

Strength in Partnerships



**RI-MUHC
ANNUAL REPORT
2018**
**ADULT AND PEDIATRIC
BIOMEDICAL RESEARCH**



Centre universitaire
de santé McGill
Institut de recherche



McGill University
Health Centre
Research Institute

With our many vital partners,
the Research Institute of the
McGill University Health Centre
(RI-MUHC) brings real
change to health care.





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446

active members,
including fundamental,
clinical and evaluative
researchers



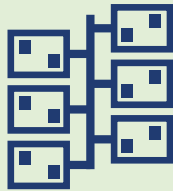
1,260

research trainees,
including **390** M.Sc. and
505 PhD candidates,
216 postdocs and **150**
clinical research fellows



Over **1,100**

staff in research
and administration



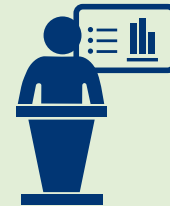
Over **31,000**

square metres of
research space



Over **1,900**

peer-reviewed scientific
publications



Over **2,000**

scientific talks given by our
researchers worldwide



Ongoing research
collaborations with
62 countries



Multimillion-dollar
license agreements
from **2** intellectual
property portfolios



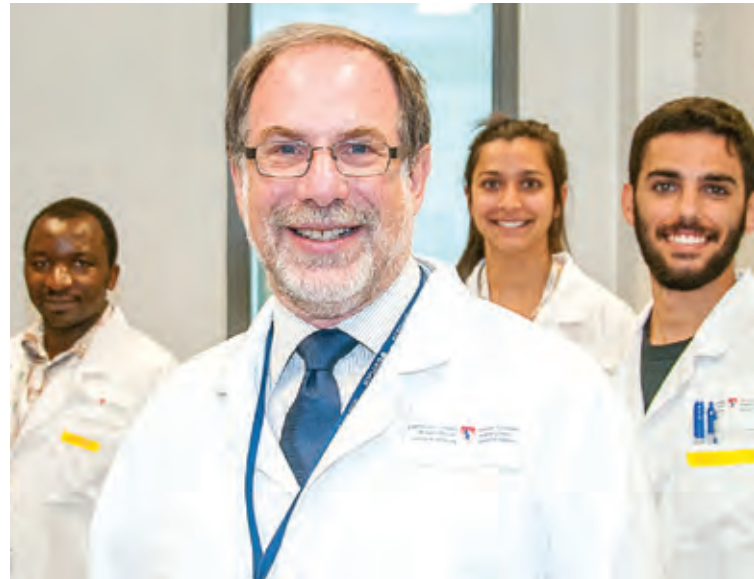
362
research contracts and
444 agreements signed

**MESSAGE FROM****Bruce Mazer, MD, and Raymond Royer**

AROUND THE TIME THAT OUR YOUNG RESEARCH TRAINEES WERE BORN, most scientific publications had two or three authors and labs worked like small businesses, each having its own niche product. Today it's rare to publish a study from one lab. Collaboration and cooperation between several research groups in the same institute is almost a given, and the most influential work involves multiple groups in numerous cities, frequently in multiple countries.

This annual report highlights how the Research Institute of the McGill University Health Centre (RI-MUHC) is taking collaboration to new heights. Indeed, our researchers have a long history of work advancing global health in areas as diverse as the impact of breastfeeding, vaccine development, infectious diseases, and metabolic conditions, to name only a few. This year we want to underscore that our researchers continue this tradition of excellence with studies that have tremendous international impact. Moreover, with new, innovative programs across the lifespan in such domains as infection and immunity, cancer, cardiovascular disease, neuroscience and computational medicine, we are forging important new bonds with our partners at McGill University and at other large hospital and university-based research institutes in Montreal and across Quebec.

In particular, we thank our Foundations for their spectacular support over the past year and thank our community of scientists and clinical investigators, the prime movers and creative sparks behind these efforts. We take pride in our partners, ongoing and new. Collaboration is the best way to ensure that the fruits of our research not only influence our world-class hospital, the MUHC, but reach out and touch Montreal, Quebec, and Canada, ultimately contributing to our global healthcare ecosystem.



BRUCE MAZER, MD (centre), Executive Director and Chief Scientific Officer (Interim), RI-MUHC



RAYMOND ROYER, Chairman of the Board of Directors, RI-MUHC



MESSAGE FROM

Aimee Ryan, PhD

THE GOALS OF CHILD HEALTH RESEARCH AT THE RESEARCH INSTITUTE OF THE MCGILL UNIVERSITY HEALTH CENTRE (RI-MUHC) ARE TWOFOLD: to improve the quality of life for children with disease and to find cures! Research that paves the road to these goals is never a solo effort—it is a partnership. At the heart of our research are teams led by our accomplished fundamental and clinician scientists, the hard work of our trainees, the expertise of support staff, local, national and international collaborations, and the patients and families who participate in research studies.

Congratulations to all of our child health researchers on another outstanding year! For a sampling of success stories, read about the innovative research partnership of **Dr. Nada Jabado** and **Jacek Majewski, PhD** (McGill University and RI-MUHC) with **Dr. Michael Taylor** (SickKids) on page 14, and about international teams led by **Dr. Bethany Foster** on page 8 and by **Dr. Nancy Braverman** on page 16.

Thank you to The Montreal Children’s Hospital Foundation, its staff and generous donors, who enable large-scale funding partnerships with national and international agencies and provide support to launch innovative research projects that will be the successes of tomorrow. ■



AIMEE RYAN, PhD

Deputy Executive Director and Deputy Chief Scientific Officer (Interim), Research Institute of the McGill University Health Centre (RI-MUHC)
Head of Child Health Research (Interim), MUHC

MESSAGE FROM

McGill University

COLLABORATION IS AT THE HEART OF HEALTHCARE INNOVATION. This is true at the micro level, where interprofessional teams work in sync to provide patients with the best possible care. It is also true at the macro level, where institutions come together to address some of the world’s greatest health threats.

