

Building Better Brain Health

2020-2021 Impact Report



Fondation
Brain Canada
Foundation

Executive Summary

For more than two decades Brain Canada has championed paradigm-changing research.

We play a unique and invaluable role as a national convener of the brain research community – driving innovation and connectivity by building a truly interdisciplinary commitment to brain health. We have to. Brain disorders are among the leading causes of disability in our country and a major public health burden.

By investing in high-risk, high-impact research projects and bringing together some of the brightest minds, Brain Canada is helping to improve the lives of people in Canada and achieve societal impact.

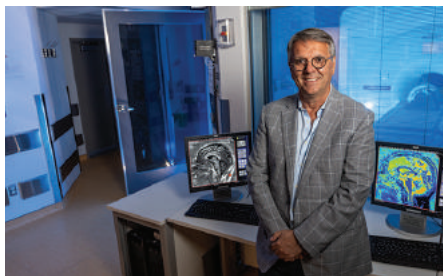
Since 1998, \$277,730,083 has been injected into brain research through Brain Canada, thanks to our innovative partnership with the government of Canada, through Health Canada, and more than 100 other partners and donors.

As you will discover in the following pages, Brain Canada committed a total of \$32,823,438 to brain research in Canada this year, with a focus on addressing gaps in mental health research, sex and gender-based analysis and early-career funding support. These three priorities were underlined during the COVID-19 pandemic as areas in critical need of funding. Thanks to a growing team, with seven additional staff members and three new Board Directors, Brain Canada introduced new Sex, Gender, Diversity and Inclusion considerations, established a mental health research initiative, and launched five innovative new research programs this year.

Brain Canada is dedicated to bringing together the neuroscience community and all those who wish to advance brain research and unlock the mysteries of the brain.

With your continued support, we look forward to another year of leading, and enabling brilliant brain research in Canada.

Thank you for funding brilliance daily with us.



Front cover: Dr. Julien Doyon at The Neuro (Montreal Neurological Institute-Hospital). Dr. Doyon and his team were awarded a \$4,674,000 2019 Platform Support Grant (PSG) from Brain Canada.

Photo: Owen Egan/Joni Dufour

*Financial contribution from
Avec le financement de*








Health Canada Santé Canada

Brain Canada by the numbers this year

June 1, 2020 - May 31, 2021

51 grants  **\$32,823,438**
invested in Research

-  **25** Research Projects in Quebec
-  **18** Research Projects in Ontario
-  **4** Research Projects in Alberta
-  **3** Research Projects in British Columbia
-  **1** Research Project in Manitoba

VISION

To understand the brain, in health and illness, to improve lives and achieve societal impact.

MISSION

Brain Canada is achieving its vision by:

- Increasing the scale and scope of funding to accelerate the pace of Canadian brain research;
- Creating a collective commitment to brain research across the public, private and voluntary sectors;
- Delivering transformative, original and outstanding research programs.

VALUES

- Connecting with purpose.
 - Seeking to understand different brain functions and dysfunctions as part of a single interconnected system.
 - Building mutually beneficial and transparent relationships with every partner.
 - Fostering original insights and outcomes.
- Delivering value and benefits with efficiency and effectiveness.
- Ensuring the highest standards of ethical behaviour and good governance.

2020/2021 Impact Report



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Brain Canada is a national registered charity that enables and supports excellent, innovative, paradigm-changing brain research in Canada.
Registration number: 89105 2094 RR0001.

Why We Need You

1 in 10

Canadians are affected by a neurological condition

20 %

of Canadians will experience a mental illness in their lifetime

- Brain disorders are the **#1** cause of disability in Canada

- Nearly one million Canadians could be living with dementia by 2031.

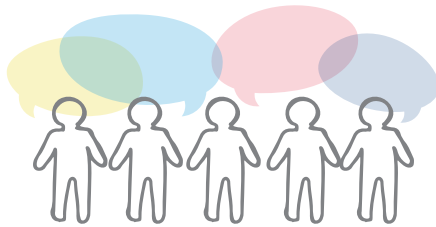
The current cost of dementia care is

\$ 12 B/year.

As the number of Canadians living with dementia grows, so too will the burden on society.

- Mental health is one of the most significant health burdens for Canadians and their families, causing an estimated **\$ 51 B** in annual health care costs, lost productivity, and reductions in health-related quality of life.

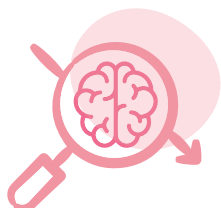
Your Impact 1998-2021

 1,155 researchers

115 institutions 

 129 partners

372 grants 

 \$277M injected in brain research

1,326 publications* 

 38,815 citations in academic journals*

* 2011-2021

Message from the Chair

On behalf of the Board of Directors, I am pleased to present Brain Canada's 2020-2021 Impact Report.

It was an extraordinary year of accomplishments and I would like to extend my gratitude to the volunteer Board members, staff, donors and partners who have all contributed to another meaningful year for brain research.

Brain Canada is committed to excellence through good governance, transparency, collaboration and innovation and this year was no exception. Despite pandemic-fueled disruptions, our community pulled together to stay engaged and make brain health a top priority for people in Canada. I am proud to be part of a growing organization that is making significant progress toward shaping the present and future health of our communities and country.

In 2011, Brain Canada committed to raising \$100 million over six years from private and non-federal partners, which Health Canada matched on a 1:1 basis through the Canada Brain Research Fund. More than a year ahead of schedule, Brain Canada raised \$100 million by October 2015. To maintain the positive momentum achieved with donors, partners and the research community, in Budget 2016, the Government of Canada provided \$20 million in additional matching funds, administered through Health Canada, to the Canada Brain Research Fund, an additional commitment of \$40 million from Budget 2019, and a subsequent \$40 million funding extension in 2021.

Despite the challenge of working during a pandemic, this year was spent building a solid foundation for a more prosperous future. We were pleased to welcome Dr. Viviane Poupon as President and CEO, along with seven additional team members, including a new Chief Research and Programs Officer, Director of Legal Affairs and Director of Marketing and Communications. During these transitions, the Brain Canada staff rose to the occasion to meet each new member with enthusiasm and hope for the future. Over the past year, the skills, abilities and qualities of Brain Canada's dynamic team met and exceeded our expectations in a multitude of ways.

The growing team has enabled the Board to work closely with the Brain Canada staff, seizing opportunities to raise the organization's profile, broaden our fundraising base and connect with prospective partners. We are bringing further scientific expertise to the organization, enabling us to position Brain Canada as a thought-leader within the research community. We were able to swiftly develop and implement a mental health research strategy in just a few short months, the first competition launching in February 2021. It took a tremendous amount of work and dedication to build this audacious but necessary research program so quickly.

As the Brain Canada staff expanded this year, so too did our Board of Directors. Dr. Shernaz Bamji, Associate Director at the Djavad Mowafaghian Centre for Brain Health, Dr. David S. Park, Director at the Hotchkiss Brain Institute, and Peter Dhillon, CEO of the Richberry Group of Companies, joined as Directors. Their respective experience, passion and commitment to high-impact research will be great assets to Brain Canada and we are looking forward to working together over the coming years.

Across the country and around the world, researchers studying the brain have made great progress, but there is still so much that remains unknown. I am honoured to work alongside this dedicated and talented group as we prepare for tomorrow's challenges and continue to support those striving diligently to unlock the brain's mysteries today. Our collective commitment to improving the lives of people in Canada through impactful brain research is unwavering.

Together, we are building better brain health.

Thank you all so very much.

Sincerely,



Naomi Azrieli, DPhil
Chair, Brain Canada



Governance

Leading with integrity.

Brain Canada's Board of Directors volunteers its time and expertise to provide strategic advice and oversight to the Foundation. The Board is committed to ensuring Brain Canada's success as a leading brain research convenor and in supporting its engagement with the brain research community, stakeholders and the broader public.

Composed of leaders from the business, academic, scientific, philanthropic and Indigenous communities, the Board adheres to Brain Canada's Code of Conduct. Its members uphold the highest standards of honesty, integrity, ethics and professional management.

In addition to meeting four times a year for standing Board meetings, Directors also sit on various committees:

The Governance, Nominating and Ethics Committee (GNEC)

A committee that assists the Board on all matters relating to governance and leadership, as well as ensuring the highest ethical standards.

The Audit, Finance, Investment and Risk Management Committee (AFIRM)

A strong and independent committee that provides support to the Board to ensure financial and organizational viability by overseeing the annual audit, budgets, treasuries, policies, key financial controls, key role succession and risk management. The AFIRM Committee meets four times a year, independent of management, and once a year with Ernst & Young (E&Y), Brain Canada's auditors. The Committee reports to the Board of Directors and recommends the appointment of auditors to review the annual financial statements.

The Research Policy Committee (RPC)

The RPC offers advice and strategic direction on priorities.

Members of the Board and its committees are determined to remain effective in their overall governance of Brain Canada and conduct a thorough self-evaluation on an annual basis, to ensure adherence to all policies and guidelines. Brain Canada requires any Board member who has a potential conflict of interest to disclose the conflict publicly, and abstain from voting on any matter where there is a conflict or potential conflict of interest.

