiple sources of funding are essential for laboratory operations, researcher salaries, developing research support programs, and awarding scholarships. Thanks to these funding sources and IRIC's unique model, the annual average budget per research unit was \$940,650.

Administrative services are the responsibility of Dr. Richard Martin, and department heads include Patrick Gendron, information technologies; Vincent Huard, finance; Marie-Christine Ménard, human resources; Manon Pepin, director of communications and media relations; Stéphane Pinsonneault, infrastructure and specialized equipment manager; and Dr. Manon Valiquette, head of scientific platforms. ●

Revenues (in dollars)	Operating	Research	Capital assets	Total
Université de Montréal	5,301,127	2,468,008	-	7,769,136
Grants	3,803,768	13,128,595	15,122,000	32,054,363
Student and postdoctoral awards	-	1,157,124	-	1,157,124 ¹
Chairs and salary awards	-	2,451,008	-	2,451,008
Contracts with industry	-	7,069,865	-	7,069,865
Core facilities – external clients	1,327,089	-	-	1,327,089 ²
Donations	-	1,944,887	-	1,944,887 ³
Sponsorship and other	49,521	-	-	49,521
TOTAL	10,481,505	28,219,486⁴	15,122,000	53,822,992

Expenses (in dollars)	Operating	Research	Capital assets	Total
Salaries and employee benefits	5,349,442	18,342,381	-	23,691,823
Supplies and services	1,813,249	6,767,308	-	8,580,557
Maintenance and repairs	2,665,010	205,943	-	2,870,954
Scientific equipment	477,238	763,641	10,067,012	11,307,891
Laboratory fit-up	-	-	5,054,988	5,054,988
TOTAL	10,304,940	26,079,273	15,122,000	51,506,213⁵

¹ Excludes the Perseverance Challenge Awards, IRIC Members Ph.D. Awards, IRIC Next Generation Internship Awards, and IRIC awards

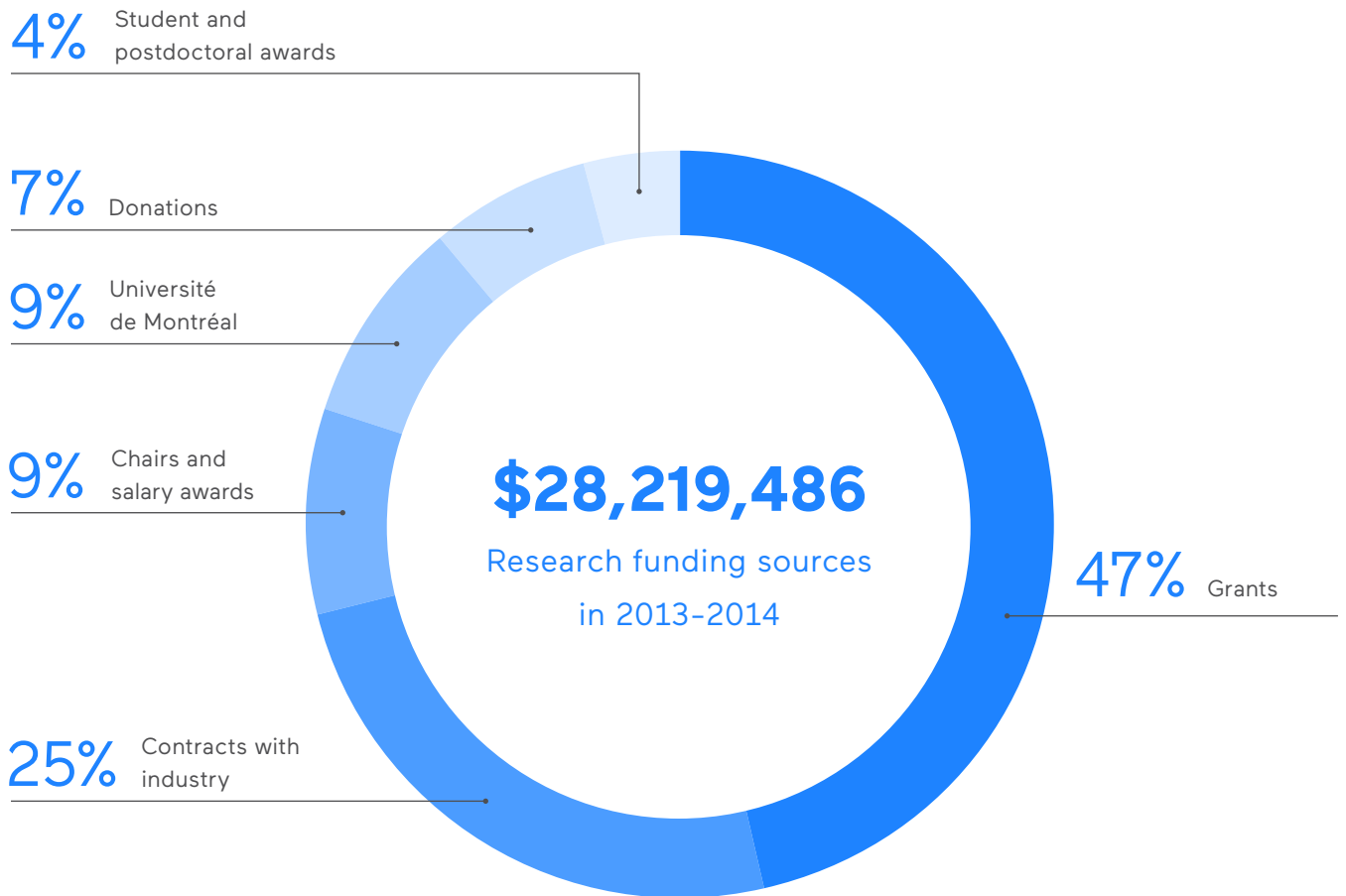
² Excludes the amount from IRIC researchers (\$1,904,222), this being included in research grant revenues