At McGill we are very proud of our longstanding partnership with the RI-MUHC. Spanning neuroscience to cancer, wonderful examples of the fruits of our collaborations can be found throughout this report. The *McGill Interdisciplinary Initiative in Infection and Immunity*, launched this year, is one case in point where our research community is coming together in force to develop innovative means of translating their research into new knowledge, treatments and technologies to tackle some of society’s most formidable health challenges.

We warmly congratulate our colleagues and friends at the RI-MUHC on yet another successful year, and look forward to again combining strengths in the year ahead for our patients. ■



DAVID EIDELMAN, MD, CM, FRCPC

Vice-Principal (Health Affairs) and Dean, Faculty of Medicine



MARTHA CRAGO, PhD, CM

Vice-Principal (Research and Innovation)

**MESSAGE FROM****the McGill University Health Centre (MUHC)**

IF THE HALLMARK OF A SUCCESSFUL ACADEMIC HEALTH CENTRE IS PERFORMANCE that keeps it at the forefront of excellence and innovation in matters of patient care, research, education and health technologies, then maximizing the investments it receives is critical. Prioritizing strategies capable of positively influencing performance is equally incontrovertible.

One performance strategy is to build greater capacity for knowledge generation and sharing. Hence, *strength in partnerships* is a fitting annual report theme for the Research Institute of the McGill University Health Centre (RI-MUHC). Partnerships bridge the divide between geography, technology, experience and expertise. They draw on typical and atypical relationships to accelerate the elucidation of topics of local to global concern, and translate discoveries into improved health outcomes for people across their lifespan.

Throughout 2017-2018, the RI-MUHC nurtured highly collaborative and regularly interdisciplinary/inter-industry partnerships (some highlighted in this report) that led to innovative clinical trials, screening tests, personalized treatments, and other inspiring advances in health care. Collectively, these results underscore the value of relationships in capacity-building and the breadth and depth of the return on investment for governmental, non-governmental and individual funders.

I congratulate and thank the RI-MUHC's leaders for their performance. I also extend my appreciation to **Dr. Bruce Mazer** for serving enthusiastically as interim executive director and chief scientific officer, as well as to the Board for its oversight.

The RI-MUHC's beauty lies in its potential to improve the health outcomes of people, regardless of where they live. Thus, partnerships should never be underestimated. My final thank you is therefore reserved for all those who, by virtue of investing in research, are invaluable partners in the future we are shaping today. ■

**MARTINE ALFONSO**

Interim President and Executive Director



The Research Institute of the McGill University Health Centre

CENTRE FOR
INNOVATIVE
MEDICINE



CIM

CENTRE FOR
OUTCOMES RESEARCH
AND EVALUATION



CORE

CENTRE FOR
TRANSLATIONAL
BIOLOGY



CTB



Brain Repair and Integrative Neuroscience Program

BRaIN



Cancer Research Program

CRP



Cardiovascular Health Across the Lifespan Program

CHAL



Child Health and Human Development Program

CHHD



Metabolic Disorders and Complications Program

MeDiC



Infectious Diseases and Immunity in Global Health Program

IDIGH



Injury Repair Recovery Program

IRR



Translational Research in Respiratory Diseases Program

RESP

Each of our **research programs** unites investigators from all three **centres**, drawing from the expertise of clinical, fundamental and evaluative researchers.



Year of Inspired Collaborations

Better screening for ovarian and endometrial cancers

"IF A CANCER IS DETECTED EARLY, it can be cured," says **Dr. Lucy Gilbert**. She and **Dr. Kris Jardon**, both from the Cancer Research Program and Centre for Innovative Medicine, collaborated with **Dr. Bert Vogelstein** at Johns Hopkins to develop a screening test that provides a safe and minimally invasive method for earlier diagnosis of ovarian and endometrial cancers. This test—called PapSEEK—analyzes small amounts of cancer DNA obtained from Pap samples from the cervix and uterus, as well as from blood. The technique promises an important advance for these cancers, which are usually diagnosed at a late stage. ■

"If a cancer is detected early, it can be cured."
—Dr. Lucy Gilbert



Lucy Gilbert, MD, M.Sc. (left), and Kris Jardon, MD



George Zogopoulos, MD, PhD (right), with MUHC patient Richard Beauchamp

The priority is to identify molecular subtypes of pancreatic cancer that could respond to more targeted treatments.

Pancreatic cancer research: Personalized approach brings new hope

DR. GEORGE ZOGOPOULOS (Cancer Research Program and Centre for Translational Biology) is co-principal investigator on a Canadian research team focused on Enhanced Pancreatic Cancer Profiling for Individualized Care (EPPIC). Led by investigators at BC Cancer and the University of British Columbia, the project is funded by the Terry Fox Research Institute. Over the next five years EPPIC aims to improve personalized treatments for patients with pancreatic ductal adenocarcinoma (PDAC), a disease with a five-year survival rate of eight per cent. The priority is to identify molecular subtypes of pancreatic cancer that could respond to more targeted treatments. ■



Tackling adherence to treatment in young kidney transplant patients

LOW ADHERENCE TO MEDICATION is a major factor in the high level of organ rejection in young kidney transplant patients. Transplant specialists and researchers from eight leading pediatric medical centres across Canada and the United States have united to make a difference with an innovative clinical trial. Led by **Dr. Bethany Foster** (Child Health and Human Development Program and Centre for Outcomes Research and Evaluation), the team tested a new intervention, TAKE-IT, to improve adherence to treatment in adolescents. Results show that patients who used the digital health medication management and adherence solution in combination with coaching had a 66 per cent higher adherence to anti-rejection medicine. ■



▲ **Bethany Foster, MD, M.Sc.** (left), with transplant recipient **Audrey Grenier**