Brain Canada Privacy Policy

Brain Canada understands the responsibility that comes with collecting, using and sharing personal information, and we are committed to protecting the privacy of all. The privacy policy applies to information we collect, use or disclose whenever you interact with us, including through our website. To read the full privacy policy, please visit braincanada.ca/privacy-policy/

Directors



Naomi Azrieli, DPhil
Chair
Member, Audit, Finance, Investment and Risk Management Committee
Member, Governance, Nominating and Ethics Committee
Member, Research Policy Committee
Chair and Chief Executive Officer
The Azrieli Foundation (Toronto)



Shernaz Bamji, Ph.D
Associate Director,
Djavad Mowafaghian Centre for Brain Health, Professor, Department of Cellular and Physiological Sciences
Vice-President elect of the Canadian Association for Neuroscience, Life Sciences Institute, University of British Columbia (Vancouver)



Wayne E. Bossert
Chair, Audit, Finance, Investment and Risk Management Committee
Deputy Chairman and Global Head of Ultra High Net Worth Clients and Canadian Private Banking
RBC Wealth Management (Toronto)



France Chrétien-Desmarais, C.M.
Founding member and Executive President of Precinomics Health Solutions Canada inc., France Chrétien-Desmarais currently sits on numerous Boards in the health, research and social development sectors. (Montreal)



George Cope, C.M.
Chair of the Board
Bank of Montreal (Toronto)



Graham Collingridge, Ph.D, CBE, FRS
Member, Research Policy Committee
Krembil Family Chair in Alzheimer's Research, University of Toronto, Director, Tanz Centre for Research in Neurodegenerative Diseases
Senior Investigator, Lunenfeld-Tanenbaum Research Institute, Mount Sinai Hospital (Toronto)



Peter P. Dhillon, OBC*
CEO of the Richberry Group of Companies, and Chairman of the Board of Directors of Ocean Spray Cranberries Ltd.



Celeste Haldane, QC
Member, Audit, Finance, Investment and Risk Management Committee
Chief Commissioner
BC Treaty Commission (Vancouver)



Robert Mark Krembil
Member, Audit, Finance, Investment and Risk Management Committee,
Member, Research Policy Committee
President and Chief Executive Officer
Krembil Foundation (Toronto)



Ravi Menon, Ph.D, FCAHS, FRSC
Member, Research Policy Committee
Professor of Medical Biophysics, Medical Imaging & Psychiatry
Scientist, Robarts Research Institute
Principal Investigator, The Brain and Mind Institute
Co-Scientific Director, BrainsCAN, Western University (London, Ontario)



David S. Park, Ph.D, FRSC
Director, Hotchkiss Brain Institute
Lead – UCalgary Brain and Mental Health Research Strategy
Professor, Departments of Clinical Neurosciences, and Cell Biology and Anatomy
Cumming School of Medicine, University of Calgary (Calgary)



Lawrence M. Tanenbaum, O.C.
Vice-Chair
Chairman and CEO
Kilmer Van Nostrand Co. Ltd.
Chairman, Maple Leaf Sports & Entertainment Ltd. (Toronto)



Franco J. Vaccarino, Ph.D, FCAHS
Chair, Research Policy Committee
Member, Governance, Nominating and Ethics Committee
Former President and Vice-Chancellor
Professor of Psychology and Neuroscience
University of Guelph (Guelph)



Catherine Zahn, C.M., MD, FRCP(C)
Chair, Governance, Nominating and Ethics Committee
Member, Research Policy Committee
President and CEO
Centre for Addiction and Mental Health (Toronto)

* elected June 16, 2021

A woman with short dark hair, wearing a blue suit jacket and trousers over a white top, is sitting on a black stool. She is looking directly at the camera with a slight smile. The background features a large painting of a city skyline. To her left is a green plant. On the stool next to her is a book titled 'THE SCIENCE OF THE BRAIN' with a blue cover and a white brain graphic.

A very
different
year.

Message from the CEO

In the Fall of 2020, I joined Brain Canada as President and Chief Executive Officer. I am grateful for all the support from the Brain Canada team, and want to thank Naomi Azrieli and the Board of Directors for entrusting me to lead the organization into the future.

As a neuroscientist, I am honoured and proud to be part of a trailblazing organization with a proven track record of supporting high-risk/high-impact research. Even during a remarkably challenging year, Brain Canada maintained its dedication to science and improving the quality of life for all people in Canada.

As we embarked on this new journey together, the COVID-19 pandemic continued to test our resilience as a community and exacerbated long-standing gaps in funding for research and health care. Mental health has reportedly declined, inequalities for vulnerable communities have been magnified and young researchers - the future of brain health - are struggling now more than ever to receive funding. While COVID-19 did not create these challenges, it certainly intensified them.

Yes - much of this past year has been undeniably filled with obstacles. But it has also served as a catalyst for change and provided us with an opportunity to make informed and targeted investments where they matter most. And there are many take-aways that I think could transform the types of research we fund, and inspire a more inclusive, collaborative and efficient future for science.

By looking at the response to the pandemic, we can see the power of teamwork. As individuals, we may have spent the last several months social distancing. But as part of the global scientific community, we made monumental progress in breaking down barriers. International collaboration has reached unprecedented levels and research findings are being shared at record-breaking speed. Imagine all that we can accomplish if we continue to chip away at the silos that have been holding us back and slowing down the pace of discovery. Imagine the impact we can have by working together.

For an organization that joins people, labs, platforms and institutions from coast to coast to coast, the possibilities for adopting more collaborative approaches are both encour-

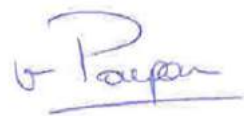
aging and energizing. Since the onset of the pandemic, Brain Canada has continued to support excellent research.

We led with compassion and flexibility and pledged to maintain an open dialogue with investigators to assist with any changes during these uncertain times. We worked to maintain the right balance of supporting creativity while still upholding a rigorous peer review process.

This year, we saw a critical need for funding in three particular areas: mental health, sex and gender-based analysis and early-career support. Aligned with Brain Canada's proven track record of taking on calculated risks and implementing ambitious strategies, we decided to tackle all three as priorities for the year. It was important for us to create relevant programs that address these gaps in the short-term while maximizing positive impact in the long-term.

I am confident that our investment today will lead to improvements in the lives of all Canadians tomorrow. By harnessing the power of collaboration and nurturing new and existing partnerships, we are convening researchers, partners and donors to further accelerate our understanding of the brain in meaningful ways.

For all these reasons, I am delighted to embark on my second year as President and CEO of Brain Canada. I extend my heartfelt gratitude to the Board for their unwavering dedication to improving the lives of Canadians, to Health Canada for prioritizing brain research, to our donors and supporters for continuing to rally behind us, even during this difficult year, and lastly to all the staff for their dedication and enthusiasm. We are blossoming into a wonderful team that exemplifies the importance of working together to create a healthier society. We may be a small group, but we make a big impact. The future is bright, and, together, we are taking all the right steps toward building better brain health.



Viviane Poupon, Ph.D
President and CEO, Brain Canada

Building back our mental health

To mitigate the impacts of the pandemic, Brain Canada has launched a mental health research initiative that is both strategic and forward-thinking. Introducing three complementary pillars (basic, targeted and translational), the approach promises to benefit all Canadians and cast a much-needed light into the shadows of mental health research.

By including a variety of stakeholders, Brain Canada is building a community that will lay the groundwork for a healthier and more prosperous future for all people in Canada, a future where research into mental health and substance use is no longer scarce.

Basic Research	Targeted Research	Translational Research
<p>BASICS OF RESEARCH PROGRAM WILL...</p> <ul style="list-style-type: none"> • Support a better understanding of the nature, development and progression of specific mental health illnesses • Foster new knowledge to build more targeted and effective therapies, with fewer side effects • Increase the development of interventions that could alter events or outcomes of mental health diseases • Bring neuroscience into mental health treatment • Lead to better access and options for optimal treatment 	<p>YOUTH MENTAL RESEARCH PLATFORM WILL...</p> <ul style="list-style-type: none"> • Offer an opportunity for new and emerging directions to intervene promptly and develop and share solutions • Create a large, integrated database of research findings eliciting an interactive network to collaborate and quickly capitalize on findings • Enable the sharing of data across disciplines that will speed up the pace of discovery and accelerate the practical application of research findings in improving youth mental health services 	<p>BELL LET'S TALK – BRAIN CANADA MENTAL HEALTH RESEARCH PROGRAM WILL...</p> <ul style="list-style-type: none"> • Harness game-changing advances by Canadian researchers in mental health • Support the development of innovative solutions to ensure effective, sustainable, and accessible mental health care for all Canadians • Engage knowledge users and stakeholders at each stage of the research process to ensure meaningful outcomes are achieved • Transform knowledge into action throughout the granting period to ensure that the project is impact driven • Drive more effective mental health care services to the front lines, so Canadians have better access

In partnership with Bell Let's Talk, Brain Canada launched the new Bell Let's Talk-Brain Canada Mental Health Research Program to accelerate Canadian brain research while helping to address the impacts of COVID-19 on mental health care in Canada. Funding for the program is made up of a \$2 million gift from Bell Let's Talk matched with a \$2 million contribution by the federal government through the Canada Brain Research Fund (CBRF), for a total research investment of \$4 million.

As brain health becomes an increasingly prominent societal issue, there is a growing need for scientific data to support new treatments. This new research program is taking great steps to address the complexity of these challenges by promoting collaborative and cross-disciplinary research."

Dr. Mona Nemer
Canada's Chief Science Advisor

Through this collaboration, Bell Let's Talk and Brain Canada will fund four game-changing projects that accelerate emerging scientific knowledge and innovative solutions to drive more effective and sustainable mental health care services to the front lines.



The Future of Brain Canada's Mental Health Research Initiative

We are working to acquire an additional \$3M from private donors for the mental health research program next year. That envelope would be matched by the government of Canada through our partnership with Health Canada.

Building diversity

Enabling high-impact research at Brain Canada through equity, diversity, and inclusion.

Research approaches that consistently account for sex and gender differences drive innovation and scientific rigour, while also reducing gender-based health inequities for previously silenced voices. In 2021, Brain Canada refined its principles on sex and gender-based analysis plus (SGBA+) to emphasize its importance in the research hypotheses and to foster equity, diversity and inclusion (EDI) in the pool of funding recipients.

Evidence clearly shows that increasing EDI in research environments enhances excellence, innovation and creativity. In addition, incorporation of principles of EDI in the design and execution of research involving human participants is critically important for broadening the potential impact of the work and the potential for new knowledge to be translated into health benefits.

Historically, brain research on humans has been conducted on white male subjects. In addition, male rats have traditionally been considered "easier" to study because female hormones make female rats less "stable" research subjects—meaning much of the basic science that underpins our understanding of neuroscience is based on the male brain.

// At the end of the day, if we want to help everyone, we need to include everyone."

