



DISCOVERING

2014 - 2015
ANNUAL
REPORT





.....
DISCOVERING
.....

MISSION

To understand the causes and mechanisms of diseases

To find diagnostic tools and means of prevention and treatment

To train a new generation of high-calibre scientists

To contribute to Quebec's socioeconomic development by facilitating the commercial development of new discoveries

THE IRCM AT A GLANCE

Founded in 1967

Independent non-profit institution

Affiliated with the Université de Montréal

Associated with McGill University

IRCM Clinic associated with the Centre hospitalier de l'Université de Montréal (CHUM)

Funded by the Quebec Ministry of Economy, Innovation and Exports

(Ministère de l'Économie, de l'Innovation et des Exportations)

Member of the Université de Montréal's RUIS (Réseau universitaire intégré de santé)

430 researchers, students and employees

A budget of 39.1 million dollars

Contents

MESSAGES FROM MANAGEMENT

05

BASIC AND CLINICAL RESEARCH

10



TRAINING AND RESEARCH SERVICES

30



59

IRCM FOUNDATION



43

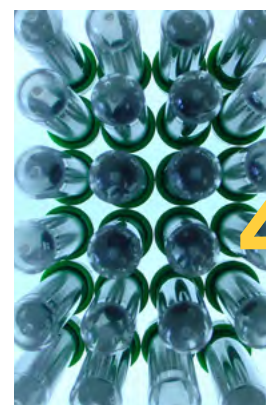
ADMINISTRATION AND PUBLIC AFFAIRS

77

CREDITS

40

STRATEGIC PLANNING



MESSAGES FROM MANAGEMENT



Message from the President and Scientific Director

It is with pleasure that I use this annual report to present you with a short report of the IRCM's activities for 2014-2015.

Important investment in the IRCM's infrastructure

In June, the minister of Economy, Innovation and Exports (ministre de l'Économie, de l'Innovation et des Exportations – MEIE), **Jacques Daoust**, came to the IRCM to announce an investment of nearly \$6.1 million in the institute's research infrastructure. This grant is part of the government of Quebec's program to support research infrastructure, the *Programme de soutien à la recherche, volet 2 : soutien au financement d'infrastructures de recherche*. The project's total budget is \$7.6 million, which includes a \$1.5-million contribution from the IRCM and its Foundation.

The construction projects, which started in August 2015, aim to ensure the health and safety of our staff and researchers, as well as the security of our building in a way to foster a work environment that is both adequate for research and compliant with government requirements. I am very pleased with this support, which will enable the IRCM to maintain its level of excellence.



Strategic planning

In fall 2014, along with a number of IRCM researchers, colleagues from the Management committee and external advisor **Pierre Chartrand**, I started a strategic planning exercise focused on the institute's scientific development. Following consultations with all research divisions and the Scientific Advisory Board, the IRCM's new 2016-2021 strategic plan was approved by our Board of Directors in September 2015.

This strategic plan proposes to launch two major institutional initiatives at the IRCM: the establishment of a Research centre on rare and genetic diseases in adults, and the development of a pipeline for the production of biomarkers including discovery, validation, clinical trials and the development of partnerships for commercialization. You can learn more about these initiatives in the "[Planning the future](#)" section of the current report.

As part of this strategic planning exercise, I also finalized a partnership agreement between the IRCM and the Regroupement québécois des maladies orphelines (RQMO), a Quebec coalition for orphan diseases, in order to better support our future research program on rare diseases. As a result, the RQMO moved its offices to the IRCM in September 2015, on the ground floor near the main lobby.

I would like to thank everyone who contributed to the development of this strategic plan, as well as our advisor, **Pierre Chartrand**, who

is the new Director of strategic partnerships at the IRCM. He was recruited to support the strategic planning process and will now oversee the implementation of the two major initiatives.

Laboratory closing

One researcher closed her laboratory this year: **Katrina Podsypanina** who supervised the Breast Cancer Biology research unit. On behalf of us all, I wish her the best of luck in the continuation of her career.

Internal promotions

I had the pleasure of announcing the internal promotion of five researchers. **Michel Cayouette**, Director of the Cellular Neurobiology research unit, was promoted Full IRCM Research Professor; **Frédéric Charron**, Director of the Molecular Biology of Neural Development research unit, was promoted Full IRCM Research Professor; **Éric Léculyer**, Director of the RNA Biology research unit, was promoted Associate IRCM Research Professor; and **Woong-Kyung Suh**, Director of the Immune Regulation research unit, was promoted Associate IRCM Research Professor. In addition, **May Faraj**, formerly Visiting Scientist in the Metabolic Diseases research unit, was promoted IRCM Visiting Research Professor. As such, she also becomes a member of the IRCM's Scientific Committee and supervises her own research unit on Nutrition, Lipoproteins and Cardiometabolic Diseases.



Scientific Management Committee

Every year, in the fall, I renew existing or appoint new members to the Scientific Management Committee, which is made up of research division directors. For 2014-2015, **Marie Kmita** joined the committee while **Éric A. Cohen**, **François Robert**, **Nabil G. Seidah** and **Jean Vacher** renewed their mandates. I wish to thank them all for their participation in this committee.

IRCM Foundation

Thanks to its different activities, the IRCM Foundation gave the institute the record sum of \$2,260,077 for the year 2015. This extraordinary result will be used to support the IRCM's research projects and scientific training activities. In June, the Foundation and the institute celebrated the end of the major fundraising campaign *Give for Life*. This campaign surpassed its objective by raising \$15.2 million. Many thanks to the IRCM Foundation, as well as to all volunteers and donors for their support.

Congratulations and acknowledgements

I would like to congratulate all the researchers who were successful in various granting agency competitions and those who obtained awards. I particularly congratulate **Michel Chrétien** who received the 2015 Wilder-Penfield Prix du Québec. I wish to thank them all very sincerely, as well as the students and employees, for their contribution to the reach and growth of our institute.

Finally, I thank all members of the IRCM and the IRCM Foundation Boards of Directors for their commitment to the institute, especially the Chair of the Board, **Louise Lambert-Lagacé**, for her personal support and her outstanding dedication to the IRCM.

Tarik Möröy, PhD





Message from the Chairwoman of the Board

The beginning of the year was marked with new budgetary restrictions, which sparked disappointment and frustration. Despite this financial context, researchers continued to discover, publish and promote their work here and abroad.

This year once again, the Board members and I greatly admired their excellent performances. We also had the privilege to witness the tireless work of the institute's management, particularly the President and Scientific Director, **Tarik Möröy**.

Institutional projects

In an attempt to lessen the impact of the budgetary restrictions imposed by the government, the Board favoured using a political approach to make certain ministers aware of our situation. We called upon Minister **Martin Coiteux**, Chair of the Conseil du Trésor (treasury board), to visit the IRCM, which he did in January 2015. We met with MEIE Minister **Jacques Daoust** and members of his cabinet in February. We also met with senior officials from the ministry of Finance with the objective of readjusting our funding. These steps culminated in June with the visit and announcement by Minister Daoust of a \$6-million investment in the institute's research infrastructure.

To reposition the IRCM, **Dr. Möröy** set in motion a strategic planning process that led to the development of two great projects that will bring researchers together. The Board received and enthusiastically supported this plan, which paves the way to new growth opportunities for the institute. I wish to thank him and congratulate the management team and everyone who actively participated in the development of this promising strategy for the IRCM's future.

Appointment to the Research ethics committee

The Board had the pleasure of welcoming **Brigitte St-Pierre** as Chair of the institute's Research ethics committee, upon recommendation from the said committee. Her practical experience combined with her expertise in the field of bioethics are valuable assets for the fulfilment of her mandate chairing this committee, which is vital to researchers' work.

Thanks to our ombudsman

For five years now, **Robert Bisailon** skilfully fulfills the ombudsman's duties for the IRCM community. He rejoices the Board during the presentation of his annual report, and deserves our thanks and admiration.

Board member departures

It is difficult to see some of the Boards' pillars go and to do justice to their important contributions. I want to warmly thank **Pierre Shooner**, IRCM Board member since 2000, member of the audit committee from 2005 to 2015, and member of the human resources



committee from 2006 to 2009. He is also a member of the Circle of benefactors as a Great Builder, having made a significant donation to the IRCM Foundation. I sincerely thank **Michael L. Turcotte**, Chairman of the IRCM Foundation's Board from 1998 to 2004, Board member since 2002, member (since 2006) and Chair (since 2011) of the governance committee, member of the audit committee (2005-2006), and Vice-Chair of the Board (since 2011). I also wish to thank **Hélène Robitaille** who joined the Board of Directors in 2012 and was a member of the communications committee. These individuals are leaving the Board, but accepted to remain members of the IRCM corporation.

Congratulations

I am privileged to chair a Board of Directors composed of such admirable people who are dedicated to the success and future of the IRCM. Among them, **Monique Jérôme-Forget** remarkably distinguished herself this past year. Appointed Member of the Order of Canada, she also received a Lifetime Achievement Award from the organization La Gouvernance au Féminin. Congratulations.

I conclude by warmly thanking all Board members for their continued commitment throughout the year, especially the committee chairs in 2014-2015, **Michael L. Turcotte** in governance, **Michel Lespérance** in human resources, **W. Robert Laurier** in audit, and **Yvon Turcot** in communications. I also wish to acknowledge the outstanding work of the Board's Secretary, **Stéphane Létourneau**.

Louise Lambert-Lagacé

Louise Lambert-Lagacé, C.M., C.Q., PDt





BASIC AND CLINICAL RESEARCH

Translational research at the IRCM

From the IRCM's beginnings in 1967, translational research (the close relationship between basic and clinical research) has been at the heart of the institute's mission. In fact, the IRCM was the first research centre in Quebec to operate under this model, which continues to be extremely relevant as it links basic research conducted in laboratories with its clinical application in patients. A large number of important discoveries were made thanks to the IRCM's unique infrastructure and organizational model, which allow scientists to conduct innovative research.

DISCOVERING: FIVE BASIC RESEARCH DIVISIONS

- [Cancer and genetic diseases](#)
- [Cardiovascular and metabolic diseases](#)
- [Immunity and viral infections](#)
- [Neurobiology and development](#)
- [Systems biology and medicinal chemistry](#)

TREATING: CLINICAL RESEARCH

- [The IRCM clinic](#)
- [Four specialized research clinics](#)
- [The role of a clinical researcher](#)
- [Research project: a summer camp for diabetic children](#)



35

researchers – IRCM research professors *

196

scientific publications

\$21.1 million

in research funding

5

research divisions

231

researchers and clinicians**

* 36 laboratories were operational in 2014-2015

**including postdoctoral fellows and students (as of August 31, 2015)

Discovering

The IRCM groups together 35 basic and clinical researchers who work to better understand the causes of diseases and discover diagnostic tools and means of prevention and treatment. The researchers publish nearly 200 scientific articles per year, including the scientific breakthroughs presented in this report that were the subject of a news release.

In 2014-2015, the institute's researchers continued to achieve excellent results in competitions from various granting agencies and successfully obtained \$21.1 million in research funding. By fully investing in national and international collaborations, which are essential to the advancement of science, the researchers thereby significantly contribute to the excellent reputation of the IRCM and of Montréal's scientific community.





CANCER AND GENETIC DISEASES RESEARCH DIVISION

Members of the Cancer and Genetic Diseases division are interested in better understanding the cellular and molecular mechanisms associated with the development of specific pathologies. Their research results will help define new therapeutic targets and have a significant impact on the development of effective treatments against these diseases.

Certain research projects aim to facilitate the development of anti-metastatic therapies, particularly within the context of breast cancer, whereas others focus on identifying therapeutic targets to counter different forms of blood cancer such as leukemia, myeloma and lymphoma.

Moreover, by producing and analyzing animal models, some researchers in this division study blood and liver diseases, certain cancers and genetic diseases, including osteoporosis and nepronophtisis, in order to transpose their results through translational studies in humans and, ultimately, counter these pathologies through therapeutic avenues.

[Read more](#)

2014-2015

6 teams

1 Canada Research Chair

19 publications by the division's researchers

2 researchers honoured: Jean-François Côté (2014 Marcel-Piché Award, IRCM); Tarik Möröy (Recognition award, Leukemia and Lymphoma Society of Canada; Honorary guest professor in consideration for outstanding achievements in immunology, Beijing Ditan Hospital)

2 grants from the Canadian Institutes of Health Research: Jean-François Côté (\$936,254) and Jean Vacher (\$734,372)

1 grant from the Canadian Hemophilia Society: Tarik Möröy (\$150,000)

Research unit directors

Jean-François Côté, PhD

Director, cytoskeletal organization and cell migration – Associate IRCM Research Professor

Tarik Möröy, PhD

Director, hematopoiesis and cancer – Full IRCM Research Professor – Canada Research Chair in Hematopoiesis and Immune Cell Differentiation

Katrina Podsypanina, MD, PhD

Director, breast cancer biology – Assistant IRCM Research Professor (laboratory closed in September 2014)

Marie Trudel, PhD

Director, molecular genetics and development – Full IRCM Research Professor

William Y. Tsang, PhD

Director, cell division and centrosome biology – Assistant IRCM Research Professor

Jean Vacher, D.Sc.

Director of the research division – Director, cellular interactions and development – Full IRCM Research Professor



Scientific breakthroughs

New therapeutic target to prevent the invasion of cancer cells

The team of scientists led by **Jean-François Côté** discovered a potential new therapeutic target to prevent the invasion of cancer cells and the formation of metastasis, which could have a significant impact on breast cancer treatment. The researchers studied a molecule called Axl that is associated with various types of invasive cancer. They showed that Axl modifies a protein known as ELMO in order to robustly induce the spread of breast cancer cells. This discovery, published in *Molecular and Cellular Biology*, could eventually lead to the development of new treatments for triple negative breast cancer. **Continue reading.**

Identification of a protein that controls the “guardian of the genome”

Tarik Möröy and his team shed new light on a well-known mechanism required for the immune response. The researchers identified a protein that controls the activity of the p53 tumour suppressor protein known as the “guardian of the genome”. To avoid the premature death of developing immune cells, the activation of p53 must be limited. The researchers discovered that a protein called Miz-1 can exert such a function by controlling the activity of p53. This study, published in *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, helps advance our understanding of how an efficient immune response is built in the body. **Continue reading.**



CARDIOVASCULAR AND METABOLIC DISEASES RESEARCH DIVISION

Cardiovascular diseases remain among the leading causes of death in the western world. At the IRCM, research is conducted by both basic and clinical researchers working to better understand the risk factors of cardiovascular and metabolic diseases, including genetic factors, hypertension, dyslipidemia and nutrition.