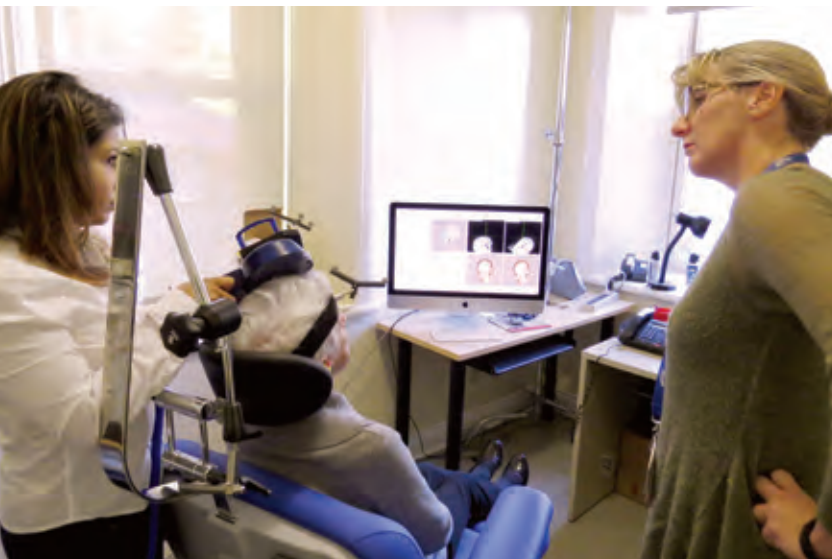
◀ The clinical trial TAKE-IT monitored medication-taking with an electronic pillbox developed by Vaica

“We hope to improve thinking and memory abilities for patients living with the disease.”

—*Dr. Lisa Koski*

Testing a noninvasive means of slowing down mild Alzheimer’s

DR. LISA KOSKI (Brain Repair and Integrative Neuroscience Program and Centre for Translational Biology) is participating in a study testing the use of magnetic fields to slow down mild Alzheimer’s disease. Her lab is one of three worldwide sites recruiting participants with early to mid-stage Alzheimer’s to undergo repetitive transcranial magnetic simulation (rTMS) treatment. “By increasing activity in the frontal lobe, parts of the brain affected by Alzheimer’s, we hope to improve thinking and memory abilities for patients living with the disease,” says Dr. Koski. The clinical trial is led by **Zahra Moussavi** at the University of Manitoba in collaboration with the MUHC in Quebec and Monash University in Australia. ■



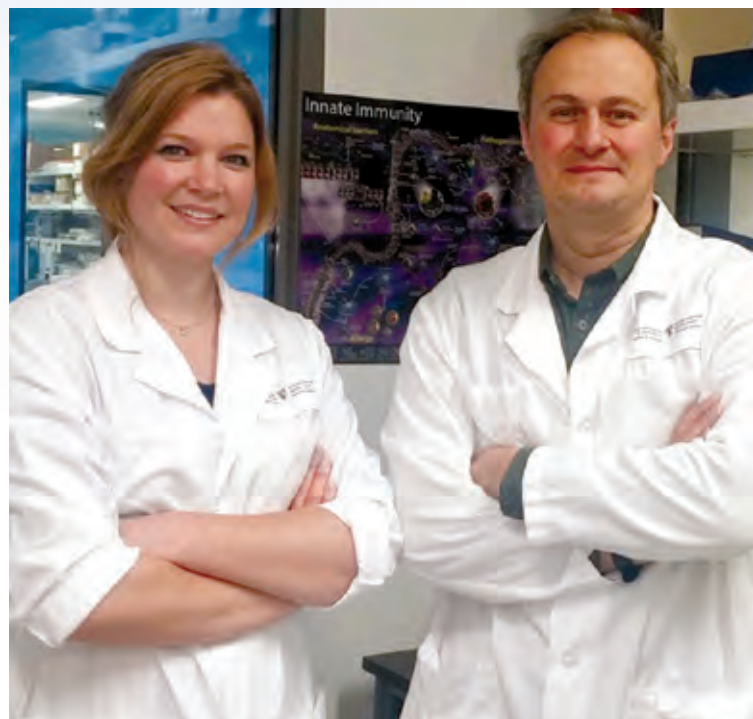
Lisa Koski, PhD (right), and research assistant **Rishanathi Sivakumaran, PhD**, performing the noninvasive rTMS procedure



Targeting innate immunity for vaccine against tuberculosis

ONE THIRD OF THE WORLD population is infected with *Mycobacterium tuberculosis*, the causative agent of tuberculosis (TB), and around two million people die of TB every year. Collaborative work between **Maziar Divangahi, PhD** (associate leader of the Translational Research in Respiratory Diseases Program and associate director of the McGill International TB Centre) and **Luis Barreiro, PhD**, a geneticist at the Université de Montréal, has identified genomic pathways responsible for the memory-innate immunity against TB. This study opens a new paradigm for developing a novel vaccine against TB and potentially other infectious diseases like flu. It is funded by a CIHR Foundation Grant. ■

A new weapon to combat a global killer



Maziah Divangahi, PhD (right), and postdoctoral fellow **Eva Kaufmann, DVM, PhD**

Artificial pancreas systems to control sugar levels in diabetes patients

OVER 300,000 CANADIANS live with type 1 diabetes, but less than one in five patients achieve glucose targets to minimize the risk of long-term complications affecting the kidneys, eyes and heart. **Ahmad Haidar, PhD**, a biomedical engineer in the Metabolic Disorders and Complications (MeDiC) Program and Centre for Innovative Medicine, is collaborating with clinical endocrinologists, **Drs. Laurent Legault** (Child Health and Human Development Program), **Michael Tsoukas** and **Jean-François Yale** (MeDiC), on a novel solution. The team has developed mechanical artificial pancreas systems that regulate sugar levels in type 1 diabetes patients. Using glucose sensors and mathematical algorithms, these systems deliver the precise amount of hormones needed. ■

Reducing the risk of long-term complications



Biomedical engineer **Ahmad Haidar, PhD**, teamed up with clinical endocrinologists

Pooling Research Expertise into Dynamic Initiatives

Reaching for policy-changing results with global impact, our researchers prove that the whole is indeed greater than the sum of its parts.

Investigators at the Research Institute of the McGill University Health Centre (RI-MUHC) work closely with academic and clinical colleagues from McGill University and the MUHC to build initiatives with the scope to address critical health problems. This meeting ground of technologies and expertise is a springboard to partnerships with institutions and industries across Quebec, Canada and the world.