– Dr. Catherine Ferland
Chief Research and Programs Officer

This imbalance has led to gaping holes in both the understanding of diseases and how effective treatments work for women and other subgroups. For example, two-thirds of Alzheimer's patients are female, but most of the research into the disease is based on male-rat models.

All applicants are now asked to consider a diverse range of differences including sex, gender, age, ethnicity, and education in their research questions. These comparisons can inform research on disease mechanisms and the development of new therapeutics as well as enhance scientific rigour and reproducibility.

Homogenous groups of researchers can also lead to more homogenous outcomes, which is why Brain Canada's position also encourages sex, gender, and diversity considerations for grantees.

The initiative builds on Brain Canada's longstanding commitment to collaboration, and introduces sex, gender, and diversity considerations to every stage of the granting process.

In May 2021, Brain Canada's Chief Research and Programs Officer, Dr. Catherine Ferland, was a panelist at a Knowledge Exchange event: **Sex, Gender, Diversity and Inclusion** hosted by Health Canada. During the digital event, Dr. Ferland joined Heart & Stroke and the Canadian Centre on Substance Use and Addiction to discuss the importance of sex and gender-based analysis plus (SGBA+) considerations in research and health care.

Building for the future

In 2012, Dr. Nancy Butcher was a young PhD student at the Centre for Addiction and Mental Health exploring a new line of research into individuals with a rare genetic condition known as 22q11.2DS, the only confirmed molecular genetic subtype of schizophrenia. By looking at the brains of older adults with the disorder, Dr. Butcher's research aimed to explain some of the neuropsychiatric and neurological manifestations that were being seen clinically.

Brain Canada's Training Awards are designed to support the next generation of Canadian neuroscience researchers by providing them with guidance, mentorship and training under the direction of world-leading researchers.

Funding opportunities for early career researchers are a significant investment in Canada's future. They enable budding scientists to explore new ideas and accelerate their careers in neuroscience. When Dr. Butcher received her 2012 Bell Mental Health Research Training Award, she was working under the supervision of Dr. Anne Bassett. Her \$97,500 grant was disbursed over a three-year period, along with a \$5,000 career development supplement.

"For me, it was pragmatically extremely helpful, as someone who was always really dependant on scholarships and funding, to support my desire to be a researcher. Having the award from Brain Canada and Bell Canada, which included a training allowance, was really helpful to be able to completely focus on the research, be a really productive PhD student and spend time learning," she explains.

Since receiving the Bell Mental Health Research Training Award, Dr. Butcher's work has evolved to focus on bridging the gaps in high-quality pediatric mental health research.

"As my career developed, one thing I became increasingly aware of as I was conducting clinical research studies in mental health was that there is a large gap in terms of high-quality methods that can be used to do mental health research, in particular pediatric mental health research," says Dr. Butcher.

Along with being a researcher and methodologist, Dr. Butcher is now also an Assistant Professor in the department of psychiatry at the University of Toronto, where some of her own students are seeking early career funding opportunities.

"It's a very exciting time to be a young investigator but probably now more than ever funding resources are quite scarce.", says Dr. Butcher. "Having these types of awards is motivating and encouraging for young investigators who want to pursue research."

Dr. Nancy Butcher is just one of many researchers who received support from Brain Canada at an early stage in their career. We believe that supporting the next generation of scientists, whether that be through our Training Awards, Future Leaders in Canadian Brain Research Program, or student sponsorships, all contribute to the future of scientific leadership. It means investing today for a better and more brilliant tomorrow.



Dr. Nancy Butcher, recipient of a 2012 Bell Mental Health Research Training Award, with her supervisor, Dr. Anne Bassett.

There's some really wonderful work that's being done in research but getting that change into practice and making that impact directly into patients' lives can be difficult. It's really important to bridge that gap."

BioSpec 70/30USR

Photo: Doug Nicholson, Sunnybrook Health Sciences Centre



Brain Canada is proud to partner with the Canadian Consortium on Neurodegeneration in Aging (CCNA) to drive innovative brain research in Canada.

Fostering Collaboration

Bringing together the country's best researchers to improve outcomes for dementia

Brain Canada is a proud partner to the Canadian Consortium on Neurodegeneration in Aging (CCNA), a cross-country collaborative effort to make strides in our understanding and treatment of dementia. The CCNA has 19 teams looking at various aspects of dementia, from basic science to clinical trials.

"The CCNA, along with partners like Brain Canada, gives Canada the means to step up its game in dementia research," says Dr. Howard Chertkow, Scientific Director of the Consortium. "This gives us a top-down plan to help synergize and bring scientists together, to attempt to do things that an individual researcher simply cannot do."

In December 2020, Brain Canada provided a five-year grant totaling \$2,500,000 for Phase 2 of the CCNA, with Alzheimer's Society of Canada providing matched funds. Brain Canada's fund-

ing is contributing to one CCNA team's goal of exploring the role of vascular illness in dementia, the Women, Sex, Gender, and Dementia (WSGD) cross-cutting program promoting the inclusion of sex and gender considerations across all CCNA research, and network coordination support.

Exploring the Contributions of Vascular Disease to Dementia

More than 400,000 Canadians over the age of 65 live with dementia. Brain Canada funded scientists are committed to improving the aging experience for hundreds of thousands of Canadians by gaining a more thorough understanding of this devastating disease.

"The etiology of dementia is extremely complex," says Dr. Bojana Stefanovic, a Senior Scientist at Sunnybrook Research Institute in Toronto.

Photo: Doug Nicholson, Sunnybrook Health Sciences Centre



Dr. Bojana Stefanovic is a Senior Scientist at Sunnybrook Research Institute in Toronto.

Dr. Stefanovic is co-leading a CCNA team dedicated to understanding and treating vascular contributions to dementia risk. Despite the complexity, she notes, bringing together scientists from across the research spectrum to build a more complete picture of the role of vascular illness will propel progress toward identifying dementia treatments that target the underlying causes of the disease, not simply the symptoms.

A major hurdle in uncovering treatment and care is that, despite its high rate of occurrence, researchers are still investigating the origins of the disease. The role of vascular illness is critical to understand, according to Dr. Stefanovic, because it is one of the strongest risk factors when it comes to dementia—and is much easier to study, diagnose, and treat than dementia itself.

Dr. Stefanovic's team works on preclinical modelling of vascular disease, to understand how risk factors, such as high blood pressure, might cause arterial stiffness and reduced blood flow to the brain.

The second half of this cross-country partnership, led by Dr. Eric Smith of the University of Calgary, takes a clinical approach, conducting human studies to explore possible therapies for dementia patients with vascular illness. The impact of Brain Canada's funding for this

team, says Dr. Stefanovic, is in the way it brings together researchers at different points in the research pipeline to inform each other's work. "The preclinical researchers can identify specific pathways and specific comorbidities in dementia, which are then taken up by the clinicians and tested in clinical trials," Dr. Stefanovic explains. "Then, as clinical trial researchers observe aspects of patients' condition that might be predictors of treatment's working better or worse, they can go back to the preclinical researchers and ask them to test those hypotheses in a new model."

For one person to understand the complexity of dementia is very unlikely. But if you put together a network of people, all of whom have different perspectives, many of which have different backgrounds and lenses, then together they are much likelier to make true progress."

Dr. Bojana Stefanovic

Through this network, Brain Canada funding works as a leverage point for more—and more targeted—experiments, leading to a fuller understanding of the many intersecting factors contributing to dementia.

Fostering Collaboration Ensuring Sex & Gender Representation in Dementia Research

The Women, Sex, Gender, and Dementia (WSGD) cross-cutting program, led by Dr. Gillian Einstein, Wilfred and Joyce Posluns Chair in Women's Brain Health and Aging at the University of Toronto, has its eye across the entire Canadian Consortium on Neurodegeneration in Aging (CCNA), helping teams bring the sex and gender lens to all of their dementia research.

In spite of the higher rates and incidence of Alzheimer's disease in women, much of the basic research that underpins our current understanding of the disease is from studies on male mice. In addition, many clinical trials, while they include women and men, cancel out any sex effects by controlling for sex.

Despite a historical reluctance to prioritize sex and gender (S&G) considerations, "most of the time when somebody separates their analysis by sex, they see these differences," says Dr. Einstein. If they do not, that is important to know as well, she adds.

To ensure proper representation of female sex and gender considerations across the CCNA, Dr. Einstein is working with a team of S&G Champions who serve as advocates on each team. The champions come together regularly to compare notes and assess different methods of promoting S&G considerations, adding to the collective understanding of the issue in Canadian research.

Dr. Einstein also reviews every CCNA produced paper to ensure it includes S&G considerations. In addition, one of the goals of the WSGD program is to provide extra funds to the teams to ensure representative study populations can be accessed by researchers—for example, by funding the use of female mouse colonies, which are typically more expensive to use.

"The role of the WSGD cross-cutting program is really to ensure that every team and platform is thinking about sex and gender in the research, and building up a research climate in which people feel comfortable doing that," says Dr. Einstein.

According to Dr. Einstein, understanding these implications in dementia is crucial, because it gives us one more tool in providing individualized, effective care for Canadians suffering from the disease. "Sex and gender is just one part of that," she says. "But it's an overlooked part. Women are people who have been overlooked in this research."

She hopes that this Brain Canada-funded push will help influence the broader Canadian research landscape.

Dr. Chertkow agrees, noting that he hopes the WSGD program can become a model internationally. "This team ensures Canada is ahead of the curve when it comes to S&G considerations," he says.

The work aligns with Brain Canada's new Sex, Gender & Diversity and Inclusion considerations, which was introduced in early 2021 and outlined our commitment to ensuring S&G is included in all Brain Canada research programs going forward.

Dr. Gillian Einstein
Wilfred and Joyce Posluns Chair
in Women's Brain Health and
Aging at the University of
Toronto leads the CCNA's
Women, Sex, Gender,
and Dementia
Cross-cutting Program.



Building Partnerships

Humans and the Microbiome.

Project illuminates microbiome's role in human health.