Among other subjects, researchers are studying the molecular mechanisms of diabetes and hypercholesterolemia in order to develop innovative drugs to treat these diseases. A team is also studying pulmonary diseases such as cystic fibrosis and the associated metabolic disorders. In addition, some researchers developed a proteomics initiative to advance “precision medicine”, which aims to determine the most appropriate treatment according to each patient’s unique physiological condition.

[Read more](#)

2014-2015

8 teams

2 Canada Research Chairs

3 IRCM Research Chairs

89 publications by the division’s researchers

1 researcher honoured: May Faraj (Teaching excellence award, Université de Montréal)

1 grant from the National Institutes of Health (USA): Rémi Rabasa-Lhoret (\$2,509,367 USD)

2 grants from the Canadian Institutes of Health Research: Benoit Coulombe (\$100,000); Jennifer Estall (\$100,000)

Research unit directors

Yves Berthiaume, MD

Director, cellular and molecular lung biology – Full IRCM Research Professor – Gosselin-Lamarre Chair in clinical research

Benoit Coulombe, PhD

Director, translational proteomics – Full IRCM Research Professor – Bell-Bombardier Chair of Excellence

Christian F. Deschepper, MD

Director, experimental cardiovascular biology – Full IRCM Research Professor

Jennifer Estall, PhD

Director, molecular mechanisms of diabetes – Assistant IRCM Research Professor

May Faraj, Pdt, PhD

Director, nutrition, lipoproteins and cardiometabolic diseases – IRCM Visiting Research Professor

Mathieu Ferron, PhD

Director, integrative and molecular physiology – Assistant IRCM Research Professor – Canada Research Chair in Bone and Energy Metabolism

Rémi Rabasa-Lhoret, MD, PhD

Director, metabolic diseases – J.A. Desève Chair in clinical research

Nabil G. Seidah, C.M., O.Q., PhD, FRSC

Director of the research division – Director, biochemical neuroendocrinology – Full IRCM Research Professor – Canada Research Chair in Precursor Proteolysis



Scientific breakthroughs

A glimmer of hope for patients with leukodystrophies

An international research team, led by **Benoit Coulombe** in collaboration with researchers from the Research Institute of the McGill University Health Centre, made a discovery that offers a glimmer of hope for patients with leukodystrophies, deadly neurodegenerative diseases that affect one in 7,000 children and remain incurable. The team identified a new gene associated with 4H leukodystrophy, one of the common forms of the disease. Their findings, published in *Nature Communications*, will guide efforts in the development of new diagnostic tools to better predict the evolution and severity of the disease, and new therapeutic tools to help sick children. [Continue reading.](#)

Can our bones protect us against diabetes and obesity?

Mathieu Ferron and his team, in collaboration with researchers at Columbia University, discovered a new function of the bone associated with diabetes and obesity. Published in *The Journal of Cell Biology*, their scientific breakthrough reveals how a hormone produced by bones, and controlled in part by vitamin K, can influence the whole body's energy and glucose metabolism. Their results could eventually lead to the development of new therapies for type 2 diabetes and obesity. [Continue reading.](#)

The artificial pancreas shown to improve the treatment of type 1 diabetes

Rémi Rabasa-Lhoret and his team led the world's first clinical trial comparing three alternative treatments for type 1 diabetes. In addition to the conventional treatment using an insulin pump, two configurations of the external artificial pancreas were tested: the one delivering insulin alone and the one that delivers both insulin and glucagon. The study, published in *The Lancet Diabetes & Endocrinology*, confirms that the artificial pancreas improves glucose control and reduces the risk of hypoglycemia better than the conventional diabetes treatment. The artificial pancreas thus has the potential to substantially improve the management of diabetes and patients' quality of life. [Continue reading.](#)





IMMUNITY AND VIRAL INFECTIONS RESEARCH DIVISION

Allergic reactions, respiratory tract diseases and autoimmune diseases are growing problems in our society. The resurgence of infectious diseases thought to have been eradicated and the emergence of new viruses require major research efforts to fight viral infections.

Collectively, the cutting-edge research conducted in this division leads to a better understanding of molecular and cellular mechanisms that control the activity of immune cells as part of normal immune responses and during diseases. As such, it can potentially lead to the development of immunotherapeutic approaches against several diseases such as atherosclerosis, various forms of lymphoma, as well as immunodeficiency and autoimmune disorders of genetic origin.

Studies on the mechanisms governing HIV persistence are also essential to develop strategies aiming to eradicate or cure HIV. In this regard, the IRCM is playing a leading role as the host institution for the Canadian HIV Cure Enterprise (CanCURE).

[Read more](#)

2014-2015

7 teams

4 Canada Research Chairs

1 IRCM Research Chair

17 publications by the division's researchers

2 researchers honoured: Éric A. Cohen and Mariana Bego (Personnalités *La Presse*)

3 grants from the Canadian Institutes of Health Research: Éric A. Cohen (\$421,359); Hua Gu (\$732,000); André Veillette (Foundation Scheme, \$4,858,830)

Research unit directors

Cheolho Cheong, PhD

Director, cellular physiology and immunology – Assistant IRCM Research Professor

Éric A. Cohen, PhD

Director of the research division – Director, human retrovirology – Canada Research Chair in Human Retrovirology

Javier Marcelo Di Noia, PhD

Director, mechanisms of genetic diversity – Associate IRCM Research Professor – Canada Research Chair in Genetic Diversity

Hua Gu, PhD

Director, molecular immunology – Full IRCM Research Professor – André-Aisenstadt Chair of Excellence

Paul Jolicoeur, MD, PhD

Director, molecular biology – Full IRCM Research Professor – Canada Research Chair in Studies of Pathogenesis of Retrovirus-Induced Diseases

Woong-Kyung Suh, PhD

Director, immune regulation – Associate IRCM Research Professor

André Veillette, MD, FRSC

Director, molecular oncology – Full IRCM Research Professor – Canada Research Chair in Immune System Signalling



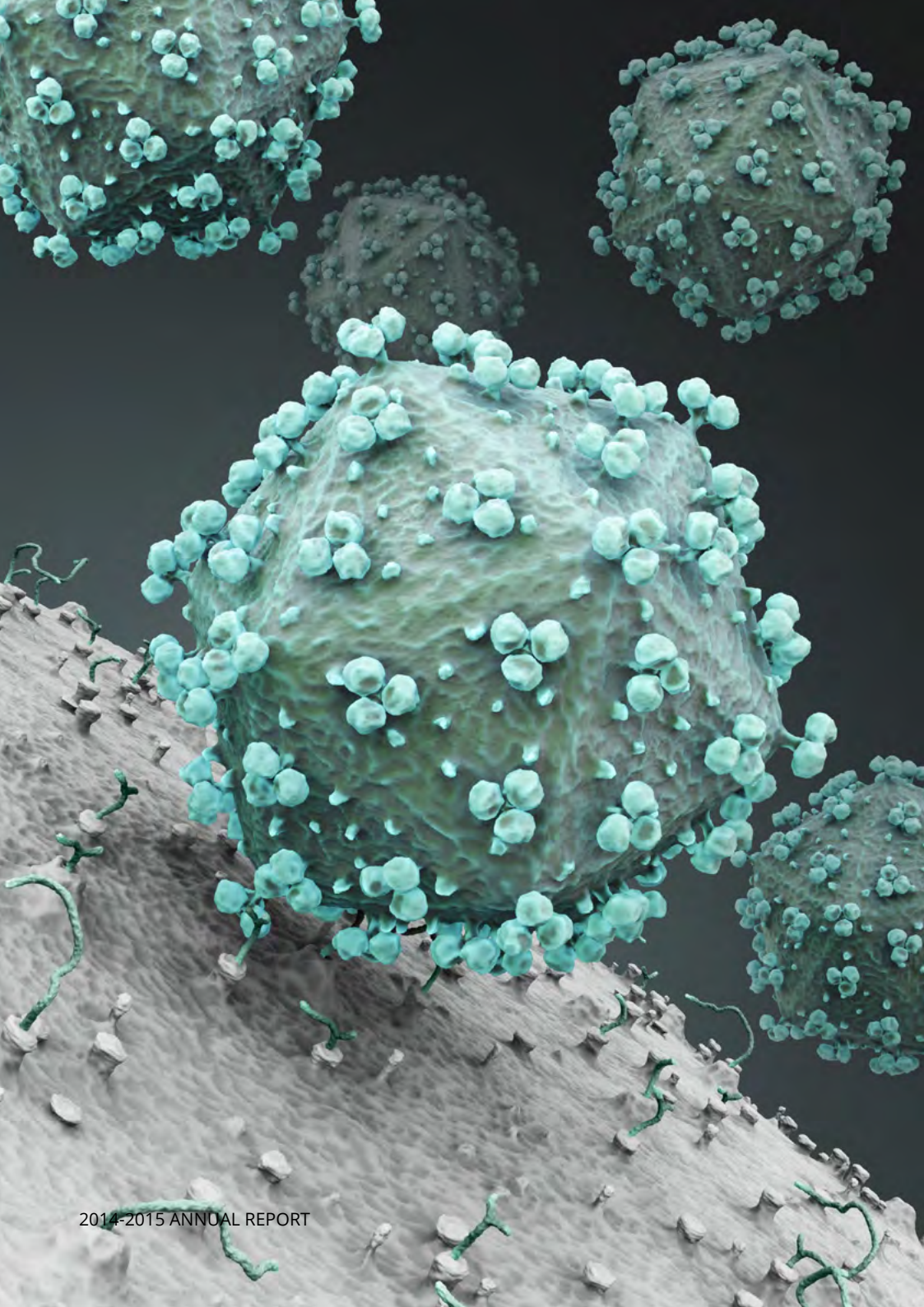
Scientific breakthroughs

HIV uses the immune system's own tools to suppress it

A Canadian research team, led by **Éric A. Cohen**, made a significant discovery on HIV persistence, which represents the primary barrier to a cure. The team, working as part of the Canadian HIV Cure Enterprise (CanCURE), uncovered how an HIV viral protein known as Vpu tricks the immune system by using its own regulatory process to escape the body's antiviral responses. The findings, published in *PLoS Pathogens*, pave the way for future HIV prevention or cure strategies. [Continue reading.](#)

Improving treatment for the common flu, lymphoma and leukemia

A study by **Javier M. Di Noia** and his team sheds light on a mechanism affecting AID, an enzyme required for an efficient antibody response but that, at high levels, can also have harmful effects and lead to certain cancer-causing mutations. The results, published in *The Journal of Experimental Medicine*, explained mechanisms that can both reduce and increase the activity of AID by targeting different proteins. This knowledge could eventually lead to new treatments to boost the immune system and help our aging population fight influenza, for example, as AID activity in our cells decreases with age. On the other hand, therapies could also be developed to lower toxic levels of AID in certain cancers such as B-cell lymphoma and leukemia. [Continue reading.](#)





NEUROBIOLOGY AND DEVELOPMENT RESEARCH DIVISION

Embryonic development is carefully controlled by cellular and molecular mechanisms that ensure the proper functioning of organs in adults. Researchers in this division study the fundamental processes of development and the disruption of these mechanisms that often causes diseases such as cancer, Parkinson's or Alzheimer's diseases.

The researchers also provide new considerations for the treatment of neurodegenerative diseases, blindness, muscular dystrophies and hormone deficiencies. This division also includes a program on the ethics of neuroscience research.

[Read more](#)

2014-2015

8 teams

2 Canada Research Chairs

38 publications by the division's researchers

2 researchers honoured: Jacques Drouin (honorary doctorate degree, Université Aix-Marseille); Hideto Takahashi (Young Scientist Lectureship Award, International Society for Neurochemistry)

2 grants from the Canadian Institutes of Health Research: Frédéric Charron (Foundation Scheme, \$3,591,701); Artur Kania (\$823,385)

1 grant from the Brain Canada Foundation: Michel Cayouette (\$360,000)

1 grant from the Scottish Rite Charitable Foundation: Hideto Takahashi (\$105,000)

1 senior research scholar from the Fonds de recherche du Québec – Santé: Eric Racine

Research unit directors

Michel Cayouette, PhD

Director, cellular neurobiology – Full IRCM Research Professor

Frédéric Charron, PhD

Director, molecular biology of neural development – Full IRCM Research Professor – Canada Research Chair in Developmental Neurobiology

Jacques Drouin, D.Sc., FRSC

Director, molecular genetics – Full IRCM Research Professor

David R. Hipfner, PhD

Director, epithelial cell biology – Associate IRCM Research Professor

Artur Kania, PhD

Director, neural circuit development – Associate IRCM Research Professor

Marie Kmita, PhD

Director of the research division – Director, genetics and development – Associate IRCM Research Professor – Canada Research Chair in Molecular Embryology and Genetics

Eric Racine, PhD

Director, neuroethics – Associate IRCM Research Professor

Hideto Takahashi, MD, PhD

Director, synapse development and plasticity – Assistant IRCM Research Professor



Scientific breakthroughs

Discoveries in the fight against blindness

Three breakthroughs by **Michel Cayouette** and his team could eventually help overcome obstacles in the fight against blindness. To begin, researchers discovered the first genetic mutation associated with Oliver McFarlane syndrome, which causes vision loss at a very young age. The results, published in *Nature Communications*, could pave the way to new treatments for retinal degenerative diseases and **childhood blindness**. The team then published a breakthrough in *Neuron* that helps explain certain challenges associated with stem cell treatments to **restore sight**. Finally, the researchers discovered a protein's essential role in the function and survival of cells required for vision. The findings, published in *The Journal of Neuroscience*, could have a significant impact on our understanding of retinal degenerative diseases that cause blindness. [Continue reading.](#)

One step closer to finding how to repair damaged nerve cells

In collaboration with bioengineers at McGill University, a team of scientists led by **Frédéric Charron** uncovered a new kind of synergy in the development of the nervous system, which explains an important mechanism required for neural circuits to form properly. This breakthrough, published in *PLoS Biology*, could eventually help develop tools to repair nerve cells following injuries to the nervous system (such as the brain and spinal cord). [Continue reading.](#)

Preventing the development of brain tumours in children

The team led by **Frédéric Charron** also discovered a mechanism that promotes the progression of medulloblastoma, the most common brain tumour found in children. The team found that a protein known as Sonic Hedgehog induces DNA damage, which causes the cancer to develop. Their findings, published in *Developmental Cell*, identified a protein that could be targeted to develop a new therapeutic approach that would stop the growth and progression of medulloblastoma and could reduce the adverse side effects of current treatments.