Coming together to fight infectious and immune threats to global health

“WE HAVE THIS INCREDIBLE NEW SUPERHOSPITAL, a large patient population, cutting-edge research facilities, and world-class scientists,” says **Dr. Don Sheppard** (Infectious Diseases and Immunity in Global Health Program and Centre for Translational Biology). “We want to be the catalyst that brings all of these elements—from the RI-MUHC, from the wider McGill community, from the MUHC and Jewish General Hospital—together.”

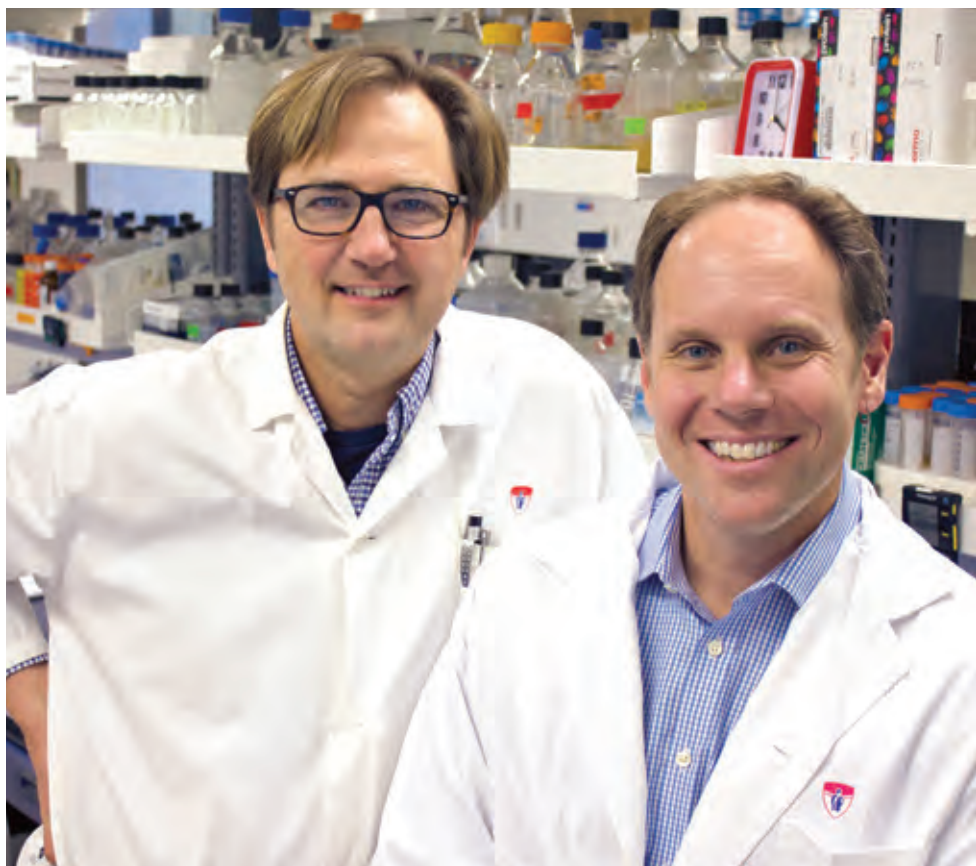
Dr. Sheppard is talking about the new *McGill Interdisciplinary Initiative in Infection and Immunity*, of which he is director. The initiative—which revolves around four themes: antimicrobial resistance, emerging and re-emerging diseases, infections in vulnerable populations, and diseases of altered immunity—was launched in 2018 after the MUHC Foundation and McGill University secured a \$15-million gift from the visionary Doggone Foundation.

“We have a real opportunity to become a world leader in the infection and immunity space,” says Dr. Sheppard.

And, along with co-director **Dr. Marcel Behr**, also from the Infectious Diseases and Immunity in Global Health (IDIGH) Program and Centre for Translational Biology, Dr. Sheppard is getting things off to a roaring start.

“We are not letting the grass grow under our feet,” he says. “Our goal is to have funded projects running within a year of getting our funding.”

“This is really a transformational initiative,” says **Dr. Makeda Semret** (IDIGH Program and Centre for Innovative Medicine), whose research focuses on hospital-associated infections and antimicrobial



Marcel Behr, MD, M.Sc. (left), co-director, and **Don Sheppard, MD**, director of the McGill Interdisciplinary Initiative in Infection and Immunity

resistance in Canada and in Africa and who is one of the many researchers involved in the early stages of the project.

“It helps to bring people together,” she explains. “Just through my involvement so far, I’ve met people who work at McGill whom I didn’t know before. This is already generating collaborations and ideas I would not have thought of on my own.”

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Makeda Semret, MD, M.Sc.

“This is really a transformational initiative...”

—Dr. Makeda Semret



Working together to eliminate hepatitis C in vulnerable populations: from right to left, **Marina Klein, MDCM, M.Sc.**, and **Nadine Kronfli, MD, MPH**, both with the IDIGH Program and Centre for Outcomes and Evaluative Research at the RI-MUHC, have joined forces with **Christina Greenaway, MD, M.Sc.**, from the Centre for Clinical Epidemiology at the Lady Davis Institute for Medical Research, Jewish General Hospital

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This is exactly what **Dr. David Eidelman**, Vice-Principal Health Affairs, McGill University, wants to see happening. “This is a different way of doing business,” he explains. “It’s thinking big, about how we can take our place with the best in the world.”

“A lot of the work we do is, by necessity, focused on individuals or small groups, and that is very important,” he says. “But we need to bring people together who don’t necessarily cross paths in the hallways.”

The initiative is also addressing the challenge of bringing patients and science together. “We are building some very concrete bridges between clinical care and research,” Dr. Sheppard explains. “It is time

for translational research to be more than just a concept written on a piece of paper, but something that we live.”

The work by the 250 investigators connecting in this initiative over the next five years will have an impact at multiple levels throughout the care continuum, he adds. There will be people and projects focused on “making sure that when we have new treatments, new diagnostics, and new approaches, that we can actually get them to the communities that need them the most.” ■

“It is time for translational research to be more than just a concept written on a piece of paper, but something that we live.”