³ Solely donations awarded

⁴ Includes the Principal Investigators' salaries paid by the Université de Montréal

⁵ Budget surplus arising from research contract revenues that were received in 2013-2014 for research activities to be carried out in 2014-2015

→ Statistical data



→ Main Organizations with peer committees having funded research funds and scholarships in 2013-2014

Canada Foundation for Innovation (CFI)

Canada Research Chairs (CRC)

Canadian Cancer Society Research Institute (CCSRI)

Canadian Institutes of Health Research (CIHR)

Cancer Research Society (CRS)

Cole Foundation

Fonds de recherche du Québec – Nature et technologies (FRQNT)

Fonds de recherche du Québec – Santé (FRQS)

Génome Québec (GQ)

Institute for Research in Immunology and Cancer –
Commercialization of Research (IRICoR)

National Institutes of Health (NIH)

Natural Sciences and Engineering Research Council of Canada (NSERC)

Networks of Centres of Excellence of Canada (NCE)

Quebec Consortium for Drug Discovery (CQDM)

Québec Ministry of the Economics, Innovation and Exports (MEIE)

Stem Cell Network (SCN)

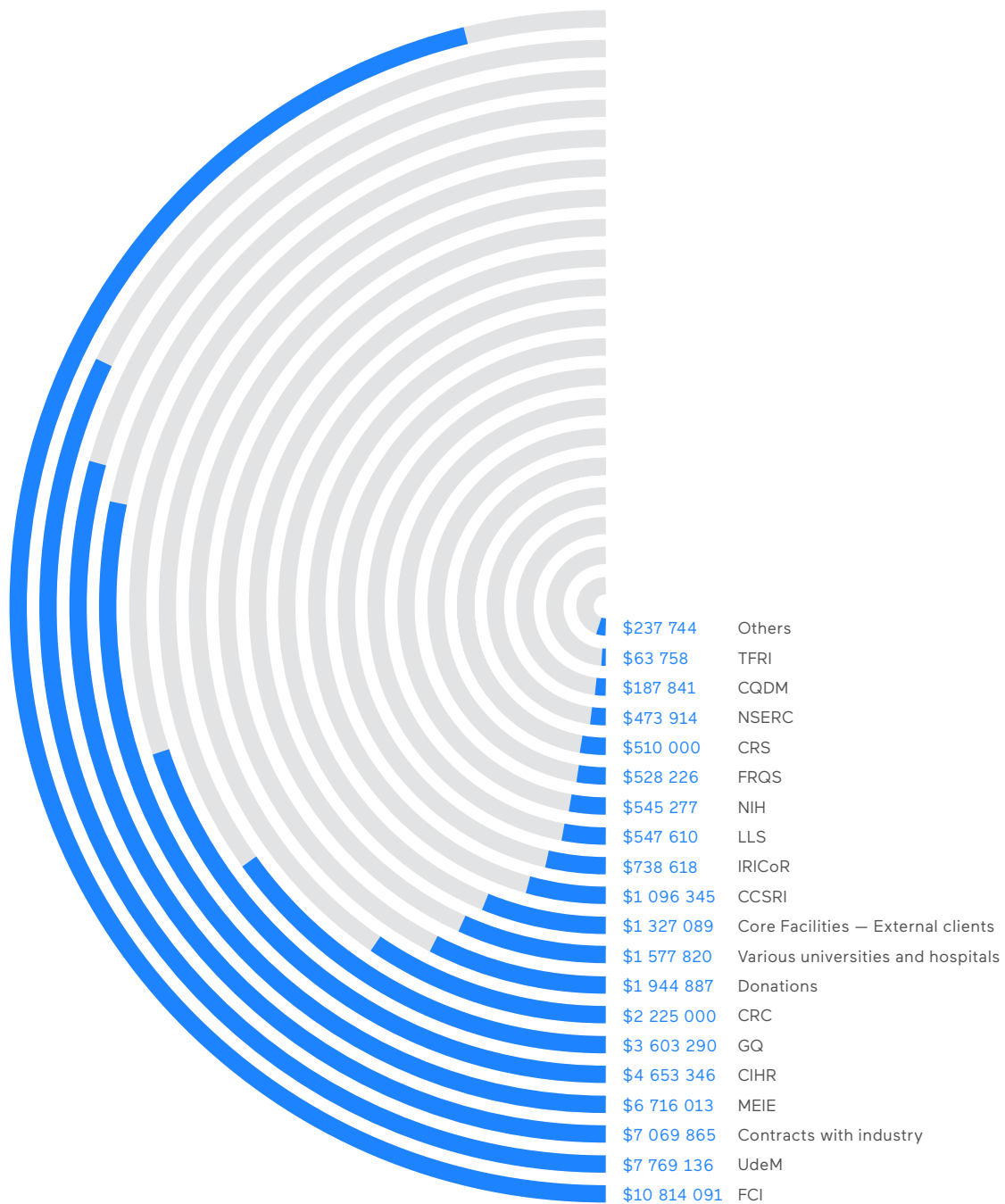
Terry Fox Research Institute (TFRI)

The Leukemia & Lymphoma Society (LLS) of Canada and the United States

Université de Montréal (UdeM)