[Continue reading.](#)

An important study for Parkinson's disease

A research team led by **Jacques Drouin** uncovered a mechanism regulating dopamine levels in the brain by working on a mouse model of late onset Parkinson's disease. The researchers found that a defective *Rgs6* gene causes the death of dopaminergic neurons, which are known to degenerate in the disease. Their work, published by *PLoS Genetics*, indicates that this gene could be a new target for the development of drugs against Parkinson's disease. [Continue reading.](#)

Critical role in pain processing of a gene associated with a rare disease

By studying the way neural circuits transform harmful stimuli (such as cold, heat, and pinch) into the perception of pain, the team led by **Artur Kania** uncovered the critical role of the gene *Lmx1b* in pain

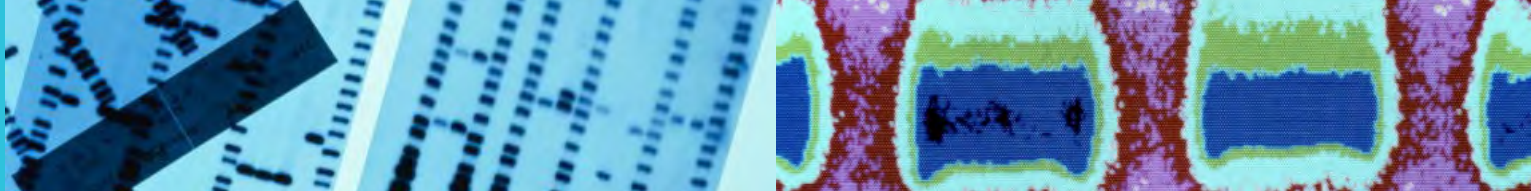


processing. Mutations in this gene also cause a rare human disease called the Nail-patella syndrome (NPS), which is characterized by limb and kidney malformations and, more importantly, reduced pain responses. This breakthrough, published in *The Journal of Neuroscience*, paves the way for a better understanding of chronic pain conditions.

Continue reading.

How do we make moral judgements?

The team of neuroethics experts led by **Eric Racine** opened the black box of moral intuitions by suggesting a new approach, published in the *American Journal of Bioethics (AJOB) Neuroscience*, to explain the way we make moral judgements. The proposed framework could offer insight into the types of simple and fast intuitive processes involved in a wide variety of moral assessments. The researchers also showed that analysing intuitions using this model could clarify a wide set of data from empirical moral psychology, and could inform future studies on moral judgment. The framework could also be very useful in applied normative ethics for case assessments and discussions about issues causing “deadlocked” moral intuitions, such as cognition-enhancement drugs or abortion. **Continue reading.**



SYSTEMS BIOLOGY AND MEDICINAL CHEMISTRY RESEARCH DIVISION

Systems biology is a research field that benefits from the powerful “omics” technologies (such as genomics, proteomics or transcriptomics) to systematically study molecular regulation networks in living organisms. It examines the immense complexity of biological systems in order to gain a better understanding of the way cells function. The IRCM has seized the opportunity to play a leading role in the revolution of this emerging discipline.

The medicinal chemistry component of this division focuses on chemical biology, an area of interdisciplinary research at the crossroads between chemistry and biology. The researchers' expertise in synthesizing organic molecules is applied to solving problems in cell and molecular biology and, among other things, allows them to find leads for the development of new drugs.

[Read more](#)

2014-2015

7 teams

33 publications by the division's researchers

1 researcher honoured: **Éric Léculyer** — 2014 Maud-Menten New Principal Investigator Prize, Institute of Genetics (\$30,000)

1 grant from the Canadian Institutes of Health Research: **Nicole J. Francis** (\$732,000)

1 grant from the Canadian Glycomics Network: **Yvan Guindon** (\$243,000)

Research unit directors

Jacques Archambault, PhD

Director, molecular virology – Full IRCM Research Professor

Nicole J. Francis, PhD

Director, biochemistry of epigenetic inheritance – Associate IRCM Research Professor

Yvan Guindon, C.M., O.Q., PhD, FRSC, FAAAS

Director, bioorganic chemistry – Full IRCM Research Professor

Éric Léculyer, PhD

Director, RNA biology – Associate IRCM Research Professor

Marlene Oeffinger, PhD

Director, ribonucleoprotein biochemistry – Assistant IRCM Research Professor

François Robert, PhD

Director of the research division – Director, chromatin and genomic expression – Associate IRCM Research Professor

Peter W. Schiller, O.Q., PhD, FRSC, FAAAS, FAAPS

Director, chemical biology and peptide research – Full IRCM Research Professor

2 grants from the Natural Sciences and Engineering Research Council of Canada: **Yvan Guindon** (\$225,000) and **Marlene Oeffinger** (\$150,000)

1 grant from the Fonds de recherche du Québec – Nature et technologie: **François Robert** (\$151,497)

1 grant from the Cancer Research Society: **Éric Léculyer** (\$120,000)

1 team grant from the Canada Foundation for Innovation: **Marlene Oeffinger** (McGill University/IRCM/Université de Montréal; \$1,500,000 for the IRCM)

1 research scholar (Junior 2) from the Fonds de recherche du Québec – Santé: **Éric Léculyer** (\$295,451)



Scientific breakthroughs

A new proteomics technique

A team of researchers led by **Marlene Oeffinger** developed a new proteomics approach to identify proteins situated close to one another in macromolecular multi-protein complexes. This new technique, published in *Nuclear Acid Research*, not only allows to capture protein proximities within static complexes, but also along dynamic pathways. It thus enables the observation of changing interactors of a protein, which could ultimately lead to discovering changes of protein interactors along dynamic proliferation pathways in diseased cells. [Read the scientific article.](#)

How is DNA organized in our cells?

A team of researchers led by **François Robert** uncovered a critical role for two proteins in chromatin structure, which is essential for normal development. The breakthrough, published in *Molecular Cell*, helps explain how DNA is organized in our cells. In addition, because defects in chromatin components can lead to several diseases, this discovery could eventually lead to a better understanding of what causes certain types of cancer, such as lymphoma. [Continue reading.](#)



Replacing morphine for chronic pain treatment

An important breakthrough in the field of opioid analgesics was achieved with a compound discovered by **Peter W. Schiller's** research group. Opioid analgesics currently available for the treatment of severe pain, such as morphine, produce side effects (analgesic tolerance, physical dependence, constipation, respiratory depression, addiction, etc.) that limit their clinical use. This study, published in *Nature Structural and Molecular Biology*, could lead to the development of analgesics that induce fewer or no side effects, and the resulting compounds could replace morphine for the treatment of chronic pain. **Continue reading.**



9,800

visits per year at the clinic

17

health professionals

(Nurses | Nutritionists | Kinesiologists)

23

specialized physicians

4

specialized research clinics

(Cholesterol | Cystic fibrosis | Diabetes | Hypertension)

Treating

The IRCM clinic is a recognized national leader in clinical care, as well as in cardiometabolic disease research and prevention. The outpatient clinic treats 6,000 patients and handles nearly 10,000 visits per year. Clinical research protocols are regularly conducted and have contributed, among other things, to the identification of novel biomarkers for cardiovascular disease and the evaluation of new therapeutic approaches.

The IRCM clinic provides innovative and personalized care to its patients, which is required for clinical research to succeed. The personalized care is offered through a unique multidisciplinary approach that includes physicians, nurses, nutritionists and kinesiologists. Each health professional provides tailored information for patients to receive well-rounded care and implement healthy lifestyle choices that can help them overcome a wide range of diseases.

The clinic and clinical research are funded directly by the IRCM and by funds from private and government organizations, such as the Canadian Institutes of Health Research, as well as the pharmaceutical industry. The IRCM clinic is associated with the Centre hospitalier de l'Université de Montréal (CHUM).

[Read more](#)

Left to right:

Robert Dufour, Julie Ianniruberto, Rémi Rabasa-Lhoret, Isabelle Blain, Jennifer Levasseur, Yves Berthiaume, Corinne Suppère, Yves Kirouac, Anne-Marie Lavoie-Pilote, Chantal Blais, Martine Gauthier, Pierre Larochelle



PERMANENT STAFF – MEDICAL AND SUPPORT PERSONNEL

<i>Directors:</i>	Yves Berthiaume (Executive Director, clinic and clinical research), Robert Dufour, Maxime Lamarre-Cliche, Pierre Larochelle, Rémi Rabasa-Lhoret
<i>Nurses:</i>	Martine Gauthier (Head Nurse), Lucienne Bourque, Maryse Dallaire, Hélène Larchevêque, Anne-Marie Lavoie-Pilote, Jennifer Levasseur, Annie Magnan, Jennifer René, Nathalie Saint-Pierre
<i>Nutritionists:</i>	Chantal Blais (Head of the nutrition department), Katherine Desjardins, Sonia Fortin, Catherine Leroux, Valérie Savard
<i>Kinesiologists:</i>	Nadia Beaudoin, Marie-Ève Ringuet, Corinne Suppère
<i>Project coordinators:</i>	Nadia Beaudoin, Guillaume Bouvet, Virginie Messier
<i>Technicians:</i>	Dany Gauthier, Diane Mignault
<i>Reception and archives :</i>	Julie Ianniruberto, Yves Kirouac
<i>Administrative assistants and secretaries:</i>	Isabelle Blain, Isabelle Jeannotte, Khiem Nguyen, Josée Therrien



NUTRITION, METABOLISM AND ATHEROSCLEROSIS CLINIC

Director: Robert Dufour, MD, M.Sc.

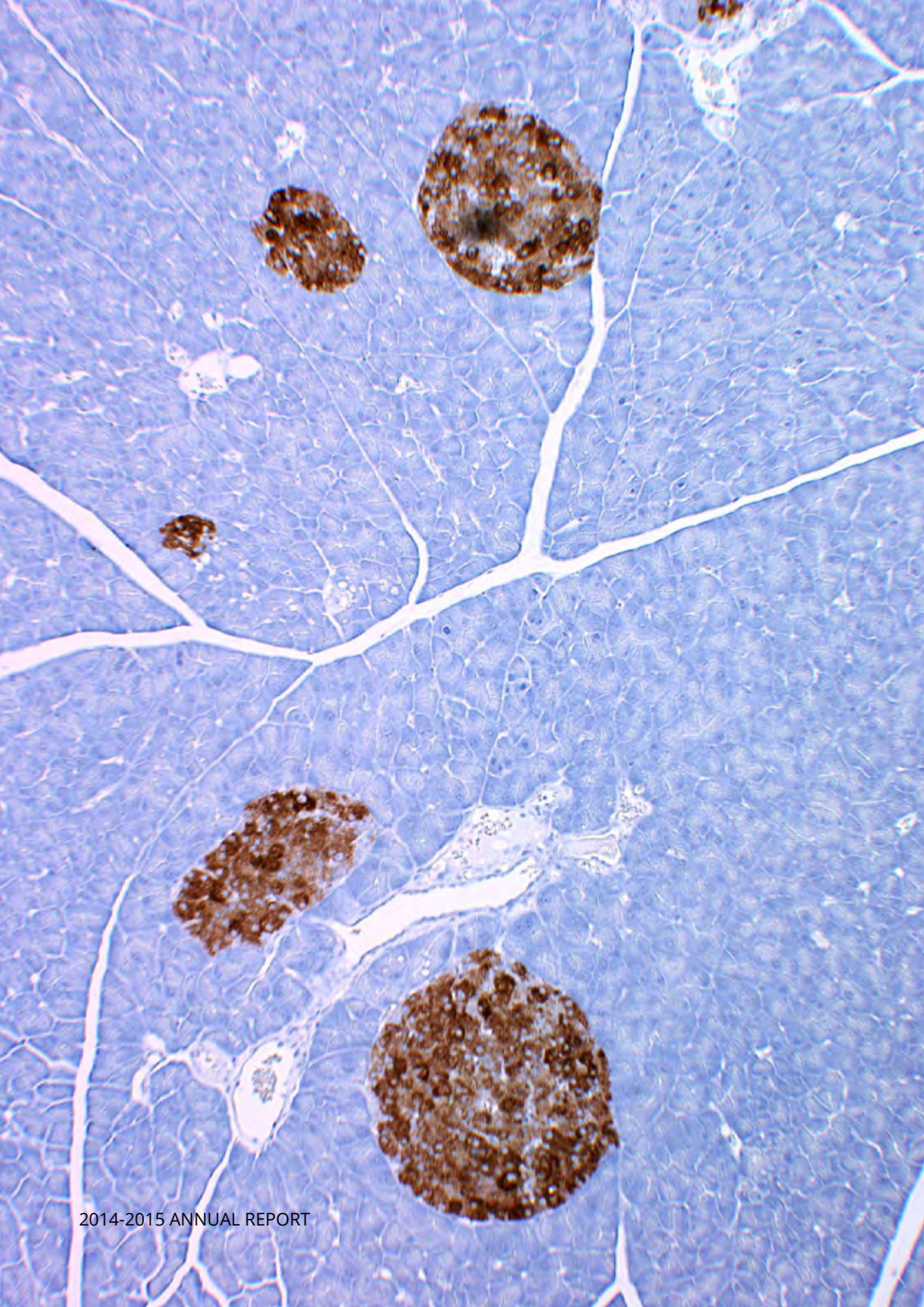
Research activities in this clinic are devoted to the characterization and treatment of hyperlipidemia, which involves the increase of cholesterol and fat in the blood. These conditions increase the risk of developing cardiovascular disease and atherosclerosis. The team studies the nutritional, genetic, biochemical, pharmacological and molecular aspects of these diseases to better understand the cause and optimize treatment.

HYPERTENSION CLINIC

Director: Pierre Larochelle, MD, PhD, FRCPC, FAHA, FACP (until July 2015)

Acting Director: Maxime Lamarre-Cliche, MD, FRCPC, M.Sc. (since July 2015)

The Hypertension clinic evaluates and treats patients referred for disorders of blood pressure regulation. The research protocols evaluate new diagnostic and treatment methods for blood pressure disorders. The clinic also develops and studies teaching strategies for home blood pressure monitoring. The future direction will focus on improving the management of patients with hypertension.



DIABETES CLINIC

Director: Rémi Rabasa-Lhoret, MD, PhD

The endocrinology clinic, specialized in diabetes, provides personalized care for patients with type 1 and type 2 diabetes, who can benefit from the expertise of a multidisciplinary team (nurses, nutritionists and, in some cases, kinesiologists). The type 1 diabetes clinic is one of the largest in the province for adult care, offering services for patients using multiple injections or an insulin pump. The type 2 diabetes clinic mainly offers services to patients as they start using insulin, as well as patients with cardiovascular disease.

CYSTIC FIBROSIS CLINIC

Director: Yves Berthiaume, MD

This clinic is the first in Canada to specialize in the metabolic complications associated with cystic fibrosis, such as diabetes, osteoporosis, adrenal insufficiency and early menopause. These complications occur as a result of the improved life expectancy of cystic fibrosis patients due to research progress. Patients have specific needs due to their pathology and can benefit from the expertise of a nurse, a respiratory therapist and a kinesiologist, as well as two endocrinologists. The clinic's research activities started in October 2014 and should be fully established, in collaboration with the CHUM, by 2016-2017.



WHAT IS THE ROLE OF A CLINICAL RESEARCHER AT THE IRCM?