—Dr. Don Sheppard



Treating vulnerable populations at risk for tuberculosis

IT IS ESTIMATED THAT ONE QUARTER of the world's population has latent tuberculosis (TB). "It's variable, but between 10% and 20% of people with latent TB will develop the disease," says **Dr. Dick Menzies**, associate director of the McGill International TB Centre until mid-2018 and a member of the Translational Research in Respiratory Diseases Program and Centre for Outcomes Research and Evaluation at the RI-MUHC.

The standard treatment for latent TB is currently nine months of isoniazid, an antibiotic that can have serious side effects. "Because of the length of treatment and fear of toxicity, it hasn't been very well accepted by either doctors or patients," says Dr. Menzies.

But now, capping a decade of contributions to this field—work enriched by the collaboration of international partners and research trainees—his team has uncovered an alternative.

In two papers in the *New England Journal of Medicine* in 2018, Dr. Menzies and colleagues presented the results of practice-changing studies in the treatment of latent TB. These studies showed that four months of treatment with the antibiotic rifampin is both safe and effective in adults and children.

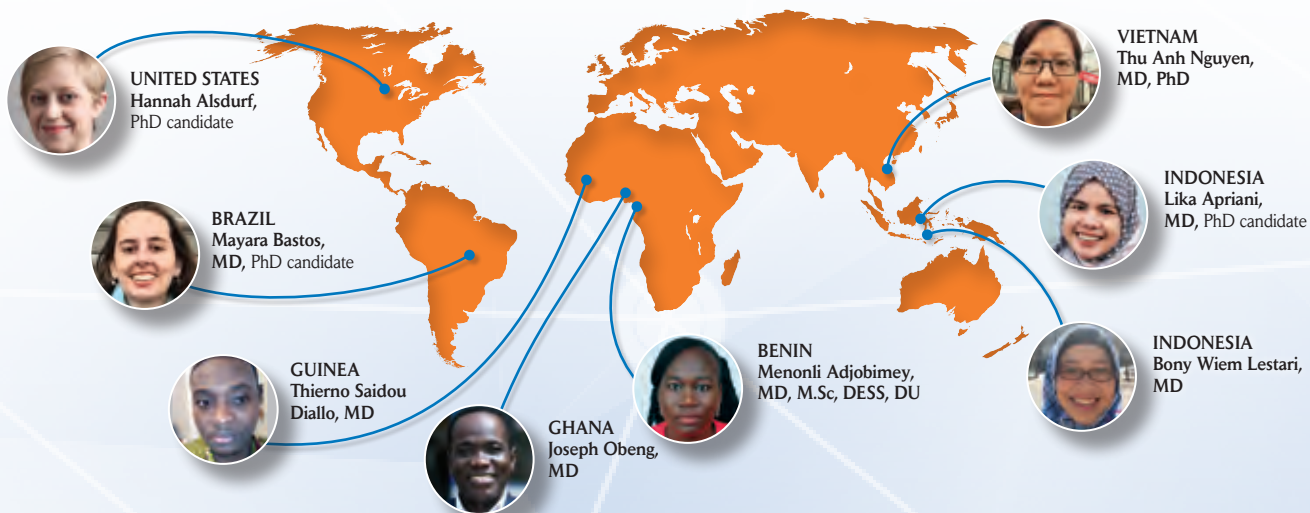
"The treatment with rifampin is obviously better because it's that much shorter, but more important, it is much safer," says Dr. Menzies.



Dick Menzies, MD (right), with research coordinator **Chantal Valiquette**

"I am convinced these trials will result in a policy change to make this a standard treatment for latent TB," says **Dr. Madhukar Pai**, director of the McGill International TB Centre.

Dr. Menzies has already been talking to international policy-makers. "It's early days, but I think in many countries this will become the standard regimen," he says. ■



Trainees from around the world come to work with investigators in the TB group, reflecting many partnerships with international research centres. Dr. Menzies encourages this exchange and spends time himself at each study site yearly.



Using genomics to develop personalized treatment for childhood brain cancer

“IN ORDER TO HELP PEOPLE, I need to understand. That’s my way of dealing with things,” says **Dr. Nada Jabado** (Child Health and Human Development Program and Centre for Translational Biology), a pediatric hemato-oncologist who works with children who have brain cancer.

For help in understanding pediatric glioblastomas, Dr. Jabado turned to **Jacek Majewski, PhD** (Child Health and Human Development Program), a specialist in genome analysis.

Using a genomic approach, the team discovered mutations in the histone genes that were implicated in up to 40% of pediatric glioblastomas.

“This was a major step forward,” says Dr. Jabado. “It showed us that everything we were doing for those brain tumours was wrong because we weren’t looking at the right target.”

But this was only the first step. Now, with **Dr. Michael Taylor**, a geneticist and neurosurgeon at



Dr. Jabado (left) and research associate **Leonie Mikael, PhD**, examining immunofluorescent tumour cells

SickKids—and \$13 million in new funding from Genome Canada—the expanded team is using next-generation sequencing tools to dig further into these mutations.

“Some of these techniques have only become available very recently,” says Jacek Majewski. “Now with genomics, transcriptomics, and new sequencing tools, we can look at everything together.”

“This allows us to better identify potential targets for treatment,” Dr. Jabado explains. There are things that can be done immediately—for example, genetic alterations that already have a

drug—and things that can be done to buy time while the researchers look for a cure.

“It’s not an easy road; it’s not going to be solved tomorrow, but we are on track,” she says. ■



Slowing the growth of pediatric brain cancer: **Nada Jabado, MD, PhD** (left), and **Jacek Majewski, PhD**



Learning how to see ... using video games

“KIDS DON’T PLAY THINGS THAT AREN’T FUN,” says **Robert Hess, PhD**, a member of the Brain Repair and Integrative Neuroscience Program and Centre for Translational Biology at the RI-MUHC.

The researcher was looking for a way to try out a new treatment for amblyopia—commonly known as lazy eye—in children.