→ Funding sources in 2013-2014

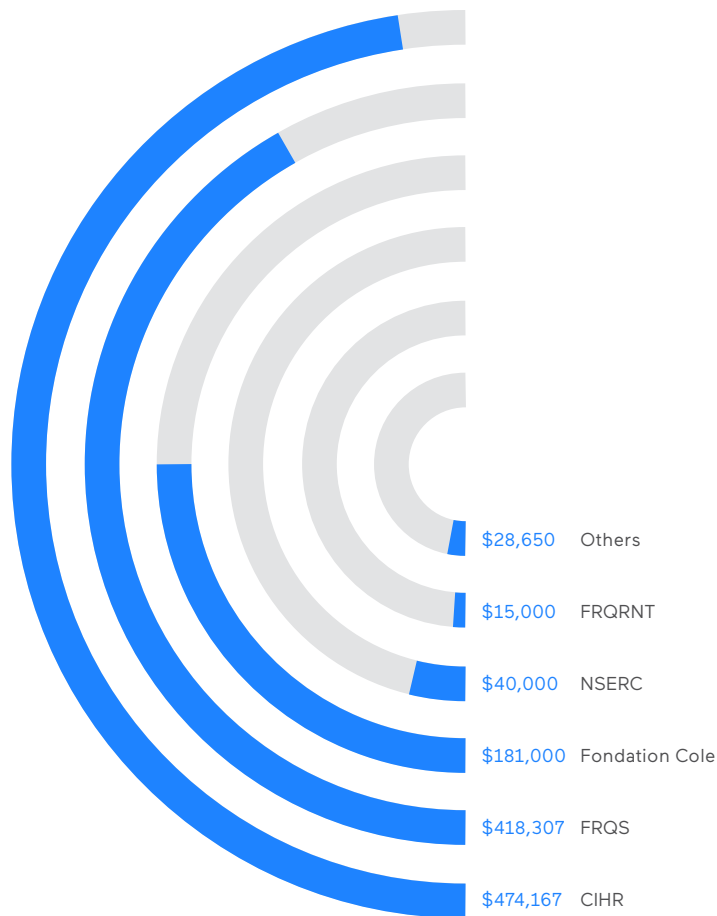
Excluding student scholarships



TOTAL: \$52,665,868

→ Student scholarships and postdoctoral fellowships in 2013-2014

Research funding from organizations with peer committees for nominative student and postdoctoral fellow awards



TOTAL: \$1,157,124

Management Team

IRIC is the result of the efforts of a group of people motivated by the shared vision of creating a research centre whose innovative approach will enable it to produce tangible results in the fight against cancer. Because of its collaborative alliances and distinct model, IRIC today ranks as one of the country's major centres in the struggle against cancer.

Front row (left to right):
Dr. H el ene Boisjoly,
Anne-Marie Boisvert,
Dr. Genevi eve Tanguay,
and Marie-Jos ee Coutu
Second row (left to right):
Jean Royer and
Marc-Andr e Blanchard;
Third row (left to right):
R eal Raymond,
Robert Tessier,
Dr. G erard Boismenu,
and Dr. Michel Bouvier
Fourth row (left to right):
Dr. Marc Therrien and
Dr. Guy Sauvageau



Board of directors

Chair

MARC-ANDRÉ BLANCHARD

Chair and Chief Executive Officer
McCarthy Tétrault

Members

HÉLÈNE BOISJOLY

Dean of the Faculty of Medicine,
Université de Montréal

GÉRARD BOISMENU

Dean of the Faculty of Arts and Sciences,
Université de Montréal

ANNE-MARIE BOISVERT

Vice-Rector for Human Resources and Planning,
Université de Montréal

MICHEL BOUVIER

Chief Executive Officer, IRICoR and
Principal Investigator, IRIC

MARIE-JOSÉE COUTU

President, Marcelle and Jean Coutu Foundation

RÉAL RAYMOND

Corporate Director

JEAN ROYER

Senior Vice-President and Chief Operating
Officer, Loto-Québec

GUY SAUVAGEAU