Physicians who practice their clinical activities at the IRCM carry out several mandates simultaneously, which are entrusted to them by the institute, the Quebec healthcare system and the scientific community.

For example, physicians in the IRCM's Nutrition, Metabolism and Atherosclerosis clinic (CNMA) give consultations and treat patients who have particular difficulties with the diagnosis or management of a lipid disorder, often related to cardiovascular disease. These patients are referred by general practitioners or specialists from across the province.

A specific disorder in a patient will represent the start of a collaboration with one or many of the institute's basic researchers, in order to elucidate the mechanisms related to the observed disease. Conversely, a basic researcher can verify with the physician whether one of the discoveries made in the laboratory is verifiable in a clinical setting.

This mutual collaboration between clinicians and basic researchers is the essence of translational research, one of the IRCM's greatest strengths.

For over 50 years, CNMA physicians have also been involved in the clinical development of all drugs used to treat diseases associated with high cholesterol levels. The most recent include the use of monoclonal antibodies against PCSK9, an enzyme discovered in 2003 at the IRCM. These pioneering treatments were offered to CNMA patients up to five years before their commercialization, which is an important benefit for many of them.

ROBERT DUFOUR, MD, M.Sc.

Associate Director, IRCM clinic

Director, Nutrition, Metabolism and Atherosclerosis clinic



RESEARCH PROJECT: A SUMMER CAMP UNLIKE ANY OTHER

A study on the artificial pancreas for children with type 1 diabetes

Approximately 30 children and adolescents with type 1 diabetes participated in a unique summer camp that included, in addition to regular activities, a research project on the artificial pancreas supervised by IRCM researchers.

The research team led by **Rémi Rabasa-Lhoret**, in collaboration with **Laurent Legault**, paediatric endocrinologist from the Montreal Children's Hospital, undertook the first paediatric outpatient study to compare three alternative treatments for type 1 diabetes, namely the conventional insulin pump therapy, the single-hormone (insulin alone) artificial pancreas and the dual-hormone (insulin and glucagon) artificial pancreas.

According to the researchers, most hypoglycaemia episodes in young diabetics happen at night-time, and fear of these episodes is a major source of stress and anxiety for families of children with type 1 diabetes. The study, conducted over three consecutive nights, aimed to measure the effectiveness of the three strategies in reducing nocturnal hypoglycemia.

The results, published in June 2015 in *The Lancet Diabetes & Endocrinology*, showed the dual-hormone artificial pancreas provides the most benefits by reducing the time spent in nocturnal hypoglycaemia.

The external artificial pancreas, the way of the future for the treatment of type 1 diabetes, is an automated system that simulates a functioning pancreas by continuously adapting insulin (and/or glucagon) delivery based on changes in glucose levels, in order to simplify the management and better control diabetes. The research projects conducted at the IRCM represent an important step in making this technology available to the general public in the near future.

[Read more](#)



TRAINING AND RESEARCH SERVICES



Training the next generation of high-calibre scientists is at the heart of the IRCM's mission. Over 1,200 researchers, many of whom now work for national and international organizations, were trained at the institute since its foundation.

The IRCM also provides its researchers and students with outstanding research services. Over the years, the IRCM has become an innovation leader in Quebec with the creation of its state-of-the-art core facilities. This ultramodern infrastructure optimizes the considerable investments required for the purchase, operation and maintenance of specialized technological equipment, and maximizes the researchers' productivity.

An office is also dedicated to technology transfer and the commercialization of discoveries made by the institute's researchers.

TRAINING: FUTURE RESEARCHERS

- [Academic affairs](#)
- [New in 2014-2015](#)
- [Student Association](#)

INNOVATING: STATE-OF-THE-ART EQUIPMENT

- [Core facilities and technology platforms](#)
- [Highlight: Proteomics discovery platform](#)

CONTRIBUTING: PATENTS AND INVENTIONS

- [Technology transfer](#)
- [Creation of Liphorus Pharmaceuticals](#)



Training

Every year, the IRCM welcomes more than 150 Master's and doctoral students, and approximately 50 postdoctoral fellows. The students are generally registered at the Université de Montréal or McGill University. In addition, about 40 undergraduate students complete research internships. These students and fellows come from all over the world, making the IRCM a very cosmopolitan institute whose diversity reflects that of the city of Montréal. Choosing the IRCM to pursue graduate studies is thus an excellent choice.

[Read more](#)

2014-2015

Students and postdoctoral fellows

56 postdoctoral fellows
85 PhD students
43 Master's students
76 scholarship holders

Completed fellowships and awarded degrees

9 completed postdoctoral fellowships
7 doctorate degrees
8 Master's degrees
34 undergraduate internships (credited)

Teaching

472 teaching hours
416.5 hours at the Université de Montréal (30 of our researchers)
55.5 hours at McGill University (10 of our researchers)

Alumni Association

Members total (as of August 31, 2015): 1,310

New members in 2014-2015: 24

Postdoctoral fellows: 9
Doctoral students: 8
Master's students: 7

Team - Academic Affairs department

André Veillette, MD

Executive Director, academic affairs

Eric Racine, PhD

Associate Director, scientific activities

Jean-François Côté, PhD

Associate Director, student affairs

Johanne Langevin

Advisor

Virginie Leduc

Agent

Danielle Méthot, PhD

Coordinator, graduate studies program in molecular and cellular medicine



ACADEMIC AFFAIRS

Research day

A true forum for scientific exchange, this event allows the IRCM's students and postdoctoral fellows to showcase the quality of their research projects and their communication skills. Once again this year, this day was a great success. Thanks to the generosity of several partners, **16 awards** were granted for the best posters and oral presentations.

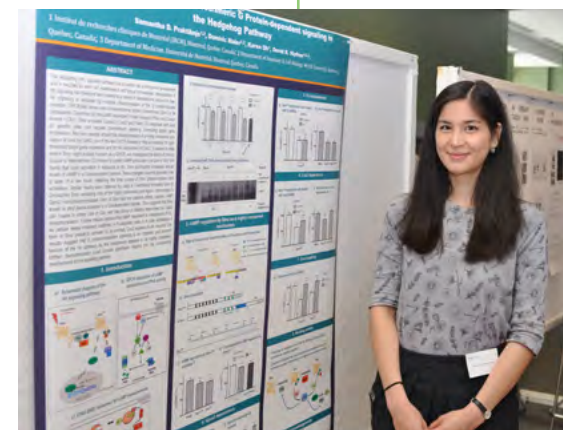
Weekly conferences

In addition to their daily work in the laboratory, researchers, postdoctoral fellows and students enrich their experience by attending weekly lectures held at the IRCM. The conferences provide them with an opportunity to meet leading professionals from the medical and scientific community. Selected by IRCM researchers, the guest speakers come from all around the globe, and deal with various topics related to the institute's different research programs. In 2014-2015, **27 conferences** were organized.

[Read more](#)

Scholarships

In 2014-2015, **54 external nominal scholarships** and **22 internal scholarships** were granted to the IRCM's graduate students and postdoctoral fellows.



Research day:
Samantha Praktiknjo



NEW IN 2014-2015

IRCM - IMRIC travel awards

As part of the memorandum of understanding signed by the IRCM and IMRIC (Institute for Medical Research Israel-Canada) allowing researchers to collaborate closely in various medical and biomedical research fields, the IRCM Foundation and the Canadian Friends of the Hebrew University jointly launched a new travel awards program.

The program's objective is to promote the exchange of graduate students and postdoctoral fellows between a laboratory at the IRCM and a laboratory at IMRIC and, thus, create synergy between the two laboratories to facilitate applying for external funding for a project.

IRCM summer seminars for young researchers

In June 2015, the Academic Affairs department, in partnership with the IRCM's Student Association, launched a series of stimulating seminars to enrich the training experience of summer students and interns at the institute. Although these activities were primarily organized for summer students, they were open to the entire student population.

Throughout the summer, five seminars on various themes were presented at lunchtime, thus proving an opportunity for young researchers to learn about careers in biomedical research and receive advice to make the most of their graduate studies. To end the program, certain summer students presented their research work to the institute's internal community.



Left to right: Ari Brojde, Monette Malewski, Stephen Lipper, Tarik Möröy, Simon Bensimon



Members of the 2014-2015 Student Association

Noumeira Hamoud (President) | Afnan Abu-Thuraia | Marine Barbelanne | Julie Bergalet | Aurèle Besse-Patin | Simon Bissonnette | Farin Bourojeni | Ashley Chin | Julie Cruanes | Yannick Cyr | Ronan Vinicius Da Silva | Tiphaine Dolique | Lorelei Durand | Jeremy Ferreira Barbosa | Jennifer Fraszczak | Michel Fries | Claudia Gentile | Awais Javed | Marine Lacomme | Valérie Lamantia | Fabio Lefebvre | Ludivine Litzler | Maëva Luxey | Alexandre Mayran | Stephen Patrick Methot | Carine Monat | Stephen Nemeč | Audrey Pelletier | Marissa Rashkovan | Marine Roux | Valérie Savard | Daniel Scott | Adele Tufford

The **IRCM Student Association** brings together the institute's students and postdoctoral fellows. It also fosters their relationships with other members of the internal community and represents them in dealings with governing bodies. The Association acts as a liaison between students and postdoctoral fellows and scientific management to facilitate interaction and cooperation, thereby positively contributing to the IRCM's development. Moreover, the Association maintains ties with other student bodies at the Université de Montréal and McGill University.

The Association includes a scientific life committee, whose members liaise with the IRCM's Scientific Committee and organize Interlab Club presentations and a career day. The Association also boasts a social life committee that plans all social activities for students and postdoctoral fellows, some of which are open to institute's entire internal community.

[Read more](#)



Innovating

Strengthening our technological advantage

To facilitate innovation, the IRCM ensures that it provides its researchers with the best technologies. The IRCM's core facilities and technology platforms thereby allow researchers to remain at the forefront of modern science, achieve important scientific breakthroughs, and offer cutting-edge training to tomorrow's scientists. Over the years, they have proven to be extremely useful and effective. Certain discoveries may not have been possible without these state-of-the-art resources.

[Read more](#)



7
core facilities

3
research platforms

4
specialized services

50
people serving research



TEAM – RESEARCH SERVICES

Executive Director: **Louis-Gilles Durand**
 Director: **Judith Cotton-Montpetit**

Core facilities

Animal experimentation and animal facilities:

Director: **Ion-Ovidiu Jumanca**
 Head, animal facilities: **Julie D'amours**
 Head, animal physiology: **Manon Laprise**

Bioinformatics:

Analyst: **Alexis Blanchet-Cohen**

Flow cytometry and histology:

Coordinator: **Éric Massicotte**
 Research Assistant: **Simone Terouz**
 Contact person, flow cytometry: **André Veillette**

Microinjection and transgenesis:

Director: **Qinzhang Zhu**
 Supervisor: **André Veillette**

Microscopy and imaging:

Head: **Dominic Filion**

Molecular biology and functional genomics:

Head: **Odile Neyret**
 Expert Advisor: **François Robert**

Technology platforms

National platform for human interactome mapping and proteomics discovery platform:

Director: **Benoit Coulombe**
 Head, mass spectrometry and proteomics: **Denis Faubert**

Research platform on obesity, metabolism and diabetes (PROMD):

Director: **Rémi Rabasa-Lhoret**
 Contact person: **Diane Mignault**

Other specialized services

Electrophysiology:

Contact person: **Artur Kania**

Molecular modelling:

Contact persons: **Peter W. Schiller, Brian Wilkes**

Nuclear magnetic resonance:

Contact persons: **Yvan Guindon, Michel Prévost**

Specialized equipment:

Head: **Richard Cimon**



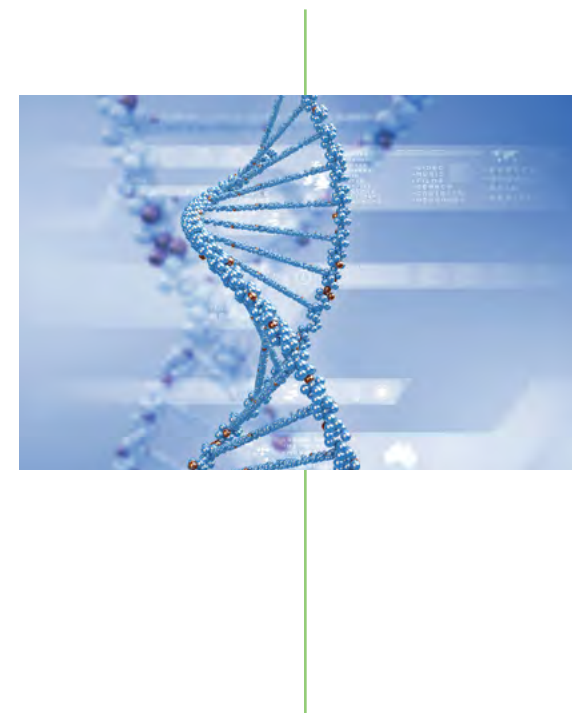
PROTEOMICS DISCOVERY PLATFORM: AT THE HEART OF A MAJOR STRATEGIC INITIATIVE AT THE IRCM

The Proteomics discovery platform (PDP) houses expensive and sophisticated equipment that allows researchers to identify and characterize proteins of interest for their research. Directed by **Benoit Coulombe**, who is also Director of the Translational Proteomics research unit, the PDP is managed by **Denis Faubert**, who supervises the work of mass spectrometry technicians **Maguy Boulos**, **Josée Champagne** and **Sylvain Tessier**, as well as a programming analyst, **Christian Poitras**.

The PDP's equipment has been acquired over the years thanks to grants from the Canada Foundation for Innovation (CFI). The recent establishment of quantitative proteomics, a technology that can measure biomarkers with great precision from a patient's drop of blood or tiny biopsy tissue sample, paved the way for the development of one of the two major initiatives included in the [IRCM's 2016-2021 strategic plan](#).

Supervised by Benoit Coulombe, the Open Biomarker Profiling Initiative (OBPI) aims to characterize a large number of biomarkers targeting various diseases from patient cohorts, as well as to make the primary data immediately available through free and open access on the web. As a public-private partnership, the OBPI initiative promises to accelerate the discovery of diagnostic tools useful not only to identify certain diseases more quickly and accurately, but also to predict, through tests called companion diagnostics, patients'

response to certain treatments or the risk of harmful side effects. The IRCM's PDP will be one of the main sites for the OBPI project, which will group together several centres from Canada and eventually from around the world.