In adults, he and his colleagues had discovered that by using the game Tetris and a set of goggles that showed different things to each eye, they could train the eyes to work together.

“We changed the way people think about amblyopia,” he says. “It was thought that people with amblyopia could never get back binocular vision because they lost it as kids.”

But his experiments with adults showed that amblyopia was a problem in the brain, not the eye, and that the brain could be retrained.

The next step was to try the treatment on children, and a start-up company, Amblyotech, was formed to market the video treatment among eye professionals. The challenge? Getting the kids to use it.

Enter **Mathieu Ferland**, a senior producer at Ubisoft, a well-known video game company, who met Robert Hess at a hacking event. The two started talking and a partnership was born.

It was a good fit. “Ubisoft doesn’t want to develop medical expertise,” explains



Robert Hess, PhD, and research trainees test an android tablet developed by Ubisoft for therapeutic video games (above) and a HoloLens for testing 3D vision (below).

Mathieu Ferland. “We want to bring what we are good at to the table: in this case, user engagement.”

“And now we have a number of fancy video games that work on the principle that we developed,” says Robert Hess.

Next up? Movies, animations and TV shows, for those with amblyopia who don’t like playing video games. ■





Bringing an innovative retinal gene therapy to clinic

IMAGINE A WORLD DEVOID OF COLOUR, a world where the smile of a loved one is indistinguishable from a black abyss. This world is the everyday reality for people suffering from Zellweger spectrum disorder (ZSD). Affecting around 2,000 people worldwide, most of them children, ZSD is a rare genetic disease driven by a mutation that causes degeneration in the retina of the eye. A cure for the resulting vision loss previously seemed impossible. However, thanks to an innovative research team led by **Dr. Nancy Braverman** (Child Health and Human Development Program; Centre for Translational Biology), that cure is potentially in sight.

Dr. Braverman, a medical geneticist, assembled a team of scientists and clinicians from the Université de Montreal, Johns Hopkins University, the University

of Pennsylvania and the University of Southern California. Each of their contributions, ranging from a mouse model of ZSD to expertise in retinal gene correction delivery systems, proved crucial to completing the puzzle: a retinal gene therapy capable of correcting the most common mutation that causes ZSD. Dr. Braverman’s own laboratory demonstrated that correcting this mutation in a mouse model both slowed and reversed vision loss.



Costas Karatzas, PhD
Business Development and Contracts Office, RI-MUHC

With these groundbreaking findings, Dr. Braverman approached **Costas Karatzas, PhD**, of the Business Development and Contracts Office at the RI-MUHC, who worked with the team to build partnerships and secure financing. Ultimately, the goal is to bring this new therapy to the clinic—and a new outlook on life to patients living with ZSD.

AmorChem, a group that provides expertise and venture capital for academic projects, is backing the initial funding of the program. “The collaborative nature of this project has created the ideal ‘ecosystem’ for discovery science to be de-risked,” says Costas Karatzas, “and to be translated into clinical reality through a well-designed development path.” ■



Researcher **Nancy Braverman, MD, M.Sc.**



Winners of the 2017 AmorChem KNOCK OUT in Quebec City: **Dr. Nancy Braverman**, left, and doctoral student **Catherine Argyriou** won seed funding for a project that aims to advance therapy for vision

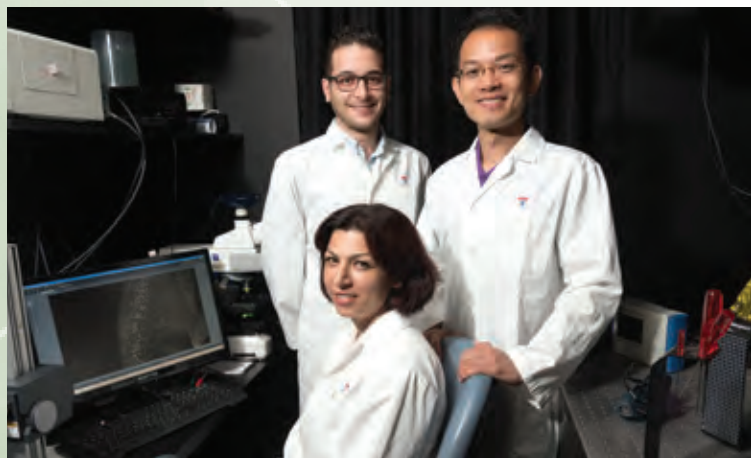


Over 1,200 research trainees generate new ideas

at the Research Institute of the McGill University Health Centre (RI-MUHC). This is a small sample of their joint accomplishments.

FOUNDING A BIOPHARMACEUTICAL STARTUP

Two postdoctoral fellows founded a biopharmaceutical startup based on their joint doctoral work in the laboratory of **Brian Chen, PhD** (Brain Repair and Integrative Neuroscience Program). Together they had developed Protein Quantitation Ratioing, which provides researchers with a tool to observe and measure protein synthesis in a single living cell over time. In 2018 they founded Geneboost, a company dedicated to accelerating drug discovery, with research associate **Farida Emran, PhD**. ■



Postdocs **Ibrahim Kays, PhD**, and **Chiu-An Lo, PhD** (left to right, standing), with colleague **Farida Emran, PhD**

BEST BUSINESS CASE FOR NEW PRODUCT ADDRESSING A CLINICAL NEED

With teammates from L'École de technologie supérieure and the project mentorship of **Dr. Mirko Gilardino** (Injury Repair Recovery Program), two RI-MUHC students were on the interuniversity team that placed first in the 2018 presentations of the McGill-led Surgical Innovation Program. Their product concept, **FlapStat**, is a non-invasive probe that assesses blood perfusion of flaps during breast reconstructions, reducing necrosis and other complications. ■



Master's students **Mohamed Nazhat Al Yafi, MD** (second right), and **Noémie Joannette-Lafrance** (left), with FlapStat team

TRAINEE-LED INITIATIVES AND OUTREACH

Three members of the RI-MUHC Trainee Council spearheaded initiatives that tap into needs of our current and future research trainees. The council produced a handbook to orient new trainees and hosted secondary students for a day to learn about careers in research. As members of RI-MUHC committees, these and other trainees participated this year in decision-making that affects them. Our Trainee Council puts trainees at the heart of the RI-MUHC! ■



Hilary Hendin and **Kim Phan**, doctoral students, and **Lama Yamani, PhD**, postdoctoral fellow (left to right)

With generous support from Desjardins, the Desjardins Centre for Advanced Training enhances career development and opportunities for our trainees.