Since the early 2000s, researchers have begun to zero in on one of the most significant mind-body linkages in humans, the connection between the microbiome of our digestive systems and our brains—sometimes called the “brain-gut connection.” The implications coming out of this research, on everything from Parkinson’s to Alzheimer’s to mental illness, are shifting the way we think about the profound impact of the human microbiome and human health.

In 2015, Brain Canada became a key funding partner on CIFAR’s Humans and the Microbiome (HMB) project, a progressive, multi-disciplinary effort that brings together more than 30 researchers from across North America to uncover the mysteries of the human microbiota and the role it plays in human health, evolution, and development. The project is co-led by Dr. B. Brett Finlay, a microbiologist at the University of British Columbia, and Dr. Melissa Melby, an anthropologist at the University of Delaware, who recently took over for Dr. Janet Rossant of The Hospital for Sick Children in Toronto.

The novel insights gained by HMB researchers are already making a major impression on public health.

In early 2021, HMB researchers collaborated on a paper published by *Proceedings of the National Academy of Sciences (PNAS)*, titled “The hygiene hypothesis, the COVID pandemic, and consequences for the human microbiome.” The paper received widespread media attention in both Canada and the USA.

“The PNAS paper is about some of the unintended consequences of not only intense sanitization and disinfecting due to COVID, but other behavioral changes related to the pandemic, such as food access, social isolation,

and more,” says Dr. Melby. “I think that paper was able to capture what can happen when you get microbiologists and social scientists talking to each other in meaningful ways.”

The team recently identified their research themes for the next five years of the HMB, in which they will focus on the “bookends of life,” from birth to end-of-life diseases and care; the microbiome and the community; and the impact of the environment on the microbiome.

Dr. Melby hopes the HMB’s work can continue to give strong scientific underpinning for many public health issues, from breastfeeding, to elder care, to systemic and environmental concerns, all of which can impact the microbiome, and in turn, human health.

Everything from antibiotic resistance to climate change has an impact on the microbiome. We’re trying to bring all these ideas together.”

Dr. Melissa Melby

“The HMB brings together people who are not only committed to doing great science, but to communicating with people outside of their discipline,” she says. “I think the public wants more of us, as academics and scientists, to do that kind of innovative, integrative, interdisciplinary work. And I think the world demands it.”

A portrait of Dr. Melissa Melby, a woman with short, light-colored hair, smiling. She is wearing a dark blazer over a blue top. The background behind her is a vibrant, abstract painting with streaks of green, pink, purple, and yellow. The text is overlaid on the bottom left of the image.

Dr. Melissa Melby,
a medical anthropologist
at the University of Delaware,
is co-lead on the Humans
and the Microbiome project,
funded by Brain Canada.

Building Partnerships

Love builds brains: integrating cultural knowledge with brain science

Early childhood is a critical stage of development. The things we learn and encounter at this time set the stage for our later experiences and fundamentally shape us as people. It is clear that past and present colonial realities have given way to disruptions in parenting and traditional child-rearing practices. It is also clear that these persistent disruptions impact Indigenous children's development during the earliest years of life and beyond. Given the multiple, unique contexts in which Indigenous children are growing, the development and sustainable provision of unique, culturally grounded supports are required in order for Indigenous parents and communities to nurture their children's healthy development. A growing body of research on early childhood development has shown that by equipping families with strong knowledge of their children's early developmental processes, they can reliably provide the stable, predictive environments that help their children thrive.

It was with this idea in mind that the Martin Family Initiative (MFI) approached the Ermine-skin Cree Nation to discuss co-developing a prenatal to early childhood intervention program. Together, MFI with Ermineskin, Maskwacis Health Services (MHS) and Maskwacis Education Schools Commission (MESCC) created the Early Years pilot program. In 2018, it received funding from the Brain Canada Foundation and an anonymous donor.

The Early Years differs from the other projects supported by the Brain Canada Foundation so far, representing a shift in the way research is conducted. Relationship building and ongoing co-development with the community ensure that evaluation is embedded throughout in a respectful way. The Early Years is centred around visitors from the community, many of them mothers themselves, who support preg-

nant women and young families in their homes, and walk alongside them as they navigate the new challenges of parenthood. According to Chloe Ferguson, Director of the Early Years, "Brain Canada really took a chance on this project and have approached it in a way that demonstrates a real understanding of the fact that research doesn't happen in a vacuum. There is a way to approach research from a community driven and relational perspective."

MFI and its partners have worked with leading researchers in the field to develop a comprehensive 45-hour training course for Visitors, described by Ms. Ferguson as a "crash course in childhood development." They also developed a collection of original resources, that weave together Indigenous-led community innovation and trailblazing scientific research in early childhood development. A set of 170 "Toolbox cards" provide conversation topics, activities and relevant information to guide each visit and draw parents into their young children's early learning experiences while strengthening ties to their families and cultures.

The program is now in its fourth year and there has been great uptake. Dr. Melissa Tremblay, an Indigenous scholar at the University of Alberta and child psychologist who, along with Dr. Bryan Kolb from the University of Lethbridge, has been leading the scientific direction of the project, says that the reputation of the program and the level of trust participants have in their visitors has already come across in the evaluation interviews she has conducted. "Having worked on lots of other community initiatives... I would say that the momentum of this project, the relationships that have been built and the way that the program has become so imbedded within the community has been incredible."



According to Heather Downie, Program Manager, a big part of the program's success is due simply to listening to community Elders. "The key lessons are already part of the traditional knowledge. We are now in a place where we can build on what the Elders are saying and then we can back those messages up with the latest science."

Thanks to the success of the Early Years in Ermineskin Cree Nation, the project was expanded to serve the three other communities that make up Maskwacis. As Dr. Tremblay says, "the communities we're working with already have the resources and the strengths that they need in order to address issues that they might be facing. Our role is to walk alongside community partners to provide a different perspective on how to access those strengths." Although it is too soon to determine the long-term outcomes that can be attributed to this intervention, the Early Years program provides a great example of how successful collaborations and integrating research with Indigenous culture can uplift the existing strengths of Indigenous families and communities.

Demonstrating Impact

Help for kids with injured brains

It was early 2010, and the research team in Dr. Freda Miller's lab at the Hospital for Sick Children had just made an exciting discovery: they'd identified a crucial pathway for telling developing neural stem cells to make neurons and glia in the brain.

"It was a very basic science discovery," says Dr. Miller. But, with the support of funding from Brain Canada, that fundamental discovery has gone on to underpin a decade of translational research that has the potential to benefit countless young people with a range of brain diseases and injuries.

In 2012, Dr. Miller, along with co-investigators Dr. Cindi Morshead, Dr. Donald Mabbott and Dr. Paul Frankland, were among the recipients of a \$1.5 million research grant from the W. Garfield Weston Foundation – Brain Canada Multi-Investigator Research Initiative (MIRI) Grants competition.

This grant came at a critical time. It allowed us to work as a team. And it allows us to do the difficult work of taking the kinds of basic research I do in my lab to animal models, and eventually to humans. That's a rare thing."

Dr. Freda Miller

The research team, led by Dr. Miller, sought to determine whether metformin, a type 2 diabetes drug that was known to activate the same pathway they had discovered in neural stem cells, could enhance the genesis of brain cells and in doing so, promote brain repair in the injured brain. To enhance the translational potential of their research, the studies were conducted in both mice and humans, with a particular focus on brain repair in children.

"My lab has always had the philosophy that even though much of what we do is basic science, if we find something that could be translated, we should make every effort to do that," says Dr. Miller.

Within the three-year grant, which ended February 2016, their research led to a number of notable findings from both their animal and human studies, resulting in a total of 13 publications in several high-impact journals, including *Cell Stem Cell*, and *Neuron*.

The research continues to make an impact: currently, three clinical trials have stemmed from the original discovery in Dr. Miller's lab, including one exploring the benefits of metformin on repairing brain injuries in children caused by tumour irradiation. The findings were published in *Nature Medicine* in July 2020, with two of the Brain Canada grant co-investigators, Drs. Donald Mabbott and Cindi Morshead, as senior authors.

"Metformin, in the short-term at least, looked like it was able to enhance some measures of brain repair, and even potentially improvement on certain types of cognitive tasks," says Dr. Miller. While this was a pilot trial, it is providing the basis for a larger multi-centre clinical trial that is currently being organized.

Another pilot trial, led by Dr. Ann Yeh, is also looking at whether metformin can help repair damaged white matter in the brains of children with a multiple sclerosis-like inflammatory disorder.

For Dr. Miller, these exceptional results further the case for the "one brain" approach to neurological disorders, mental illness, and brain injury, meaning that every discovery has the potential to have an impact on multiple brain disorders, and to further our understanding of brain functioning—an approach that has underpinned Brain Canada's support of collaborative research teams for more than two decades.



Dr. Freda Miller
studies brain injury in children
and teenagers

Outcomes

 1 original basic
science discovery

 10 years of
translational research

 3 clinical trials

 13 publications

Demonstrating Impact

Transformative technology sparks collaboration and knowledge exchange

One of the major limitations in finding treatments for brain diseases such as Parkinson's and Alzheimer's has been the difficulty acquiring appropriate tissue samples from patients.

"People will give you a bit of their blood or their skin, but they won't give you a piece of their brain," says Dr. Edward Fon, Scientific Director of the Early Drug Discovery Unit (EDDU) at The Neuro (Montreal Neurological Institute-Hospital).

But a promising technology developed in the past decade is changing that. The method involves converting adult stem cells into what's called an "inducible pluripotent stem cell." These new cells can then be reprogrammed into desired cell types.

"Now, just from a blood sample, we can reprogram those blood cells into stem cells, and then make those stem cells grow into neurons, other types of brain cells, or even three-dimensional brain organoids, that have electrical activity and express the same kinds of genes that cells within a real brain do," says Dr. Fon.

With these stem cells, researchers have the means to study underlying biological mechanisms and to test new therapies, with the hope of finding more effective treatments for diseases such as Parkinson's, ALS, and more.