Chief Executive Officer and
Principal Investigator, IRIC

GENEVIÈVE TANGUAY

Vice-Rector for Research, Creation and
Innovation, Université de Montréal

ROBERT TESSIER

Chairman of the Board
Caisse de dépôt et placement du Québec

MARC THERRIEN

Scientific Director and
Principal Investigator, IRIC

Executive committee

President

GUY SAUVAGEAU

Chief Executive Officer and
Principal Investigator, IRIC

Members

MICHEL BOUVIER

Chief Executive Officer, IRICoR and
Principal Investigator, IRIC

MARC THERRIEN

Scientific Director and
Principal Investigator, IRIC

RICHARD MARTIN

Director, Administration, IRIC

MARTINE RAYMOND

Director, Academic Affairs and
Principal Investigator, IRIC

Published by the Department of
Communications and Public Relations

Legal deposit

Bibliothèque et Archives
nationales du Québec, 2015
Library and Archives Canada, 2015
ISSN 1923-9068

Editorial committee

Nadine Beauger, Vincent Huard,
Patrick Lacasse, Anne Lebel, Richard Martin,
Marie-Christine Ménard, Manon Pepin,
Benoît St-Jacques, Robert Turgeon,
Manon Valiquette

Editorial support
Paul Gilbert, Mixcom

English translation
Ron Rosenthal

Linguistic revision of the English version
Jeffrey Freedman

Graphic design
Agence Code

Photo credits
IRIC et UdeM

Institut de recherche en
immunologie et en cancérologie
Université de Montréal
P.O. Box 6128, Downtown Station
Montréal, Québec H3C 3J7
T 514-343-7770
C info@iric.ca
W www.iric.ca

Université de Montréal campus address:
Marcelle-Coutu Pavilion
2950 Chemin de Polytechnique
Montréal, Québec H3C 3J7



→ This document is also available in French
in digital format only.

→ You can download this 66-page PDF
document (7 MB) from the IRIC'S website at:

www.iric.ca