74%

of IRCM researchers shared their discoveries with the
Technology transfer office

7

new declarations of invention in 2014-2015

4

new patent applications filed in 2014-2015

\$4.26 million

in revenue for the institute, its laboratories, and its
researchers accumulated over the past nine years

38

patents duly issued for major discoveries
in the past 29 years

Contributing

Technology transfer

The IRCM's contribution to the socioeconomic development of Quebec constitutes an important element of its mission. In collaboration with Univalor, a university technology transfer organization, the IRCM's Technology transfer office (TTO) carries out this mission by facilitating the commercial development of new discoveries. More specifically, the TTO helps setup and assists partnerships between IRCM researchers and the industry, whether it be for a research collaboration, a license, a research contract or material transfer.

In 2014-2015, three new license agreements were set up and two collaboration contracts were signed with commercial partners.

[Read more](#)

TEAM - TECHNOLOGY TRANSFER OFFICE

Stéphane Létourneau, LLB, M.Litt.
Director

Dominique Bergeron, PhD
Technology Transfer Officer



THIS YEAR'S HIGHLIGHT: CREATION OF LIPHORUS PHARMACEUTICALS

A significant investment in healthcare based on research conducted at the IRCM

In October 2014, the IRCM signed an agreement with a leading international investment firm, Sanderling Ventures, to create Liphorus Pharmaceuticals. Up to 6.4 million dollars will be invested in the new spinoff company in coming years. The IRCM concluded this agreement through its company Adaerata, in collaboration with Univalor.

The IRCM is proud to draw such an investment to Montréal, which reflects the quality of its health research. The investment will be used to develop a new technology related to the PCSK9 enzyme that was discovered, over 10 years ago, by two of the institute's researchers, **Nabil G. Seidah** and **Michel Chrétien**.

Liphorus Pharmaceuticals will focus on developing small molecules that inhibit PCSK9 and whose activity is proving to be very promising in the treatment of high blood cholesterol. IRCM researchers have already clearly shown that these PCSK9 inhibitors reduce the level of bad blood cholesterol, thus helping reduce the risk of cardiovascular events. The small molecules in question could lead to the development of new pills.

[Read more](#)



STRATEGIC PLANNING

Planning the future

The IRCM's vision is to become an international leader in the creation and transfer of knowledge in life sciences in order to contribute to improving human health. This year, an innovative strategy was developed to reach this ambitious goal and ensure the institute's sustainable future.

The IRCM's 2016-2021 strategic plan includes two major institutional initiatives that focus on scientific development and take into account promising avenues in research as well as society's needs.

[Read more](#)

2016-2021 Strategic plan: two major initiatives at the IRCM

Research centre on rare and genetic diseases in adults

Pipeline for the production of biomarkers including discovery, validation, clinical trials and the development of partnerships



INITIATIVE I: RESEARCH CENTRE ON RARE AND GENETIC DISEASES IN ADULTS

Between 6,000 and 7,000 rare diseases exist. While the diseases may be rare, the patients are not. A total of 2.5 million Canadians are affected, including more than 500,000 people in Quebec.

Rare diseases represent a significant public health concern as many of them do not have any effective treatment options. Moreover, a substantial void exists in the healthcare system with regards to the management, monitoring and care of children with rare diseases who reach adulthood, because these patients must leave the pediatric environment but are left with very few alternatives for their future care.

To address this alarming situation, the IRCM is proposing to establish on its premises a Research centre on rare and genetic diseases in adults. Drawing on its exceptional strengths in clinical and basic research, this new centre will be the only one of its kind in Canada and will position the institute as a national leader.

In addition to providing access to specialized care, the initiative will lead to the development of a model for clinical follow-up to ensure the transition from pediatric to adult care. Furthermore, this initiative will not only allow the institute to conduct research on rare diseases, but will become a central component of the translational research program required to better understand these diseases and ultimately develop new treatments. To support this initiative, the IRCM has already begun forming three important partnerships

with the CHU Sainte-Justine university health centre, the Centre hospitalier de l'Université de Montréal (CHUM), and the Quebec Coalition for Orphan Diseases (Regroupement québécois des maladies orphelines, RQMO).

With its recognized expertise in immunology, developmental neurobiology, and cardiovascular and metabolic diseases, the IRCM is the best positioned institute to create a centre of excellence in clinical research on rare and genetic diseases associated with these fields. In fact, the IRCM also houses an outpatient clinic that conducts several research projects on certain rare diseases, and nearly half of its basic researchers are already researching these diseases.





INITIATIVE II: PIPELINE FOR THE PRODUCTION OF BIOMARKERS

The IRCM intends to become the academic leader in the creation of a public-private consortium aimed at the discovery, development and clinical validation of a biomarker pipeline that will be used for diagnosis and to develop new drugs in preventive medicine.

Effective biomarkers can lead to improving disease diagnosis, predicting the progression of a pathology, selecting the best drug for each patient and closely monitoring therapeutic response. The field of biomarkers is therefore in great expansion on an international level, in both the public and private sectors, and the role of these biomarkers in companion diagnostics has become a key component of personalized (or precision) medicine. Although biopharmaceutical companies show great interest in biomarkers, the process of development, validation, certification and commercialization remains under developed.

To remedy this situation, the IRCM proposes a biomarker pipeline using clinical proteomics; a model that does not currently exist in Canada and that could lead to the discovery and development of new diagnostic tools based on protein isoforms or their post-translational modifications. Thanks to its strong technology platforms, existing research projects and clinical research installations, the IRCM is well positioned to develop such a pipeline.

Caprion, a well-established biopharmaceutical firm in Montréal, has confirmed its support and intention to form a partnership with the

IRCM for this biomarker initiative. Montréal InVivo, MEDTEQ (Quebec Consortium for Industrial Research and Innovation in Medical Technology) and CQDM (Quebec consortium for drug discovery), natural partners for the IRCM's initiative, are already moving in the same direction, and the Quebec Network for Personalized Health Care (QNPHC) has also reacted favourably to the proposed model.

The initiative will provide patients in Quebec and Canada access to innovative and efficient diagnostic solutions that fulfil unmet medical needs. It will thus offer better therapeutic choices optimized for each patient, which will lead to improved health outcomes.



ADMINISTRATION AND PUBLIC AFFAIRS



The IRCM's management and visibility

To help them carry out their research and training activities, researchers at the IRCM can count on the support of numerous individuals who provide them with high-quality administrative services. The IRCM also relies on the volunteer support of its Board members who are particular assets for the institute's administrative and scientific management.

Moreover, the IRCM's researchers, volunteers and personnel contribute to the institute's reach and visibility in various ways, such as organizing scientific conferences and sharing their knowledge with the general public.

BOARD OF DIRECTORS AND MANAGEMENT

- [IRCM Board of Directors](#)
- [Management](#)

ORGANIZATIONAL CHARTS

FINANCIAL STATEMENTS

RESEARCH FUNDING

PARTICIPATING: SCIENCE FOR ALL

- [Scientific conferences](#)
- [Belles Soirées de l'Université de Montréal](#)
- [The IRCM in the media](#)



IRCM BOARD OF DIRECTORS

The Board of Directors is the body responsible for managing the IRCM's affairs to ensure it fulfils its mission. Its directors are prominent members of Quebec's socioeconomic and scientific community who volunteer their time for the cause.

Between the 2014 general assembly and the one held in 2015, six regular Board meetings took place. The Board member's attendance rate was of 88 per cent.

Honours received by a Board member

The IRCM's directors are individuals committed not only to the institute, but to society in general. In this regard, they are often honoured by various organizations for their contribution to the community.

This year, **Monique Jérôme Forget** was appointed Member of the Order of Canada and received a Lifetime Achievement Award from the organization La Gouvernance au Féminin. These well-deserved honours recognize her numerous achievements, her deep commitment to serving the public interest and her exceptional role as a mentor for women.



Members of the IRCM Board of Directors

(Members appointed from June 2014 to June 2015)

CHAIR

Louise Lambert-Lagacé

President, La clinique de nutrition Louise Lambert-Lagacé et associées

VICE-CHAIR

Michael L. Turcotte

Corporate Director

PRESIDENT AND SCIENTIFIC DIRECTOR

Tarik Möröy

MEMBERS

Luc Boileau

President and Director General, Institut national d'excellence en santé et services sociaux

Guy Breton

Rector, Université de Montréal

André J.P. Couillard

*President, IRCM Foundation
Vice President, Conroy Ross Partners, an Optimum Talent partner company*

Louise Dandurand

President, Acfas (Association francophone pour le savoir)

Michel Décary

Consulting partner, BCF law firm

Hélène Desmarais

*Chairwoman of the Board of Directors,
HEC Montréal*

Abraham Fuks

Professor, McGill University

Brian Z. Gelfand

*Vice-President of Institutional Relations
and Market Operations, Montréal
Exchange*

Monique Jérôme-Forget

Special Advisor, Osler

W. Robert Laurier

Corporate Director

Christine Le Jeune

CMA, FCA

Michel Lespérance

Corporate Director

Hélène Robitaille

Corporate Director

Pierre Shooner

Corporate Director

Yvon Turcotte

*Communications and Public Affairs
Advisor - Corporate Director*

SECRETARY

Stéphane Létourneau

*Executive Director, Corporate and legal
affairs, IRCM*

TREASURER

Louis-Gilles Durand

*Executive Director, Administration and
research services, IRCM*

OBSERVERS

Martin Doyon (until January 2015)
and Frédérique-Myriam Villemure
(since January 2015)

*Ministère de l'Économie, de l'Innovation
et des Exportations (MEIE)*

Board committees

(Members appointed from June 2014 to June 2015)

EXECUTIVE COMMITTEE

Louise Lambert-Lagacé, Chair

W. Robert Laurier

Michel Lespérance

Tarik Möröy

Michael L. Turcotte, Vice-Chair

COMMUNICATIONS COMMITTEE

Monique Jérôme-Forget

Hélène Robitaille

Yvon Turcotte, Chair

GOVERNANCE COMMITTEE

Michel Décary

Brian Z. Gelfand

Michel Lespérance

Michael L. Turcotte, Chair

HUMAN RESOURCES COMMITTEE

André J.P. Couillard

Louise Lambert-Lagacé

Christine Le Jeune

Michel Lespérance, Chair

AUDIT COMMITTEE

W. Robert Laurier, Chair

Christine Le Jeune

Pierre Shooner



IRCM MANAGEMENT

Tarik Möröy serves as President and Scientific Director and, as such, oversees both the IRCM's administrative and scientific operations. He thus chairs two steering committees: the Management committee and the Scientific Management committee. For the latter, he receives support from other scientists who share administrative responsibilities for the research units they each manage. Tarik Möröy also supervises his own research laboratory at the IRCM.



MANAGEMENT COMMITTEE

Left to right:
Stéphane Létourneau, André Veillette, Louis-Gilles Durand, Yves Berthiaume, Tarik Möröy

MANAGEMENT COMMITTEE

This committee's role is to support the President and Scientific Director in his administrative and management functions. It coordinates the actions, departments and personnel supervised by executive directors in order to accomplish the IRCM's fundamental mission of excellence in research and training.

Committee members (appointed for 2014-2015)

Yves Berthiaume
Louis-Gilles Durand
Stéphane Létourneau
Tarik Möröy
André Veillette

SCIENTIFIC MANAGEMENT COMMITTEE

The Scientific Management committee is composed of the five research division directors. This committee's primary role is to advise the President and Scientific Director on the recruitment of new research unit directors, the institute's strategic planning, and the mandate and relevance of various core facilities.

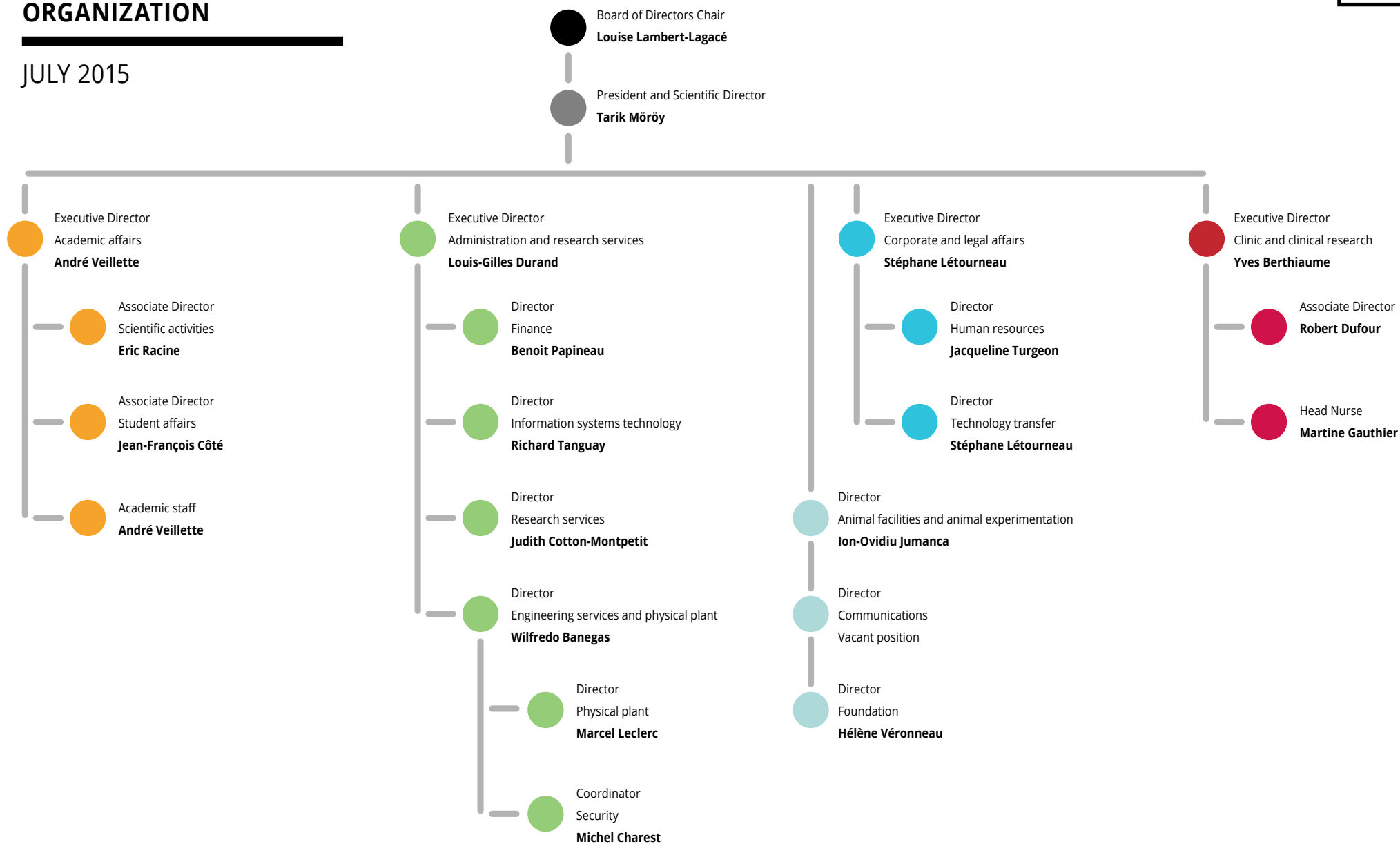
Committee members (appointed for 2014-2015)

Éric A. Cohen
Artur Kania (until November 2014)
Marie Kmita (since November 2014)
Tarik Möröy
François Robert
Nabil G. Seidah
Jean Vacher



ADMINISTRATIVE ORGANIZATION

JULY 2015



SCIENTIFIC ORGANIZATION

JULY 2015

Board of Directors Chair
Louise Lambert-Lagacé

President and Scientific Director
Tarik Mörröy

These researchers are members of the IRCM's Scientific Committee.