Dr. Fon was one of a team of collaborators, led by Dr. Jack Puymirat (Université Laval), that received a 2014 Brain Canada Platform Support Grant (PSG) to develop the Human inducible pluripotent stem cell (hiPSC) platform. The \$1.5 million grant helped make this transformative technology accessible to researchers across Canada.

Brain Canada launched its PSG program after recognizing the essential need for collaborative platforms. By bringing together cutting-edge equipment, technology, and

services and making them widely available, these platforms accelerate research outcomes beyond what a single researcher might achieve with just the resources in their own lab.

Brain Canada's initial investment and support of the platform was absolutely instrumental in getting things off the ground. Making these stem cells takes a huge amount of resources. But this platform gives us significant economies of scale."

Dr. Edward Fon

Since receiving the 2014 grant, the hiPSC platform has evolved from a local project at the Université Laval into the Early Drug Discovery Unit (EDDU), an open drug discovery platform at the Montreal Neurological Institute (MNI). Dr. Fon's colleague, Dr. Thomas Durcan, Associate Director of the EDDU, runs the day-to-day operations of the platform, which now serves researchers across Canada and has stimulated national and international collaborations with more than 40 team members, 100 users trained, 50 academic collaborators, and 8 industry partners.

Thanks to the MNI's open science model, everything developed at the EDDU is made fully available to academia and industry, dramatically accelerating medical research and the development of new therapies for devastating neurodegenerative disorders.

Not only is Dr. Fon involved with the platform on an administrative level, he uses it regularly in his work researching Parkinson's disease.

"At some point, you need to do the work in human models of disease," he says. "So as a user, the platform has been tremendously beneficial to my research."

Outcomes



40 team members



100 users trained



50 academic collaborators



8 industry partners

Clinician-scientist
Dr. Edward Fon strives to
find out how Parkinson's
disease develops on a cellular
and molecular level

Photo: Owen Egan/Joni Dufour



Dr. Nathalie Bier
is developing assistive
technology for people with
mild cognitive impairment

Sparking Insight & Innovation Now You're Cooking!

The ability to plan and prepare meals is something that we may take for granted when we are young and healthy, but it can be an especially daunting undertaking for older adults who are experiencing cognitive decline. With some assistance, individuals with cognitive difficulties can often continue participating in meal preparation. With nearly \$200,000 in funding support from Brain Canada in partnership with the Alzheimer's Association, Dr. Nathalie Bier and colleagues have been working on a technology tool they call "COOK" (Cognitive Orthosis for Cooking) to help people with cognitive impairment plan and prepare meals independently and safely. COOK is just the latest example of how innovative research can have real-world applications, even in the short term. The technology offers support on a touch-screen device that is typically placed next to the stove, providing guidance through the various tasks required to prepare a meal, while watching for and correcting any risky behaviours.

"COOK is unique in that it provides support in two ways, helping with the cognitive aspects of cooking, as well as safety," said Dr. Bier, an Associate Professor at Université de Montréal.

COOK was originally designed with (and for) people with traumatic brain injury living in a group residential setting. Since the system worked so well for them, the researchers wondered if the tool might also help other individuals who struggle with independent food preparation, like older adults.

Dr. Bier and her colleagues began studying cognitively healthy older adults and discovered that they, too, could benefit from COOK. They then turned their attention to older adults experiencing cognitive decline.

More recently, Dr. Bier and her team have begun conducting a usability study in the laboratory, which is set up like an apartment with an operating kitchen that has COOK installed. There, individuals actually prepare (or simulate preparing) a meal using the COOK technology.

"The research we've completed so far suggests that COOK has strong potential to help older adults with MCI (mild cognitive impairment) and dementia prepare meals safely in their own homes," said Dr. Bier.

COOK is still in development, but there is a good chance that the technology could be available for real-world use in the next few years.

The full version of this article was originally published in Women's Brain Health Initiative's Mind Over Matter magazine, volume 11.

Meal preparation is critical to independence, which is something that's of great importance to people as they age. Most people want to live in their own home and take care of their own needs independently for as long as possible. COOK can help with that."

Dr. Nathalie Bier

Sparking Insight & Innovation

Hope for children with brain cancer

Brain cancer is the most common type of solid cancer in children, and can be notoriously difficult to target with interventions such as chemotherapy, radiation, or surgery. But the work of Brain Canada-funded researchers is shedding new light into our ability to treat this pernicious childhood illness.

“The more that we learn about these particular types of cancers, the more we realize how clever they are,” says Dr. Laura Donovan. Dr. Donovan is a Principal Investigator studying childhood cancer at Great Ormond Street Hospital in London, UK. Until April 2020, she was a postdoctoral fellow working in the lab of Dr. Michael Taylor at the Hospital for Sick Children (SickKids) in Toronto.

One of the difficulties with brain cancer is that cancer cells “look” so similar to normally developing cells in the brain, making them difficult to specifically target with treatments without damaging normal brain tissue.

Research by Dr. Taylor, Dr. Donovan and others has shown that it’s possible to genetically modify chimeric antigen receptor (CAR) T cells from a patient’s immune system to target proteins found only on the cancer cells. They then reintroduce the CAR T cells into the body, effectively “training” the patient’s immune system to identify cancer cells—and fight them. This discovery is bringing an immense amount of hope to the fight against childhood brain cancer.

A recent study, funded by Brain Canada and led by Dr. Donovan, developed a novel approach to the delivery of the modified CAR T cells by reintroducing them directly into the patient’s cerebrospinal fluid. In doing so, Dr. Donovan found it was possible to avoid potential adverse effects that could come from intravenous delivery.

“Ependymomas and medulloblastomas [the targeted tumour types] have a devastating prognosis,” says Dr. Donovan. “These clinical trials are giving us hope for an effective way to treat them. And they’re possible because of the funding we received from Brain Canada.”

She notes how encouraging it is, as a young researcher, to see work translate from the discovery phase to the clinical phase so quickly.

“It really has given me optimism, as well as the persistence to carry on,” she says.

Today, Dr. Donovan is building on her foundational work in the Taylor Lab, leading a research team dedicated to identifying therapies that could work in tandem with CAR T-cell therapy and increase the effectiveness of the treatment. She credits her work with Dr. Taylor for giving her the skills and confidence she has today as a Principal Investigator (PI).

“Michael was always very good at bringing home what these children are dealing with, and he was the bridge between the clinical and translational research. He really gave me an understanding of the types of therapies we should be working on and why this work is so important,” she shares.

“That level of support and guidance, and mentorship—it’s changed me as a person. And it’s set me up very well for a career as a PI.”

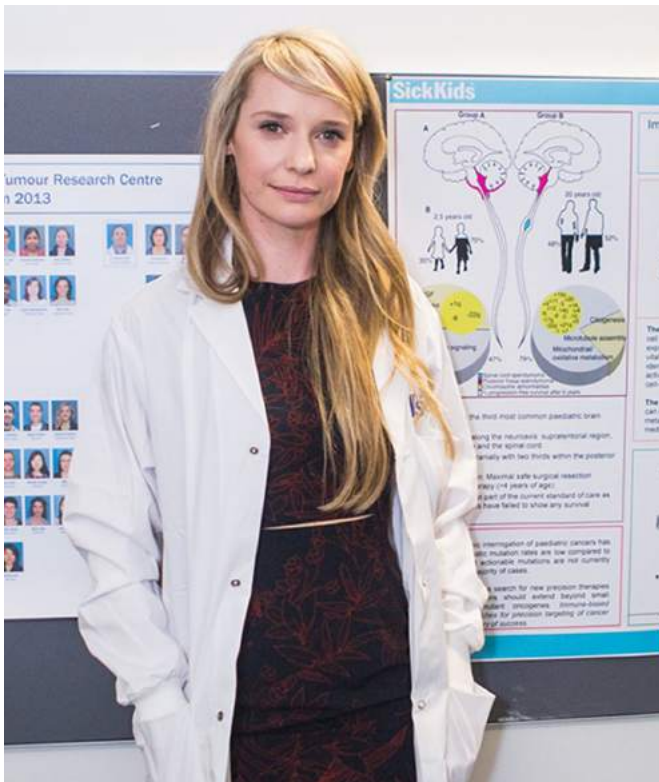


Photo: Circle of Hope Soiree in support of Meagan's Walk | West of Contra // Image by Bao Dao

Dr. Laura Donovan
Principal Investigator studying childhood cancer at Great Ormond Street Hospital in London, UK

Canada Brain Research Fund

June 1, 2020 - May 31, 2021

Total amount awarded:

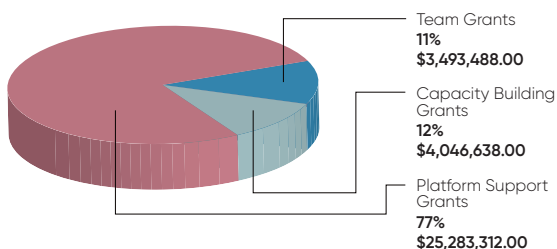
\$32,823,438.00

June 1, 2011 - May 31, 2021

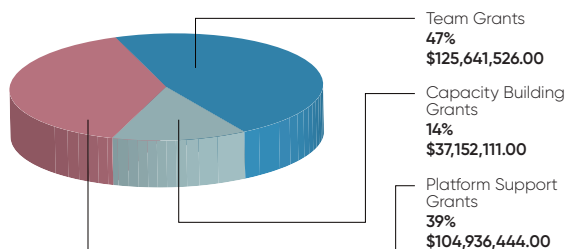
Total amount awarded:

\$267,730,083.25

Competition Type

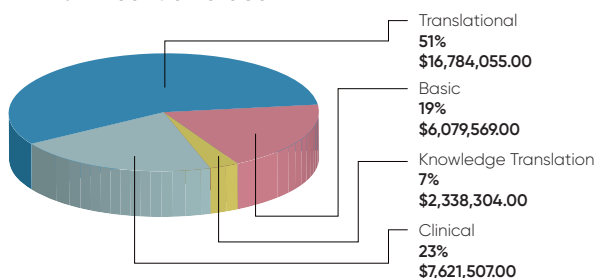


Competition Type



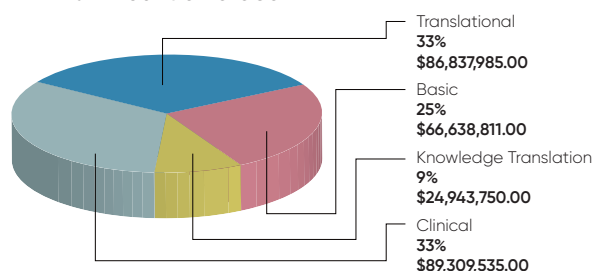
Types of Research

% Amount awarded



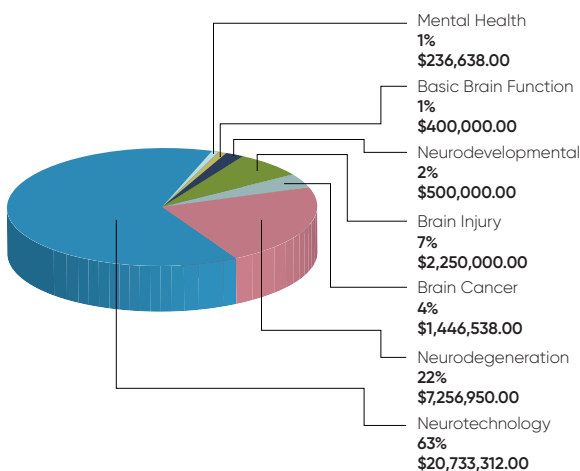
Types of Research

% Amount awarded



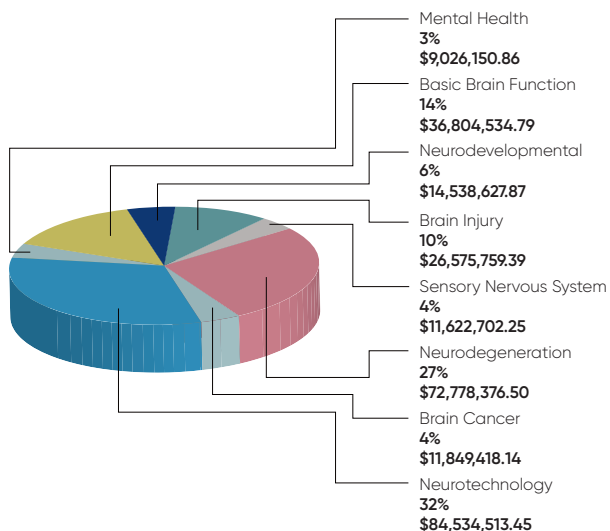
Area of Research

Primary Research Focus



Area of Research

Primary Research Focus



Canada Brain Research Fund

The Canada Brain Research Fund (CBRF) is an innovative partnership between the Government of Canada (through Health Canada) and Brain Canada, designed to encourage Canadians to increase their support of brain research, and maximize the impact and efficiency of those investments. The Fund supports the very best Canadian brain research, fostering collaboration across disciplines, institutions, and provinces, and enhancing global linkages.

In 2011, Brain Canada committed to raising \$100 million over six years from private and non-governmental sources which was matched by the Government of Canada on a 1:1 basis, creating a \$200-million fund. Brain Canada met its fundraising objective of \$100 million by the fall of 2015 – more than one year ahead of schedule. To maintain the positive momentum achieved with donors, partners and the research community, in Budget 2016, the Government of Canada provided \$20 million in additional matching funds, administered through Health Canada, to the CBRF, an additional commitment of \$40 million from Budget 2019 and a subsequent \$40 million funding extension in 2021. Currently, Brain Canada relies on the support from donors and partners, along with up to ten percent of funds from the CBRF, to cover its operating expenses.

Types of grants

Capacity Building Grants

GOAL: Support trainees and early career researchers for training and mentoring, and to convene the Canadian brain research community.

Team Grants

GOAL: Bring together scientists from different disciplines to advance collaborative research on the brain and brain health.

Platform Support Grants

GOAL: Create and enhance centralized shared research resources (referred to as "platforms") to increase access to equipment, expertise, data and protocols across research networks.



May 3, 2012

The Honourable Leona Aglukkaq, Canada's Minister of Health, officially launches the Canada Brain Research Fund.

May 18, 2012

Launch of Brain Canada's Multi-Investigator Research Initiative (MIRI), the first of the Canada Brain Research Fund's research programs.

Fall 2015

Brain Canada raises \$100 million in donor and partner commitments by October of 2015, a full 18 months ahead of schedule.

Canada Brain Research Fund

This commitment by the federal government ensures that Canada continues to be among the leaders in the global challenge to understand brain function and brain diseases. Together, we are building better brain health for Canadians.

Through our decade-long partnership with the Brain Canada Foundation, Health Canada is proud to support meritorious neuroscience research on pressing health challenges that affect many Canadians. In the context of COVID-19, we are reminded of the importance of continued and proactive investment in basic science, which is the foundation for advancements in the prevention, diagnosis and treatment of brain health issues such as dementia and mental health conditions."

The Honourable Patty Hajdu,
Minister of Health

Types of research

- **Basic research** explores questions related to how nature works.
- **Translational research** aims to take what's learned in basic research and apply that in the development of solutions to medical problems.
- **Clinical research** studies proposed solutions through clinical trials. (Source: Dana-Farber)
- **Knowledge translation** is a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system. (Source: Graham, 2010)

In 2019, a new Strategic Science Fund was proposed by the Liberal Government to support third-party science and research organizations like Brain Canada. It is through the Strategic Science Fund and its competitive allocation process that Brain Canada intends to renew the Canada Brain Research Fund Contribution Agreement moving forward.

2016

Budget 2016, the Government of Canada provides \$20 million in additional matching funds to the Canada Brain Research Fund.

2019

Budget 2019, the Government of Canada provides an additional \$40 million in matching funds to the Canada Brain Research Fund.

2021

The Government of Canada provides a \$40 million funding extension for the Canada Brain Research Fund.

Research Programs

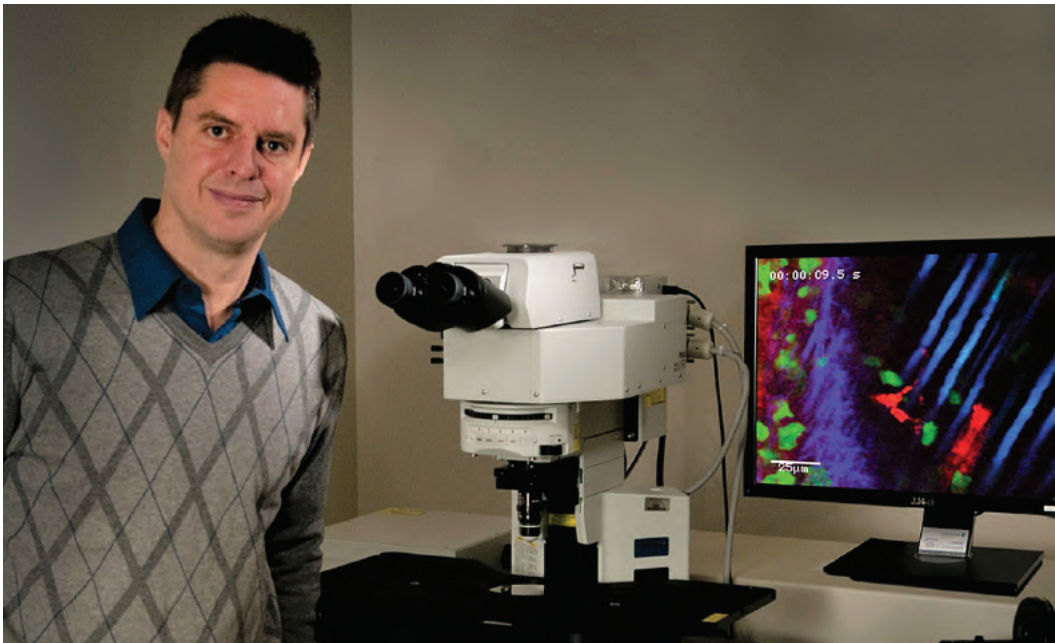
Capacity building grant

2020 Turnbull-Tator Award in Spinal Cord Injury and Concussion Research

Since 2001, in honour of Barbara Turnbull, Brain Canada and the Barbara Turnbull Foundation for Spinal Cord Research have been partnering to support the need for exceptional research in the area of spinal cord and/or brain injury to improve the lives of those affected. Co-sponsored by the foundations, the **2020 Turnbull-Tator Award in Spinal Cord Injury and Concussion Research** recognizes an outstanding publication by a Canadian researcher in the field.

Selected based on the innovation and impact of the research and its findings, Dr. Steve Lacroix, Canadian neuroscientist at Université Laval with more than 15 years of experience in spinal cord research, was awarded a \$50,000 grant for his paper entitled "Microglia are an essential component of the neuroprotective scar that forms after spinal cord injury," published in *Nature Communications* in 2019.

This funding from Brain Canada and the Barbara Turnbull Foundation is really essential for us to remain competitive internationally and develop innovative ways to understand something as complex as spinal cord repair," said Dr. Lacroix. "My goal is to deliver the best research possible and hopefully inspire the next generation of Canadian scientists so they can shape the future of spinal cord injury research."