AWARDS AND RECOGNITION

MICHAL ABRAHAMOWICZ

Reviewers of the Year, *AJ Epidemiology* and Society for Epidemiologic Research

MARCEL BEHR

Fellow, Royal Society of Canada

MOSHE BEN-SHOSHAN

F. Estelle R. Simons Award for Research, Canadian Society of Allergy and Clinical Immunology

JOHN BERGERON, Professor emeritus

Chevalier, Ordre national du Québec

STEFANIE BLAIN MORAES

Top scientists under 40
World Economic Forum

NANCY BRAVERMAN

Winner, Lumira-AmorChem
KNOCK OUT Event

MARCELO CANTAROVICH

President-elect, The Transplantation Society

STELLA DASKALOPOULOU

John J. Day Award of Excellence
Heart & Stroke Foundation (Quebec)

ALAN EVANS

150 Medal, Senate of Canada

MATTHIAS FRIEDRICH

President, Society for Cardiovascular
Magnetic Resonance

GABRIELLA GOBBI

Dr. Samarthji Lal Award for Mental
Health Research, Graham Boeckh
Foundation

PHIL GOLD

Einstein Legacy Award, Canadian
Friends of Hebrew University
Address to medical graduating class,
Queen's University
D.Sc. (honoris causa)

NADA JABADO

Appointed to Governing Council
Canadian Institutes of Health Research

LARRY LANDS

Lifetime Achievement Award in
Pediatric Respiriology, Canadian
Thoracic Society

ANNETTE MAJNEMER

Fellowship Award, Canadian Association
of Occupational Therapists

NANCY MAYO

President's Award, International Society
of Quality of Life

EMILY MCDONALD

New Investigator Award,
Canadian Society of Internal Medicine

MADHUKAR PAI

Among 75 most influential alumni,
School of Public Health at University
of California, Berkeley

Top 20 Canadian ideas to improve
maternal and child health,
Grand Challenges Canada

NITIKA PANT PAI

HCV Change Makers, *The Economist*
Presentation at UNAID/IAPAC/PEPFAR
Summit in Geneva

LOUISE PILOTE

Excellence Award for Sex and Gender
Aspects, Berlin Institute of Health

BERNARD ROBAIRE

Gabriel L. Plaa Award of Distinction,
Canadian Society of Toxicology

DAVID ROSENBLATT

Founders' Award for Career Achieve-
ment, Canadian College of Medical
Geneticists

ERNEST SEIDMAN

International gastroenterology sympo-
sium in his honour, McGill University
Health Centre

DONALD SHEPPARD

Mentor of the Year, Royal College of
Physicians and Surgeons of Canada
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INJURY REPAIR RECOVERY PROGRAM

Berian JR, Ban KA, Liu JB, Sullivan CL, Ko CY, Thacker JKM, **Feldman LS**. Association of an Enhanced Recovery Pilot With Length of Stay in the National Surgical Quality Improvement. **JAMA Surg** 153(4):358-365, 2018.

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IN RESPIRATORY DISEASES
PROGRAM**

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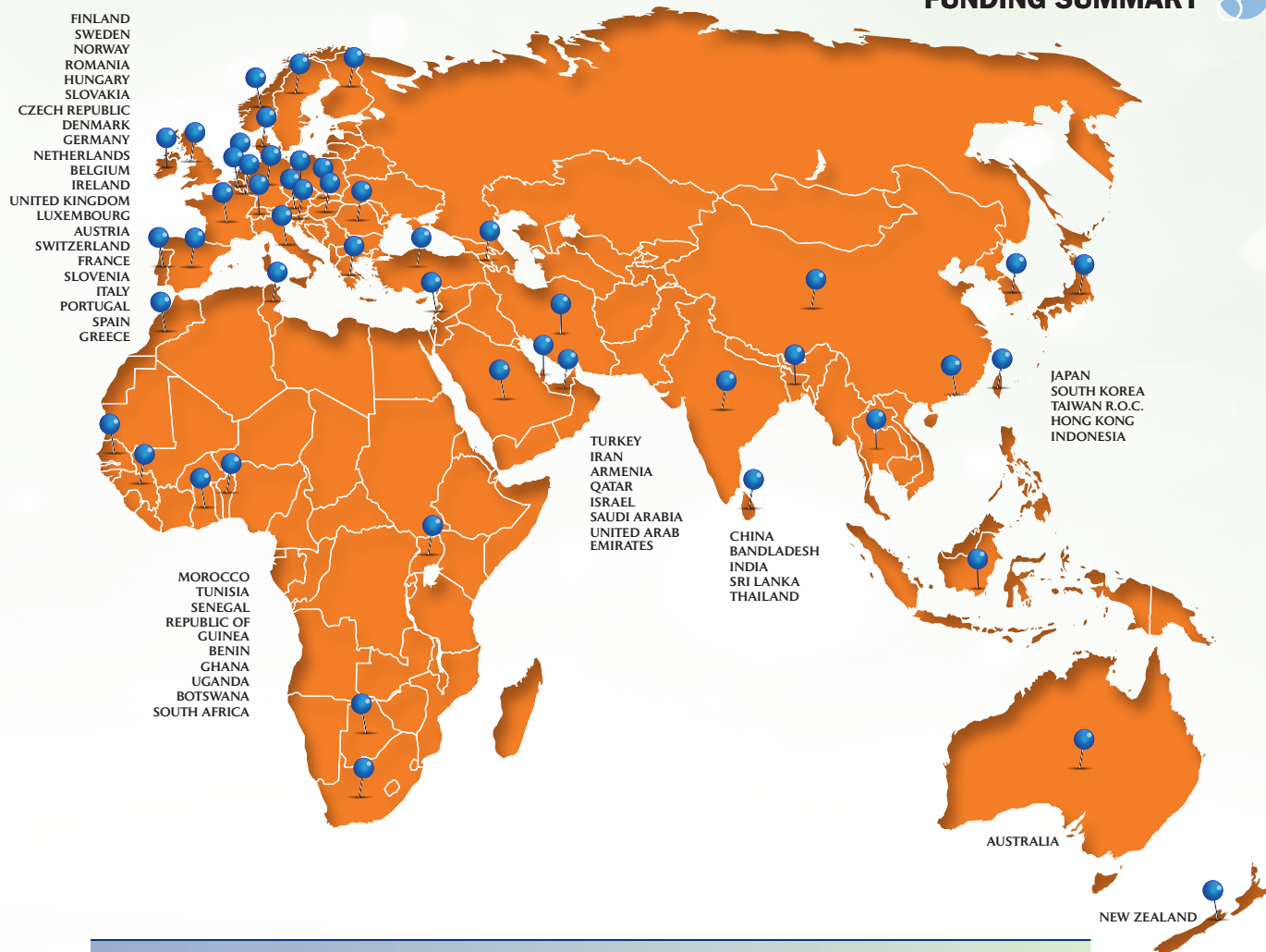
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INSTITUTIONAL GRANTS	2017–2018 \$
Fonds de recherche du Québec–Santé	4,982,260
Research Support Fund (Government of Canada)	4,579,235
McGill University Health Centre (MUHC) Foundations	902,698
Other revenues	5,378,395
Canada Foundation for Innovation–Research Hospital Fund	4,808,041
TOTAL	20,650,629