Are also members: Jean Davignon, Robert Dufour, Louis-Gilles Durand, Zaher S. Hanna, Maxime Lamarre-Cliche, Pierre Larochelle, Annik Prat





FINANCIAL STATEMENTS





Summarized Statement of Financial Position

March 31, 2015, with comparative information for 2014

	2015				2014			
	Operating Fund	Restricted Funds		Total	Operating Fund	Restricted Funds		Total
		Research Fund	Capital Asset Fund			Research Fund	Capital Asset Fund	
Assets								
Current assets:								
Cash and cash equivalents	\$ 2,030,114	\$ 7,908,438	\$ -	\$ 9,938,552	\$ 1,430,182	\$ 3,372,574	\$ -	\$ 4,802,756
Grants receivable and other receivables	54,826	5,319,555	-	5,374,381	55,290	8,307,603	-	8,362,893
Donations receivable from the Foundation	-	131,077	-	131,077	-	118,645	-	118,645
Current portion of grants receivable	-	-	3,799,538	3,799,538	-	-	3,352,660	3,352,660
Prepaid expenses	30,175	77,106	-	107,281	48,503	28,569	-	77,072
Interfund advances ⁽¹⁾	264,810	-	-	-	183,482	-	-	-
Advances receivable from the Foundation	26	1,987	-	2,013	12,459	819	-	13,278
	2,379,951	13,438,163	3,799,538	19,352,842	1,729,916	11,828,210	3,352,660	16,727,304
Investments	570,378	-	-	570,378	504,375	-	-	504,375
Investment in a subsidiary	-	1,021,761	-	1,021,761	-	100,031	-	100,031
Grants receivable	-	-	19,886,412	19,886,412	-	-	23,138,770	23,138,770
Capital assets	-	-	36,659,522	36,659,522	-	-	40,638,232	40,638,232
	\$ 2,950,329	14,459,924	\$ 60,345,472	\$ 77,490,915	-	\$ 2,234,291	\$ 11,928,241	\$ 67,129,662
								\$ 81,108,712
Liabilities								
Current liabilities:								
Accounts payable and accrued liabilities	\$ 591,723	\$ 763,500	\$ 202,580	\$ 1,557,803	\$ 589,362	\$ 855,350	\$ 184,189	\$ 1,628,901
Accrued remuneration and salaries payable	2,751,054	476,012	-	3,227,066	2,212,071	472,166	-	2,684,237
Current portion of notes payable	-	-	3,596,958	3,596,958	-	-	3,168,471	3,168,471
Interfund advances ⁽¹⁾	-	264,810	-	-	-	183,482	-	-
	3,342,777	1,504,322	3,799,538	8,381,827	2,801,433	1,510,998	3,352,660	7,481,609
Notes payable			19,886,412	19,886,412			23,138,770	23,138,770
Fund Balances (Deficiencies)								
Invested in capital assets	-	-	36,659,522	36,659,522	-	-	40,638,232	40,638,232
Externally restricted	-	12,955,602	-	12,955,602	-	10,528,115	-	10,528,115
Deficit on internally restricted balances	-	-	-	-	-	(110,872)	-	(110,872)
Deficit unrestricted net assets	(392,448)	-	-	(392,448)	(567,142)	-	-	(567,142)
	(392,448)	12,955,602	36,659,522	49,222,676	(567,142)	10,417,243	40,638,232	50,488,333
	\$ 2,950,329	14,459,924	\$ 60,345,472	\$ 77,490,915	\$ 2,234,291	\$ 11,928,241	\$ 67,129,662	\$ 81,108,712

⁽¹⁾ For presentation purposes, the interfund advances were eliminated from the total column.



Summarized Statement of Operations

Year ended March 31, 2015, with comparative information for 2014

	2015		2014		2015		2014	
	Operating Fund		Research Fund		Restricted Funds		Capital Asset Fund	
Revenues:								
Peer review grant program	\$ -	\$ -	\$ 15,586,760	\$ 16,383,022	\$ -	\$ -	\$ -	\$ -
Grants - interest and management fees portion	-	-	-	-	815,628	-	1,073,868	-
Other research grants	-	-	2,254,355	2,443,591	-	-	-	-
Restricted donations	-	-	53,906	755	-	-	-	-
Grant from ministère de l'Économie, de l'innovation et des Exportations (MEIE)	15,842,313	15,842,313	-	-	-	-	-	-
Grant from federal councils for indirect costs	1,134,856	1,127,512	-	-	-	-	-	-
Grant from peer committee organizations for indirect costs	73,307	-	-	-	-	-	-	-
Donations from Fondation de l'Institut de recherches cliniques de Montréal	-	-	2,260,077	2,239,543	-	-	-	-
Contribution from Université de Montréal	771,765	741,234	-	-	-	-	-	-
Management fee revenues from the Foundation	180,194	159,869	-	-	-	-	-	-
Investment income	27,007	33,363	187,481	44,296	-	-	-	-
Share in the earnings of the subsidiary	-	-	719,789	-	-	-	-	-
Change in fair value of investments	44,982	33,327	-	-	-	-	-	-
	\$ 18,074,424	\$ 17,937,618	\$ 21,062,368	\$ 21,111,207	\$ 815,628	\$ -	\$ 1,073,868	\$ -
Expenses:								
Research Fund expenses for the year	\$ -	\$ -	\$ 17,745,533	\$ 17,264,603	\$ -	\$ -	\$ -	\$ -
Operating Fund expenses for the year	17,551,387	17,947,640	-	-	-	-	-	-
Depreciation of capital assets	-	-	-	-	5,096,625	-	5,315,557	-
Interest on notes payable	-	-	8,904	8,380	815,628	-	1,073,868	-
Share in the loss of the subsidiary	-	-	-	199,383	-	-	-	-
	\$ 17,551,387	\$ 17,947,640	\$ 17,754,437	\$ 17,472,366	\$ 5,912,253	\$ -	\$ 6,389,425	\$ -
Excess (deficiency) of revenues over expenses	\$ 523,037	\$ (10,022)	\$ 3,307,931	\$ 3,638,841	\$ (5,096,625)	\$ -	\$ (5,315,557)	\$ -

Summarized Statement of Changes in Fund Balances

Year ended March 31, 2015, with comparative information for 2014

	2015		2014		2015		2014	
	Operating Fund		Research Fund		Restricted Funds		Capital Asset Fund	
Fund balances (deficiencies), beginning of year	\$ (567,142)	\$ 95,898	\$ 10,417,243	\$ 8,582,928	\$ 40,638,232	\$ -	\$ 43,496,245	
Excess (deficiency) of revenues over expenses	523,037	(10,022)	3,307,931	3,638,841	(5,096,625)	-	(5,315,557)	
Interfund transfers	(348,343)	(653,018)	(769,572)	(1,804,526)	1,117,915	-	2,457,544	
Fund balances (deficiencies), end of year	\$ (392,448)	\$ (567,142)	\$ 12,955,602	\$ 10,417,243	\$ 36,659,522	\$ -	\$ 40,638,232	



Government agencies and departments provide essential funding for the institute's research activities. In most cases, funds are granted based on the recommendation of peer-review committees. Researchers, as well as the students and postdoctoral fellows on their team, benefit from this funding.

SOURCES OF FUNDING

(April 1, 2014 to March 31, 2015)

74.0%

Peer-reviewed granting agencies

10.7%

Donations from the IRCM Foundation

5.8%

Pharmaceutical industry

9.5%

Other sources

Total: \$21.1 million or 100%

RESEARCH FUNDING AT THE IRCM

LIST OF THE IRCM'S MAIN FUNDING PARTNERS FOR 2014-2015

Peer-reviewed granting agencies

Allen Foundation Trust – Alzheimer Society – Brain Canada – Breast Cancer Foundation – Canada Foundation for Innovation – Canada Research Chairs – Canadian Blood Services – Canadian Cancer Society – Canadian Diabetes Association – Canadian Institutes of Health Research – Canadian Liver Foundation – Cancer Research Society – Cystic Fibrosis Canada – Fondation Leducq – Fonds de recherche du Québec-Santé – Foundation Fighting Blindness Canada – Leukemia & Lymphoma Society – Ministère de l'Économie, de l'Innovation et des Exportations du Québec – Muscular Dystrophy Association – National Institutes of Health – Natural Sciences and Engineering Research Council of Canada – Neurodevelopmental Network – Polycystic Kidney Disease Foundation – Richard and Edith Strauss Canada Foundation – Scottish Rite Charitable Foundation of Canada – Social Sciences and Humanities Research Council of Canada – Thoracic Surgery Research Foundation of Montreal

Total: \$15,586,760

IRCM Foundation

Total: \$2,260,077

Pharmaceutical industry

Amgen – AmorChem Holdings Inc. – AstraZeneca Canada – Bristol-Myers Squibb Canada – Eli Lilly Canada – Genzyme – Merck – Mondelez France R&D – Novartis Pharma Canada Inc. – Novo Nordisk – Pfizer Canada Inc. – Quintiles – Regeneron – Sanofi Canada

Total: \$1,228,344



Participating *Science for all*

It is important for the IRCM to share its research progress with the scientific community as well as the general public to make science accessible to all. Thus, in 2014-2015, the institute's researchers continued to organize scientific conferences and contribute to public radio and television programs. Some also participated in a series of public conferences offered by the Université de Montréal. Furthermore, the IRCM is present on social networks to maintain a constant link with its various publics.



SCIENTIFIC CONFERENCES

This year, researchers organized several conferences at the IRCM to share the knowledge acquired in their fields with their peers from the scientific community.

Annual CanCURE meeting | November 20 and 21, 2014

Led by **Éric A. Cohen** and for which **Cheolho Cheong** is a member, the [Canadian HIV Cure Enterprise \(CanCURE\)](#) is a national research collaboration focused on the study of HIV persistence and the development of strategies towards a functional cure for HIV/AIDS. This first annual meeting was an opportunity for researchers to present the progress of their projects.

Montréal Immunology Meetings | February 3, 2015

The IRCM hosted the year's first 5 à 7 seminar organized by the [Montréal Immunology Meetings \(MIM\)](#), an ad hoc organization composed of immunology researchers representing the city's major research institutions, including the IRCM, Université de Montréal, McGill University and INRS-Institut Armand Frappier. Organized by **Javier M. Di Noia**.

Joint IRCM-IMRIC conference | March 24 and 25, 2015

The first joint conference on biomedical research organized by the IRCM and IMRIC (Institute for Medical Research Israel-Canada) was organized to favour ties between Quebec and Israeli researchers from the two institutions and pave the way for joint research projects. It concluded with the announcement of a travel scholarship program of \$15,000 to promote the exchange of postdoctoral fellows between the IRCM and

IMRIC. Organized by **Artur Kania**.

Montreal Neuroethics Conference for Young Researchers | April 17, 2015

The Montreal Neuroethics Conference for Young Researchers was intended for young researchers, trainees, and students from all fields interested in neuroethics, including bioethics, neuroscience, neuropsychology, psychiatry, law, social science, and journalism. Participants came from nine different countries (Canada, USA, United Kingdom, Switzerland, France, Turkey, Netherlands, Mexico, and Sweden). Organized by **Eric Racine**.

Rare diseases and immunodeficiencies

Several meetings on rare diseases and immunodeficiencies took place at the IRCM. These meetings were in line with one of the initiatives outlined in the 2016-2021 strategic plan, which is to create a [Research centre on rare and genetic diseases in adults](#). Presentations by experts in the field were followed by round-table discussions about the development of this centre for clinical and applied research at the IRCM. Organized by **Yves Berthiaume** and **André Veillette**.



LES
**BELLES
SOIRÉES**
LES APRÈS-MIDI AUSSI

BELLES SOIRÉES DE L'UNIVERSITÉ DE MONTRÉAL

In March 2015, four physicians from the IRCM clinic presented a series of conferences as part of the Belles Soirées de l'Université de Montréal, in the science and life category, to share the latest breakthroughs in their research fields with the general public.

Diabetes and therapeutic avenues

Rémi Rabasa-Lhoret | Tuesday, March 10

Hypertension: do you know your blood pressure?

Pierre Larochelle | Tuesday, March 17

Cholesterol: replacing statins

Robert Dufour | Tuesday, March 24

Rare diseases: the challenges

Yves Berthiaume | Tuesday, March 31

[Montreal Gazette](#) | *"A sad disease": Montreal researchers find new*



THE IRCM IN THE MEDIA

The discoveries made by IRCM researchers frequently capture the attention of media in Montréal, Canada and abroad. They are thus published in major daily newspapers, local and national television and radio programs, as well as numerous web and social media outlets.

Moreover, researchers, physicians and other professionals from the institute and the IRCM Clinic are often approached by various media looking for experts for an article or program. Their participation as experts contributes to increasing the IRCM's visibility and informs the general public of hot topics related to health and health research.

The following is a selection of the IRCM's extensive media coverage in 2014-2015.

On the front page

Offering hope for children with orphan diseases

Benoit Coulombe, in collaboration with researchers from the McGill University Health Centre, made a discovery that could lead to new diagnostic tools to help children with leukodystrophies. In addition to being shared by several media, this breakthrough made the cover of the *Montreal Gazette* daily newspaper.



mutation linked to rare genetic condition

[Global News Montreal](#) | *MUHC says it made breakthrough to treat degenerative disease*

[Le Devoir](#) | *Découverte du gène de la leucodystrophie*

An important battle against HIV

An important scientific breakthrough by **Éric A. Cohen** and his team on HIV persistence interested many journalists and, for instance, was showcased on the home page of the Journal de Montréal website. Dr. Cohen and research associate **Mariana Bego** were also selected as the week's personalities (Personnalités de la semaine) by daily newspaper *La Presse* in honour of their discovery.

[Le Journal de Montréal](#) | *La ruse du VIH enfin décodée*

[Salut Bonjour, TVA](#) | *Gagnera-t-on la guerre contre le sida ?*

[CTV News Channel](#) | *The challenges of finding a cure for HIV/Aids*

[La Presse+](#) | *Personnalités de la semaine : Éric Cohen et Mariana Bego*

Scientific breakthroughs

Once again this year, IRCM researchers granted many media interviews to share their discoveries with the public.