Dr. Steve Lacroix

Research Programs

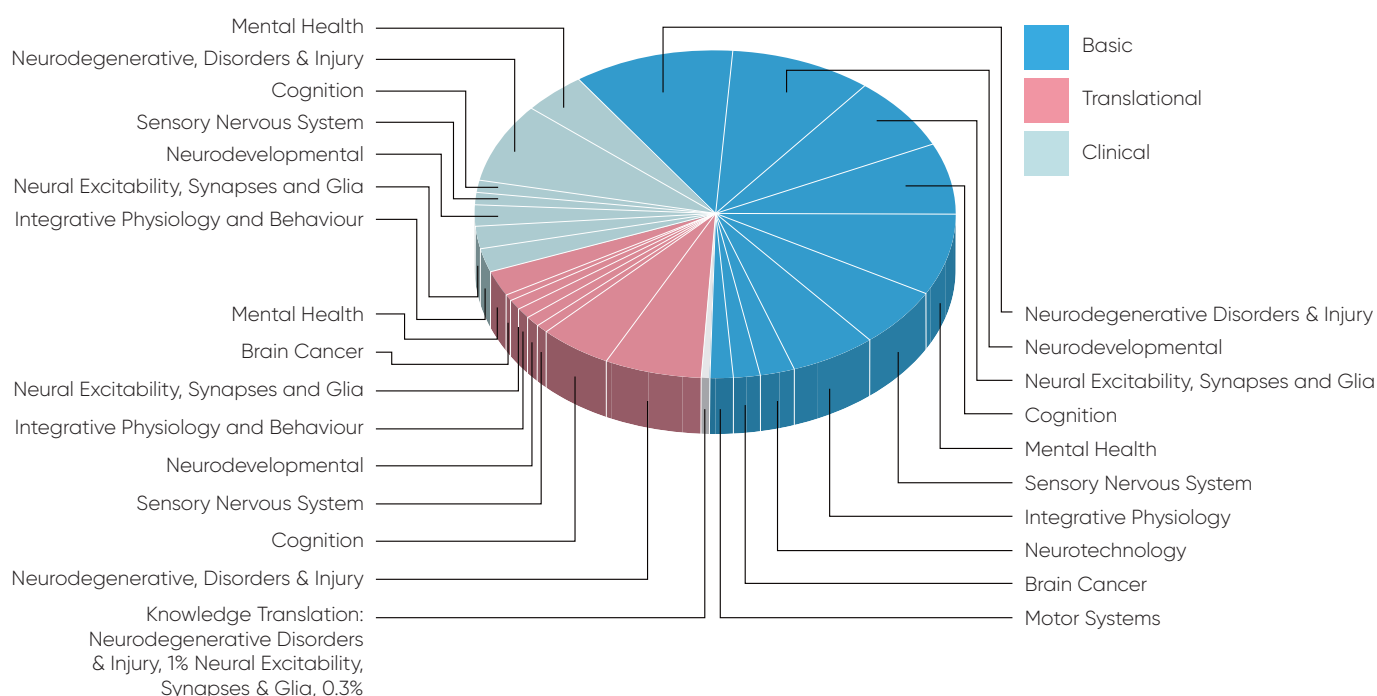
Future Leaders in Canadian Brain Research

Capacity building grants

The next generation of brain scientists is eager to push the envelope and take us deeper into the unknown. But there is often one common element preventing them from using their talent to bring Canada to the forefront of innovation – funding.

Anchored by a generous gift from the Azrieli Foundation, the Future Leaders in Canadian Brain Research program is funding the gap for our brightest early-career investigators. It is a transformative initiative. Together, we are establishing Canada's pipeline of future leaders and catalyzing innovation.

2019 and 2020 Future Leaders in Canadian Brain Research



Cumulative 2019 and 2020 Competitions

	AB	BC	MB	NB	NL	NS	ON	QC	SK	Total
Letter of Intent	58	19	4	1	5	2	151	83	7	330
Invited to Full Application	19	6	2	0	2	1	43	35	2	110
Submitted Full Application	18	6	2	0	2	1	42	33	2	106
Successful Applications	8	3	1	0	0	0	13	14	1	40

2019 and 2020 Future Leaders in Canadian Brain Research recipients.

Introducing 40 amazing Canadians taking us into the great unknown. The Brain.

For more than two decades Brain Canada has championed paradigm-changing research. We play a unique and invaluable role as a national convener of the brain research community, driving innovation and connectivity by building a truly interdisciplinary commitment

to brain health. We have to. Brain disorders are the leading causes of disability in our country and a huge public health burden. We have to invest now. Brain Canada is doing that by funding high potential ideas at a critical point in a scientist's career. The beginning.

“It’s really hard early in your career, especially with the pandemic, setting up a new lab. We’re very grateful that there are initiatives like these for brain researchers.”

Dr. Jo Anne Stratton
2019 Future Leader in Canadian Brain Research

2019
Dr. Mark Cembrowski
University of British Columbia

2020
Dr. Shannon Kolind
University of British Columbia

2020
Dr. Tamara Vanderwal
University of British Columbia

2019
Dr. Robert Laprairie
University of Saskatchewan

2020
Dr. Galen Wright
University of Manitoba

2019
Dr. Allen Chan
University of Alberta

2020
Dr. Trevor Steve
University of Alberta

2020
Dr. Sue-Ann Mok
University of Alberta

2019
Dr. Aaron Phillips
University of Calgary

2019
Dr. Marco Gallo
University of Calgary

2020
Dr. Julia Kam
University of Calgary

2020
Dr. Wilten Nicola
University of Calgary

2020
Dr. Derya Sargin
University of Calgary



2019
Dr. Sara Tremblay
University of Ottawa
Institute of Mental
Health Research



2020
Dr. Simon Chen
University of Ottawa



2020
Dr. Greg Silasi
University of Ottawa



2019
Dr. Boris Bernhardt
McGill University



2019
Dr. Mark Brandon
Douglas Hospital
Research Centre



2019
Dr. Jean-François Poulin
McGill University



2019
Dr. Masha Prager-Khoutorsky
McGill University



2019
Dr. Laurent Chatel-Chaix
Institut National de
la Recherche Scientifique



2019
Dr. Yasser Iturria Medina
McGill University



2019
Dr. Jo Anne Stratton
McGill University



2019
Dr. Ravi Rungta
Université de Montréal



2019
Dr. Janelle Drouin-Ouellet
Université de Montréal



2020
Dr. Bratislav Misis
McGill University



2020
Dr. Nader Ghasemlou
Queen's University



2020
Dr. Benoit Laurent
Université de Sherbrooke



2019
Dr. Christian Éthier
Université Laval



2019
Dr. Caroline Ménard
Université Laval



2020
Dr. Chantelle Sephton
Université Laval



2020
Dr. Jasmin Lalonde
University of Guelph



2019
Dr. Michael Mack
University of Toronto



2019
Dr. Jeehye Park
The Hospital
for Sick Children



2020
Dr. Luka Milosevic
University Health
Network (UHN)



2019
Dr. Ryan Yuen
The Hospital
for Sick Children



2020
Dr. George Ibrahim
The Hospital
for Sick Children



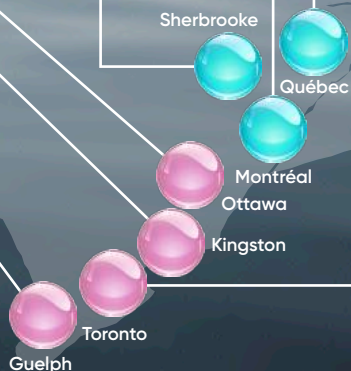
2020
Dr. Yun Li
The Hospital
for Sick Children



2020
Dr. Anne Wheeler
The Hospital
for Sick Children



2020
Dr. Vijay Ramaswamy
The Hospital
for Sick Children



Research Programs Platform Support Grants

The brain is the most critical organ in the body, but the least understood. To better understand the mysteries of the brain, we must eliminate barriers and knowledge silos by supporting open access to equipment, services, results and databases for all researchers.

Brain Canada's Platform Support Grants are awarded to teams that are creating and/or enhancing centralized shared resources, including protocols and expertise, across research networks. This year, Brain Canada has awarded nine Platform Support Grants to Canadian research teams across the country, as part of an investment of more than \$25 million in brain research.

By investing in platforms that convene the research community, we are not only fostering interdisciplinary collaboration, but also enabling innovation and discovery to move at a much quicker pace.

“Many brains are better than one. When we invest in platforms that convene the research community, we are bringing together experts in the field and enabling science to move a lot quicker.”

Dr. Viviane Poupon
Brain Canada President and CEO



Dr. Liliana Attisano
University of Toronto



Dr. Yves De Koninck
Université Laval



Dr. Julien Doyon
McGill University



Dr. Alan Evans
McGill University



Dr. Sheena Josselyn
The Hospital for Sick Children



Dr. Sanjay Kalra
University of Alberta



Dr. Ravi Menon
University of Western Ontario



Dr. Alexander Thiel
Jewish General Hospital



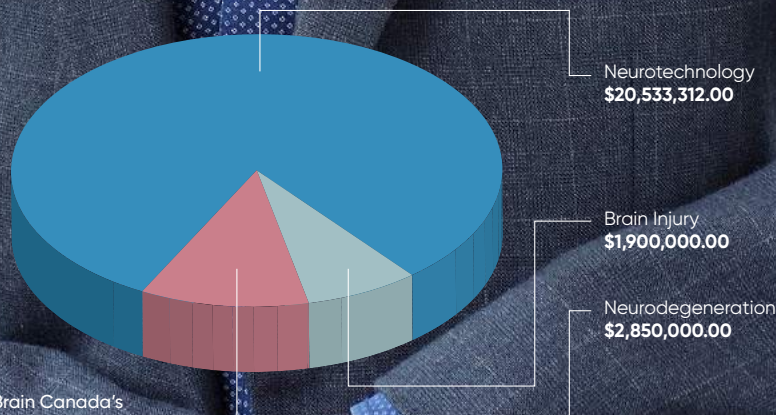
Dr. Gustavo Turecki
Douglas Hospital Research Centre

“We are grateful for this support as it facilitates and enables access to an abundance of information that will lead to improvements in ALS treatments on a global scale.”

Dr. Sanjay Kalra
Professor in the Division of Neurology
at the University of Alberta

Dr. Sanjay Kalra and his team received a 2019 Platform Support Grant (PSG) for the Comprehensive Analysis Platform To Understand, Remedy, and Eliminate ALS, (CAPTURE ALS).