RESEARCH PROJECTS	2017–2018 \$
Canadian Institutes of Health Research	50,997,156
Industry	17,318,122
Other (various granting agencies)	16,365,210
MUHC (including Foundations) and McGill University	14,427,350
Ministère de l'Éducation et de l'Enseignement supérieur du Québec	9,411,363
Canada Foundation for Innovation	8,256,296
Fonds de recherche du Québec–Santé	6,745,292
National Institutes of Health	4,870,808
Natural Sciences and Engineering Research Council of Canada	4,823,301
Génome Québec and Genome Canada	4,015,085
U.S. Department of Defense	3,098,273
Brain Canada Foundation	2,940,885
Canada Research Chairs	2,625,000
Bill & Melinda Gates Foundation	1,720,098



RESEARCH PROJECTS CONT'D	2017-2018 \$
Terry Fox Foundation	1,446,513
Consortium québécois sur la découverte du médicament	1,128,940
Mutiple Sclerosis Society of Canada	1,107,168
Networks of Centres of Excellence of Canada	679,939
MITACS	672,922
Cystic Fibrosis Canada	623,014
Fonds de recherche du Québec-Nature et technologies	600,668
Public Health Agency of Canada	582,317
Stop TB Partnership	560,908
Canadian Cancer Society Research Institute	532,357
Progressive MS Alliance	532,243
JDRF	519,105
Merck & Company, Inc.	513,832
Costello Bequest Foundation	481,039
Canadian Partnership Against Cancer	463,563
Amyotrophic Lateral Sclerosis Society of Canada	461,201
Michael J. Fox Foundation	392,155
Muscular Dystrophy Association	385,058
Richard and Edith Strauss Canada Foundation	372,019
International Development Research Centre	324,359
Fonds de recherche du Québec-Société et culture	314,591
Structural Genomics Consortium	300,000
TOTAL	160,608,150
TOTAL FUNDING	181,258,780



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AT THE RESEARCH INSTITUTE of the McGill University Health Centre (RI-MUHC) we are deeply grateful to our donors and volunteers, and to the foundations and auxiliaries affiliated with the MUHC.

We also thank provincial, federal and other funding partners, including the Canada Foundation for Innovation, the Fonds de recherche du Québec–Santé and the Ministère de la Santé et des Services sociaux. Their support remains a key driver of our success. ■

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THE MONTREAL GENERAL HOSPITAL (MGH) FOUNDATION, with the **Max Pacioretty Foundation**, raised funds for a state-of-the-art MRI machine for the MGH Traumatic Brain Injury Program, a world leader in research and treatment of concussions. Codelife.ca

Left to right: **Dr. David S. Mulder, Martine Alfonso, Max Pacioretty, Reza Farivar, PhD, Jean-Guy Gourdeau**



THE RI-MUHC AMPHITHEATRE WAS NAMED THIS YEAR AFTER DRs. SYLVIA AND RICHARD CRUESS, who inspired the community to contribute almost \$7 million in the first eight months of the **MUHC Foundation's** research fundraising campaign. muhcfoundation.com

Left to right: **Dr. David Eidelman, Dr. Sylvia Cruess, Dr. Richard Cruess, Dr. Bruce Mazer**



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Foundation of Stars, left to right: **Josée Saint-Pierre**, president and director general; **Mari-pier Morin**, spokesperson; **Marilie and Samuel**, enfants étoile; **Marie-Julie Allard**, doctoral candidate and recipient of a Foundation of Stars bursary.



ABOUT THIS REPORT

STATISTICS

Represent fiscal year 2018 (April 1, 2017 to March 31, 2018), unless indicated otherwise

RESEARCH FUNDS

Grants, contracts (including indirect costs), studentships, salary awards from peer-reviewed agencies, and funding from university and hospital foundations

Administered at either the RI-MUHC or McGill University, for RI-MUHC researchers

RESEARCHERS

Individuals conducting active and independent research, who have received at least \$5,000 in research funding during the fiscal year

STAFF

Administrative and research staff located at MUHC locations

PUBLICATIONS

Selected from September 2017 to August 2018

COUNTS

Active researchers are counted as of June 2018

Research trainees are counted as of June 2017

Staff are counted as of April 2018. Excludes researchers and trainees as well as staff located at the Montreal Neurological Institute and McGill Campus

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