Breakthrough associated with childhood blindness (Michel Cayouette)

[L'heure de pointe Toronto, Radio-Canada Première Toronto](#) | *Découverte médicale pour les gens qui souffrent de cécité*

Discovery of a mechanism that could lead to blindness (Michel Cayouette)

[RCI \(Radio Canada International\)](#) | *New discovery in degenerative eye disease*

New function of the bone associated with diabetes and obesity (Mathieu Ferron)

[TVA Nouvelles](#) | *Les os produisent une hormone qui protège du diabète*

Paediatric study on the external artificial pancreas (Rémi Rabasa-Lhoret / Ahmad Haidar)

[MedicalResearch.com](#) | *Dual Hormone Artificial Pancreas Reduces Nocturnal Hypoglycemia in Type 1 Diabetes*



Preventing the development of brain tumours in children (Frédéric Charron)

[Info Matin, Radio-Canada Première Chaîne | Découverte en recherche sur le cancer du cerveau chez les enfants](#)

The external artificial pancreas (Rémi Rabasa-Lhoret)

[L'actualité | Le pancréas artificiel améliorerait le traitement du diabète de type 1](#)

[Journal Métro | Le pancréas artificiel contre le diabète de type 1](#)

Our experts in the media

Cystic fibrosis (Yves Berthiaume)

[Découverte, Radio-Canada | La fibrose kystique: un nouvel espoir](#)

Neurostimulation devices to improve performance (Eric Racine)

[La Presse+ | Des dispositifs commercialisés en plein flou réglementaire](#)

New drugs to treat cholesterol (Nabil G. Seidah)

[CBC News \(Health\) | Cholesterol-lowering drugs show promise as alternative to statins](#)

Research in a francophone environment (Tarik Möröy)

[Nature Jobs | Spotlight on Francophone Regions](#)

Translational research (Tarik Möröy, Nabil G. Seidah, Michel Chrétien, Robert Dufour and Benoit Coulombe)

[Biotechnology Focus | Translational research: a successful model](#)

World AIDS Day (Éric A. Cohen)

[L'heure du monde, Radio-Canada Première-Chaîne | Vaincre l'épidémie mondiale de sida : Réaliste ou pas](#)

Social networks

The IRCM continues to be present on **Facebook**. As of August 31, 2015, the institute's Facebook page had 836 followers interested in IRCM news and photo albums from its various events. The IRCM also has a **YouTube** channel with over 100 videos.



Research funding is an important issue for a society's development, as research generates social and economic growth. Philanthropy is thus an indispensable asset for a research institution like the IRCM.

The IRCM Foundation is therefore an essential partner for the institute. Thanks to generous donors who value research, the Foundation is able to fulfill its mission and support scientific projects, technological development and training activities at the IRCM, thereby contributing to the institute's growth and success. As a result, IRCM researchers can rely on resources that allow them to innovate and implement novel programs in biomedical research, which lead to significant discoveries.

MESSAGES FROM MANAGEMENT

- [Message from the President](#)
- [Message from the Director](#)

SUPPORTING

- [Major fundraising campaign *Give for Life*](#)
- [Annual fundraising activities](#)

VOLUNTEERING

- [Foundation Board of Directors](#)
- [Board committees](#)

GIVING

- [Distribution of donations and expenses](#)
- [Scholarships and excellence awards](#)
- [Research funds and chairs](#)



MESSAGES FROM MANAGEMENT

Message from the Foundation's President

This year, the IRCM Foundation donated a record amount to the institute. Thanks to our annual fundraising activities, we gave the IRCM over \$2.2 million for health research and training.

Appointments to the Board

I had the pleasure of appointing two new members to our Board of Directors in 2014-2015. I would like to welcome **Louise Ann Maziak**, Vice-President of National Accounts at TD Commercial Banking, and **Nathalie Boies**, Founder President of Walkiri Marketing.

Strategic planning

In the present economic context, the Foundation must aim to increase its revenue in the coming years to meet the institute's growing needs. The Board thus initiated a strategic planning exercise to further promote the development of the IRCM's activities. Considering the fact that we already have a solid foundation and structured approach, our 2015-2018 strategic plan does not include a shift in direction, but rather an evolution of existing activities in order to reach ever-ambitious goals.



For example, the IRCM's 50th anniversary in 2017 presents a unique opportunity to increase the Foundation's revenue and financial assets. Therefore, one of our goals is to increase the capital of our endowment fund, which would mark this important milestone and ensure a sustainable plan to support the IRCM. We also developed several strategies to grow revenues of our annual activities and implement new solicitation programs. We are also relying on support from our volunteers. For instance, we want to establish a committee composed of professionals under 40 to help build a relationship with younger members of the business community.

Major fundraising campaign

Our major fundraising campaign *Give for Life* ended in 2015. Thanks to over 1,000 businesses, foundations and individuals, we surpassed our \$15-million objective. I wish to warmly thank all our donors for their great generosity towards our Foundation, particularly the members of our Circle of benefactors who confirmed how much they value research.

Fundraising activities

Our fundraising activities were very successful this year. I would like to thank all our volunteers for their remarkable work, whether they were part of our ambassadors committees or helped organize and carry out our events. I also wish to thank our honorary chairs and patrons for their support, namely **Martin Thibodeau** who chaired the 2014 annual dinner, **Wilner Morisseau** and **Florence Legros** who co-chaired the 2015 golf tournament, and **David Le Porho**, honorary patron of the 2015 IRCM Challenge.

Acknowledgements

In closing, I thank all my colleagues on the Board of Directors for their collaboration and continued support. I also wish to thank **Hélène Véronneau**, Director of the Foundation, and her team for their commitment and excellent work, as well as IRCM employees who support us in our various projects.

André J.P. Couillard





Message from the Foundation's Director

2014-2015 was a very busy year for the IRCM Foundation, in particular with the major fundraising campaign.

Major fundraising campaign *Give for Life*

This year, we celebrated the end, and the success, of our major fundraising campaign *Give for Life*. We are proud to have exceeded our goal by raising \$15.2 million to support health research at the IRCM. I would like to sincerely thank everyone who supported our campaign, especially the Fondation J.A. DeSève and the Marcelle and Jean Coutu Foundation for their exceptional contributions. I also wish to thank the co-chairs of the campaign Board, Sophie Brochu and Emmanuel Triassi, as well as its members for their commitment.

Before the end of the campaign, we announced important donations, including two that enabled the creation of new funds: the Fondation J.A. DeSève Fund for diabetes research and the artificial pancreas, and the Michel-Saucier Fund for priority research. We also received numerous donations that allowed the IRCM to renovate its seventh-floor apartment, which is made available to collaborators and speakers from outside Montréal. I would like to especially thank designer **Johanne Morency** who offered her services free of charge and obtained the numerous goods and services donations required to carry out this project.

Fundraising activities

Once again this year, our fundraising activities obtained excellent results, particularly the 2015 IRCM Challenge that raised a record amount of over \$100,000. Together, the annual activities allowed the Foundation to grant 10 scholarships.

I sincerely thank everyone who participates in our fundraising activities, as well as all the partners who support them. I also want to recognize the outstanding collaboration of our committee members for their work and dedication to our cause. In addition, I wish to thank the members of the IRCM's internal community for their support, especially the ones who volunteer during our events. Together, these individuals greatly contribute to the success of our annual campaigns.

Acknowledgement

Finally, I wish to thank the President of the Foundation, **André J.P. Couillard**, and the members of the Board, as well as the IRCM's President and Scientific Director, **Tarik Möröy**, for their trust and support.



I also warmly thank my team at the IRCM Foundation, **Stèves Morin** and **Carole Marcotte**, for their valuable cooperation, as well as all my colleagues at the institute.

Hélène Véronneau



\$15.2 million

for the major fundraising campaign

\$493,761

annual fundraising activities in 2014-2015

\$55,360

annual direct mail campaign in 2014-2015

Supporting

The major fundraising campaign *Give for Life* came to an end this year. It allowed the IRCM, among other things, to recruit and setup six new researchers, create research chairs and funds, and grant scholarships to students and postdoctoral fellows, thus training the future generation of scientists.

Moreover, the fundraising activities and annual direct mail campaign directly support the institute by helping set up new research units and train young researchers.

THE MAJOR FUNDRAISING CAMPAIGN *GIVE FOR LIFE* COMES TO AN END



The campaign surpasses its \$15-million objective

This year, the IRCM Foundation's 2009-2014 major fundraising campaign, *Give for Life*, came to an end. The campaign, which raised funds to support health research at the IRCM, exceeded its objective by raising \$15.2 million.

The campaign was publicly launched in 2011 by the co-chairs of the campaign Board, **Sophie Brochu**, President and CEO of Gaz Métro, and **Emmanuel Triassi**, CEO of Astaldi Canada. Prior to its public launch, a silent phase of the campaign was conducted with the IRCM's internal community, which collected over \$1 million. Several subsequent donations were facilitated thanks to the leverage achieved through these funds.

Photos of the closing ceremony



Left to right:

Emmanuel Triassi, Tarik Möröy, Louise Lambert-Lagacé, André J.P. Couillard, René Goulet, Gérard A. Limoges



Lyne Lavoie,
CEO of J. Armand Bombardier Foundation
and **Andrew Molson,**
President of Molson Foundation

Achievements

The major fundraising campaign *Give for Life* contributed to the growth of the IRCM and the advancement of research. For example, it led to the recruitment and installation of researchers, as well as important investments in cancer, diabetes, ethics, infectious and cardiovascular disease, and neuroscience.

CREATION OF RESEARCH CHAIRS AND FUNDS

André-Aisenstadt Chair of Excellence | BMO Financial Group Fund for priority research | Cogeco Fund for cancer research | Contributions to the Rosario and Annette Genest Fund for ethics research | Contributions to the Sainte-Thérèse de l'Enfant-Jésus Fund in memory of Mable and Lucien Toupin | Diana and Sam Scalia Fund for research on cardiovascular and metabolic diseases | Emmanuel-Triassi Fund for cancer research | Fondation J.A. DeSève Fund for diabetes research and the artificial pancreas | Gaz Métro Fund for priority research | Gosselin-Lamarre Chair in clinical research | Hydro-Québec Fund for priority research | Jean-Guy-Desjardins Fund for priority research | Louise and André B. Charron Family Fund for research on neurodegenerative diseases | Lucille, Rollande and Gaétane Côté Fund | Michel-Saucier Fund for priority research | Mirella and Lino Saputo Fund for priority research | National Bank Fund for cancer research | Power Corporation of Canada Fund for priority research | Quebecor Fund for neurology research | RBC Royal Bank Fund for research on infectious diseases | SAQ Fund for priority research | Scotia Bank Fund for diabetes research

CREATION AND GRANTING OF SCHOLARSHIPS TO STUDENTS AND POSTDOCTORAL FELLOWS

Contributions to the Jean-Coutu Postdoctoral Scholarship Fund | IRCM In-House Fund for Excellence | J. Armand Bombardier Foundation and Molson Foundation Fund for molecular and cellular medicine | TD Fund for excellence in the medical field



GIVE FOR LIFE CAMPAIGN BOARD

CO-CHAIRS

Sophie Brochu
President and CEO, Gaz Métro

Emmanuel Triassi
CEO, Astaldi Canada Inc.

MEMBERS

Nathalie Bernier
Associate Director, KPMG

Françoise Bertrand
President and CEO, Fédération des chambres de commerce du Québec

Michel Chrétien
IRCM Emeritus Research Professor

Jean-Guy Desjardins
Desjardins-Moreau Foundation

Claude A. Garcia
Corporate Director

Jacques Gauthier
Corporate Director

Norman E. Hébert
President and CEO, Groupe Park Avenue Inc.

W. Robert Laurier
Corporate Director

L. Jacques Ménard
Chairman of the Board of Directors, BMO

Yvon Turcot
*Communications and Public Affairs Advisor
Corporate Director*

Michael L. Turcotte
Corporate Director

Louis Vachon
President and CEO, National Bank

René Vézina
Columnist and Senior Reporter, Les Affaires



DONORS FROM THE MAJOR FUNDRAISING CAMPAIGN *GIVE FOR LIFE*

THANK YOU VERY MUCH!

OVER \$1,000,000

Fondation J.A. DeSève
Marcelle and Jean Coutu Foundation

\$500,000 TO \$999,999

Desjardins-Moreau Foundation
Gaétane Beauchemin Estate
Gosselin Family Foundation
IRCM internal community
Marie and Guy Lamarre
National Bank
Power Corporation of Canada

\$250,000 TO \$499,999

Gaz Métro
Hydro-Québec
J. Armand Bombardier Foundation
Mirella and Lino Saputo Foundation
Molson Foundation
RBC Foundation
Michel Saucier

\$100,000 TO \$249,999

BMO Financial Group
Cogeco
Jeanne-Mance Foundation
Les Œuvres Le Royer
Louise and André B. Charron family
Marika Farago Teakle Estate
Québecor
SAQ
Diana and Sam Scalia
Scotia Bank
TD Bank Group

\$25,000 TO \$99,999\$

Anonymous (1)
Aon Hewitt / Aon Risk Solutions
Hélène Desmarais
Louis-Gilles Durand
Groupe Park Avenue
Groupe Petra
Groupe TEQ
Industrial Alliance
Lafleur Portes de garage industrielles
Gérard A. Limoges
Luigi Liberatore Foundation
Lydia Bérard Estate
Métro Inc.
Joseph J. Paulin
Placements Borsa Inc.

Seamont Foundation
Cécile and Pierre Shooner
André Toupin

\$10,000 TO \$24,999

Yves Berthiaume
CIBC
Éric A. Cohen
Denise and Guy St-Germain Foundation
Robert Dufour
Marinella Ermacora and Pierre-Yves Le Mignon
Félix and Christiane Furst
Claude A. Garcia
Jacques Gauthier
Estelle and Jacques Genest
Gestion Fortune Hill Inc.
Gildan / Pierre Robitaille
Italian Chamber of Commerce in Canada
Johanne Morency Design
Pierre Larochelle
Claude Lazure
Marie-Paule Allard Estate
MOBILIA
Susanne and Tarik Möröy
Monique and Robert Parizeau
Paul A. Fournier Foundation
Guylaine Saucier
Sibylla Hesse Foundation

\$5,000 TO \$9,999

Anonymous (3)
Maor Amar
Jacques Archambault
Serge A. Boileau
Jacques De Champlain
Christian F. Deschepper
Paul Jolicoeur
Ovidiu Jumanca
Louise Lambert-Lagacé
Paule Leduc
Stéphane Létourneau
Camille Limoges
Gaétan Lussier
Alain Mayrand
Michael A. Meighen
Mike Prioletta and family
Roscoe Postle Associates
Guy Saint-Pierre
M. Ram Sairam
Peter W. Schiller
Michael L. Turcotte
Jacqueline Turgeon
Hélène Véronneau

UNDER \$5,000

Over 1,000 donors



ANNUAL FUNDRAISING ACTIVITIES

2014 annual dinner *Hommage à la découverte*

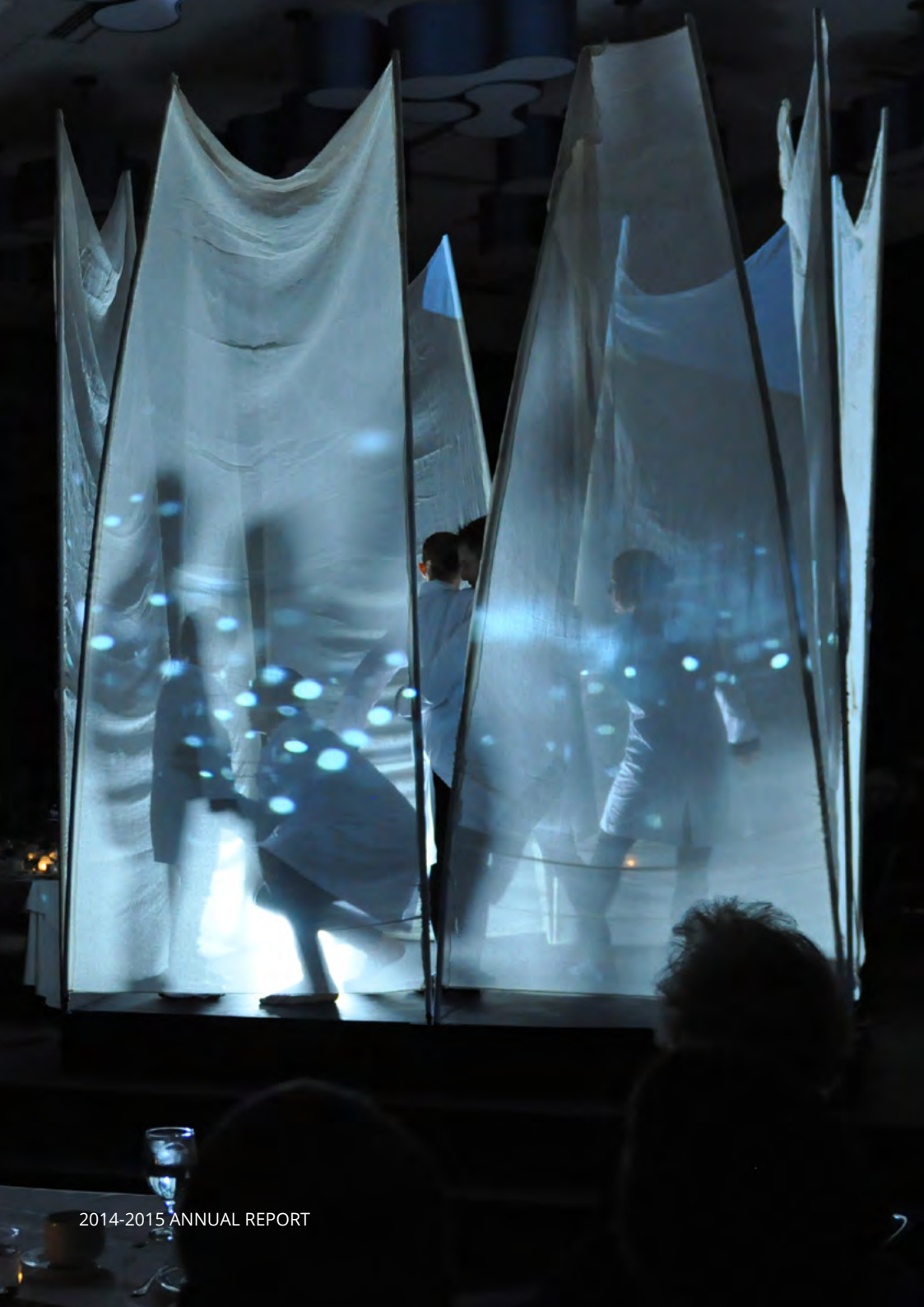
Honorary chairman: **Martin Thibodeau**, President, Quebec Headquarters, RBC Royal Bank

Host: **Dennis Trudeau**

Discovery was at the heart of the 2014 annual dinner, which brought together 350 people at the Hyatt Regency in Complexe Desjardins. The event raised **over \$250,000** in net profits for health research at the IRCM.

The opening number, produced on a volunteer basis by professionals from the Montréal art scene, combined a dance choreography unfolding behind transparent screens on which light and shadows were cast, with an audio track recounting sources of inspiration and motivation as told by the institute's researchers and students. Throughout the evening, interviews took place on stage with IRCM researchers. As such, **Éric A. Cohen**, **Nabil G. Seidah** and **Robert Dufour** briefly described research projects that received significant grants. In addition, the 2014 Marcel-Piché Award was presented to **Jean-François Côté**, Associate IRCM Research Professor and Director of the Cytoskeletal Organization and Cell Migration research unit.

Photos of the event



PARTNERS

Honorary partner: RBC Royal Bank

Devoted partners: Bombardier | Hydro-Québec | Norton Rose Fulbright | Power Corporation of Canada | SAQ | St-Hubert Group

Inspired partners: Arclen Blakely Foundation | BCF | BMO Financial Group | Business development Bank of Canada | Fasken Martineau | Guillevin International | HVAC | Merck Canada Inc. | Montréal Exchange | National Bank | Pfizer | Québecor | Raymond Chabot Grant Thornton | RBC Dominion Securities | Robic | Rx&D | Sodexo | Sun Life Financial | Tetra Tech QB Inc. | The Right Honourable Brian Mulroney and Mila Mulroney

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2015 Parcours Santé – Golf tournament

Honorary co-chairs: **Wilner Morisseau**, Vice President of civil engineering at Geninov, and **Florence Legros**, Vice President of Rayons de soleil

The 2015 Parcours Santé – golf tournament, held at Club de Golf Rosemère, raised **\$45,000** in net profits to support research and training activities at IRCM.

Once again this year, players could obtain a brief health check offered by nurses and physicians from the IRCM Clinic and Services de santé Rayons de soleil, in collaboration with Groupe Biron. Before their round of golf, a putting competition was also organized. Furthermore, IRCM nutritionists were set up along the golf course to quiz players on nutrition and heart health.

PARTNERS

Major partners: Groupe Geninov | Services de santé Rayons de soleil

Partners: Commission des services électriques de Montréal | Groupe Biron | Levy Pilotte | Matrec | McKesson Canada | Mp2B | NOJ Démolition | Pageau Morel | RBC Wealth Management | Richelieu | Sodexo | Stéris

AMBASSADORS COMMITTEE

Co-chairs: Serge A. Boileau | Jacques Gauthier

Members: Danièle Bergeron | Nathalie Boies | Robert Dufour | Robert Dupont | Marcel Leclerc | Steves Morin | Hélène Véronneau | Peter J. Young

TEAM FROM THE IRCM CLINIC

Nutritionists: Katherine Desjardins | Catherine Leroux | Valérie Savard

Nurse: Jennifer Levasseur

Photos of the tournament



2015 IRCM Challenge

Honorary patron: **David Le Porho**, sub-elite runner

Over \$100,000 (net profits) was raised during the sixth **IRCM Challenge**, thus surpassing the goal set at \$80,000. Thanks to this result, eight scholarships were granted to the IRCM's most deserving graduate students.

Approximately 600 people, including top runners and beginners, children and adults, participated in this sporting challenge held on Mount Royal. Three courses were offered: a 10-km trail race, a 5-km course for runners of all levels and walkers, and a 1-km race for children under 12. The IRCM Challenge thereby promotes physical activity and a healthy lifestyle to people of all ages.

A new online registration and fundraising platform was established this year. With this tool, participants could ask their family and friends to make or donation or recruit them to join their team.

Photos of the event



PARTNERS

Elite Partner: Salomon

Silver partners: IRCM PROMD research platform | Letko Brosseau | Norton Rose Fulbright

Bronze partners:

AmorChem | Birks | Charles River | Club Sportif MAA | Enterprise | FRUIT 2 | Gameloft | Groupe Gestion Globale | Groupe TEQ | ipDelta + | iPerceptions | KPMG | KSL | Larochelle | National Bank Financial / Bomhower | Pacini | Preston Phipps | Ressource impression | Sodexo | Synergie GGC

Supplier partners: Affymetrix / eBioscience | Corning | Fisher Scientific | GE | Liberté | Naya | PeproTech | PerkinElmer | Promega | Qiagen | Sarstedt | ThermoFisher Scientific

AMBASSADORS COMMITTEE

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Volunteering

The commitment of volunteers is crucial to a foundation. The IRCM Foundation is therefore privileged to rely on members of its Board of Directors, who value the institute's mission and growth.

IRCM FOUNDATION BOARD OF DIRECTORS

(Members appointed from June 2014 to June 2015)

In 2014-2015, five regular Board meetings were held.

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André J.P. Couillard
Vice-President, Conroy Ross Partners, an Optimum Talent Partner company

MEMBERS

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Giving

Many businesses, foundations, and individuals support the IRCM each year, either through its fundraising activities and direct mail campaign or by creating personalized funds. Other donors choose to support the Foundation by donating shares or making bequests.

**THANK YOU TO ALL
DONORS WHO ALLOWED
THE IRCM FOUNDATION
TO GIVE \$2,260,000
TO THE INSTITUTE
IN 2014-2015.**

2014-2015 distribution of income

Major fundraising campaign	\$1,418,105	52%
Fundraising activities	\$493,761	18%
Direct mail campaign	\$55,360	2%
Income from interest and investments	\$782,853	28%

TOTAL \$2,750,079

2014-2015 expenses

Management and administration	\$131,427	5%
Fundraising	\$286,886	11%
Donation to the IRCM	\$2,260,077	84%
Other expenses	\$2,283	0%

Total expenses \$2,680,673 *

*Source: [Canada Revenue Agency, year 2014-2015](#)

2014-2015 allocation of donations made to the IRCM

Understanding the causes and mechanisms of diseases and finding diagnostic tools and means of prevention and treatment	\$1,730,000	76.5%
Training a new generation of scientists	\$430,000	19%
Contributing to Quebec's socioeconomic development by facilitating the commercialization of new discoveries	\$100,000	4.5%

Total allocated \$2,260,000**

**Source: IRCM annual general assembly, June 2015



THANKS TO SUPPORT FROM ITS DONORS, THE FOUNDATION CAN, IN TURN, SUPPORT THE IRCM

2015 graduate scholarships

22 scholarships, totalling **\$306,160**, were awarded to interns, Master's and doctoral students, and postdoctoral fellows.

Jean-Coutu postdoctoral fellowship (Adèle Coriati)
 Drs. Staub-Matthay Master's scholarship (Valérie Savard)
 Emmanuel-Triassi Master's scholarship (Ashley Chin)
 Bombardier-Molson scholarships in molecular and cellular medicine (Jessica Bonneau | Vincent Desaulniers Brousseau | Fanny Giguère | Dhara Patel | Charles Rauturier)
 IRCM Challenge Master's scholarships (Amélie Germain | Olivier Rocheleau-Leclerc)
 IRCM Challenge /Merck Canada Master's scholarship (Awais Javed)
 IRCM Challenge doctoral scholarships (Omar Al-Rifai | Jérémy Ferreira-Barbosa | Rui Li | Alexandre Mayran)
Guépards et Gazelles Gourmands doctoral scholarship (Shannon Swikert)
 Tribute to discovery doctoral scholarship (Bin Li)
 Jacques-Gauthier doctoral scholarship (Claudia Gentile)
 Normand-Hébert Family doctoral scholarship (Brian Roome)
 Michel-F. Bélanger doctoral scholarships (Halil Bagci | Neera Srikandarajah)
 IRCM-IMRIC Travel Award (Xuan-Tam Nguyen)

2015 in-house fund for excellence awards

3 in-house excellence awards were granted to a student, two researchers, and an employee.

André-Barbeau Excellence Award (Ludivine Litzler)
 Pierre-Bois Excellence Award (Mariana Bego | Éric Léculyer)
 Vincent-Castellucci Excellence Award (Corinne Suppère)

The IRCM Foundation's research funds and chairs

Since the IRCM Foundation's beginnings, donor contributions have enabled the creation of several personalized funds and research chairs.

- André-Aisenstadt Chair of Excellence*
- Angelo-Pizzagalli Postdoctoral Scholarship Fund*
- Bell-Bombardier Chair in cardiovascular disease*
- BMO Financial Group Fund for priority research
- Canadian Pacific Research Chair in pain*
- Cogeco Fund for cancer research
- Diana and Sam Scalia Fund for research on cardiovascular and metabolic disease
- Emmanuel-Triassi Fund for cancer research*
- Fondation J.A. DeSève Fund for diabetes research and the artificial pancreas
- Gaz Métro Fund for priority research
- Gosselin Family Foundation Fund
- Gosselin-Lamarre Chair in clinical research
- Hydro-Québec Fund for priority research
- IRCM In-House Fund for Excellence*
- J. Armand Bombardier Foundation and Molson Foundation Fund for molecular and cellular medicine
- J.A. DeSève Chair in clinical research*
- Jacques-Genest - Royal Bank Chair*
- Jean-Coutu Postdoctoral Scholarship Fund*
- Jean-Guy-Desjardins Fund for priority research*
- John-Low-Beer Chair*
- Louise and André B. Charron Family Fund for research on neurodegenerative diseases
- Lucille, Rollande and Gaétane Côté Fund
- Marcel and Béatrice Piché Fund*
- Marie and Guy Lamarre Fund for priority research
- Marie and Willie Chrétien Fund*
- Michel-F.-Bélanger Cancer Research Chair*
- Michel-Saucier Fund for priority research
- Mirella and Lino Saputo Fund for priority research
- National Bank Fund for cancer research
- Power Corporation Fund for priority research
- Québecor Fund for neurology research
- RBC Royal Bank Fund for research on infectious diseases
- Rosario and Annette Genest Fund*
- Sainte-Thérèse de l'Enfant-Jésus Fund in memory of Mable and Lucien Toupin
- SAQ Fund for priority research
- Scotia Bank Fund for diabetes research
- TD Fund for excellence in the medical field

*Capitalized funds

**INSTITUT DE RECHERCHES CLINIQUES DE MONTRÉAL
/ 2014-2015 ANNUAL REPORT**

The annual report is a review of the year's highlights and summarizes the main scientific and academic activities for the period of September 1, 2014 to August 31, 2015.

The report also includes a summary of the IRCM Foundation's activities for the same period.

The financial figures cover the period of April 1, 2014 to March 31, 2015.

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IRCM – Communications Department

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Julie Langelier

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