Major Funding Boost for Brain Health Brain Canada's 2019 Platform Support Grants



\$25,283M in research funding was awarded through Brain Canada's Platform Support Grants this year. The funds will be disbursed from October 1, 2020 - June 30, 2024

Research Programs

Team grants

ALS Canada-Brain Canada Discovery Grant Program 2020

By fueling scientific discovery and furthering our understanding of amyotrophic lateral sclerosis (ALS), the Discovery Grants, awarded in partnership with ALS Society of Canada, will enable ALS researchers across Canada and around the world to collaborate on leading-edge projects. Their discoveries will identify pathways for future therapies and optimize care and one day have a positive impact on

people living with ALS and their families, bringing hope for a future without the disease.

Brain Canada and the ALS Society of Canada recently announced the continuation of their much-valued partnership with an additional \$1-million investment in ALS research for the 2021 Discovery Grants competition.

Since 2014, this partnership has resulted in more than \$23 million being invested in 53 research projects that have helped further the study of the disease.

2020 Discovery Grant Recipients



Dr. Honglin Luo
University
of British Columbia



Dr. Alex Parker
Centre hospitalier de
l'Université de Montréal
(CHUM)



Dr. Christopher Pearson
The Hospital for Sick Children



Dr. Jasna Kriz
Université Laval



Dr. Gary Armstrong
McGill University



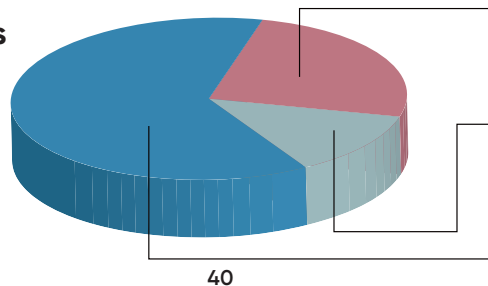
Dr. Martin L. Duennwald
University of Western Ontario



Dr. Angela Genge
McGill University

ALS Discovery Grants 2020 Regional distribution

8 grants
7 recipients
\$1 million invested



40

Research Programs

Team grants

CCS/CIHR/BC Spark Grants: Novel Technology Applications in Cancer Prevention and Early Detection

With one in two Canadians expected to be diagnosed with cancer in their lifetime, there is a pressing need for novel approaches to prevent and detect cancer at an earlier stage, when treatments are most likely to work. Emerging technologies like artificial intelligence, smart and wearable devices, nanotechnology and robotics offer the potential to dramatically improve the ways in which cancer is addressed. Over the

next year, Brain Canada is partnering with the Canadian Cancer Society (CCS) and the Canadian Institute of Health Research (CIHR), to fund research that will apply disruptive technologies that go against the grain to advance cancer care and improve health outcomes for people in Canada. Out of the total 27 new grants, nine are focusing on developing solutions for brain cancer, specifically.



Dr. Andres Lozano
University Health Network



Dr. Eleftherios Diamandis
Sinai Health System



Dr. Farzad Khalvati
The Hospital for Sick Children



Dr. Gelareh Zadeh
University Health Network



Dr. Reza Forghani
McGill University



Dr. Uri Tabori
The Hospital for Sick Children



Dr. Sara Mahshid
McGill University



Dr. Zaid Mammo
University of British Columbia

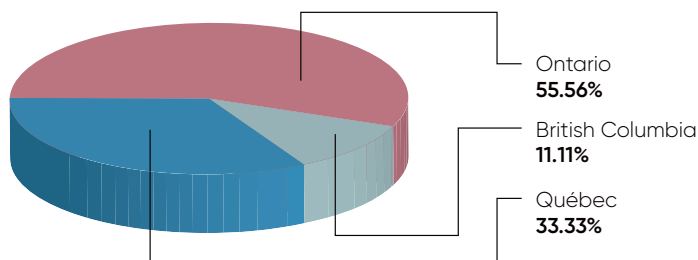


Dr. Janusz Pawliszyn
University of Waterloo

CCS/CIHR/BC Spark Grants

Regional distribution

9 grants
9 recipients
\$1.35 million invested



Other Brain Research Programs Launched this period

The Heart-Brain Connection IMPACT Award

The heart and brain are so inextricably connected that developing one condition often means being at risk of developing others. For example, people with heart failure have triple the risk of stroke. Vascular brain injuries, like strokes, can be directly linked to increased risk of cognitive decline, and vascular dementia or Alzheimer's disease.

By supporting teams across disciplines, institutions and career stages, the Heart-Brain Connection IMPACT Award, a \$6 million research competition co-funded by Brain Canada and

the Heart & Stroke Foundation, will enable breakthroughs in research and generate powerful insight into the heart-brain connection.

Two teams who successfully bring together researchers from three of the four following themes – biomedical research; clinical research; health services research; and social, cultural, environment and population health research will be selected for funding. As such, heart, stroke and brain health researchers may work with engineers, data scientists, sociologists or industrial designers.

Advancing Research on Care and Outcome Measurement

Brain Canada partnered with the US-based Alzheimer's Association (ALZ) to jointly launch the Advancing Research on Care and Outcome Measurement (ARCOM) funding program, an international and collaborative competition aimed at addressing the significant measurement gaps in care and outcomes across diverse and underrepre-

sented populations and stages of dementia. This program will provide an exceptional opportunity for Canadian researchers to join the international research community and contribute to an underfunded area of focus to help ensure care providers are implementing evidence-based practices and achieving desired outcomes.

Quantum Leap pharma-led funding program for drug discovery

Brain Canada joined the Quebec Consortium for Drug Discovery (CQDM) to launch Quantum Leap, a pharma-led funding program for drug discovery research that aims to support innovative translational biopharmaceutical research projects that have the potential to

improve, facilitate and/or accelerate the drug discovery process and the development of safer and more effective drugs. Through this program, Brain Canada will fund drug discovery research in brain related projects.

Shireen and Edna Marcus Excellence Award

The Shireen and Edna Marcus Excellence Award, an award intended for promising master's and PhD students and/or postdoctoral fellows conducting research in autism, is possi-

ble thanks to the support of the Shireen and Edna Marcus Foundation, a charity focused on supporting health organizations across Canada.

The European Union Joint Program on Neurodegenerative Disease Research (JPND)

Brain Canada, Women's Brain Health Initiative (WBHI) and Canadian Institutes of Health Research (CIHR) joined the JPND, the largest global research initiative aimed at tackling the challenge of neurodegenerative diseases, to launch a transnational call to promote research aiming at the detection, measurement, and understanding of early disease indicators related to neurodegenerative

diseases, with potential for the development of new diagnostics or interventions. By partnering with WBHI, and funding projects that effectively address sex and gender differences, Brain Canada aims to support research that will ultimately enable the development of new diagnostics or interventions for a more diverse group of patients with neurodegenerative diseases.

Review Process

Brain Canada allocates funding based on merit.

Brain Canada's rigour in its scientific review process gives donors and partners a trusted mechanism to ensure projects are chosen based on excellence and innovation. **We are committed to an open, fair, and transparent process, and evaluate these procedures on**

an ongoing basis to ensure they continue to follow best practices.

Once a Request for Applications (RFA) is launched, one or more of the following stages may be included in the application process, depending on the funding competition.

Registration Form (RF) Used for administrative purposes to estimate the volume of applications, ensure eligibility criteria are met, and gather relevant information required to form the Peer Review Panel.

Letter of Intent (LOI)

- Applicants submit LOIs describing the proposed project.
- LOIs are evaluated and scored by a Peer Review Panel.
- LOIs scoring above a threshold are recommended to advance to the Full Application stage.

Full Application (FA)

Invited applicants submit full applications, encompassing the components outlined in the RFA. As part of the FA, applicants must also demonstrate how sex, gender, and diversity are taken into consideration within their proposed research.

Full applications are evaluated based on the criteria for assessment outlined in the RFA and scored for scientific merit by a Peer Review Panel.

Top-ranked applications are recommended to Brain Canada for funding.

All applicants receive objective and constructive feedback in an anonymized fashion from the peer review process.

What is a Request for Applications?

The Request for Applications (RFA) outlines the research focus and scope of the funding competition. RFAs are published and shared with researchers and other stakeholders nation-wide. Our funding competitions are open to researchers across Canada and applications can be submitted in either English or French.

Equity, Diversity, and Inclusion in Science

In addition to EDI considerations in the research design, Brain Canada is committed to excellence through equity and encourages applicants of diverse backgrounds to apply to our funding opportunities, which will promote the expression of diverse perspectives, approaches, and experiences, including those of underrepresented groups.

Review Process

Brain Canada invites national and/or international researchers to participate in the review process, which allows us to benchmark against international standards of excellence and innovation, and create a network of ambassadors and new connections for Canada. Members of the peer review panel have experience and expertise in the relevant field(s) of brain research.

Funding – Grants Management

Brain Canada employs a milestone-driven approach with annual scientific and financial progress reporting to ensure close monitoring of funded projects towards achieving measurable goals.

Building our Community

Through a variety of fundraising activities and events, Brain Canada is building a powerful and enthusiastic community of those who support and advance brilliant brain research. It is thanks to the devotion and generosity of so many that we can continue to foster our common goal of improving brain health for all people in Canada. Read on to learn more about some of the volunteers who built our community this year, and had a positive impact on the health of people in Canada. If you'd like to plan an event and raise funds for brain research visit www.braincanada.ca/support-brain-research/fundraise-for-us/ and get in touch!

Women's Brain Health Initiative (WBHI)

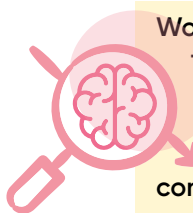
On December 2, 2020, thousands of people around the world came together to take the #StandAheadChallenge and raise awareness about women's brain health and the importance of sex and gender in brain research.

Brain Canada partnered with Women's Brain Health Initiative (WBHI) to match the first \$250,000 donated to help combat brain diseases that disproportionately affect women.

Published by Women's Brain Health Initiative and supported by Brain Canada, two new editions of Mind Over Matter were published this year. Inside the most recent issue, you can find a feature on the 2019 Future Leaders in Canadian Brain Research, along with Brain Canada-funded researcher Dr. Cindy Barha and her work on sex differences when it comes to exercise and its effects on the brain.



Stand Ahead Challenge Host Pattie Lovett-Reid and Dr. Viviane Poupon



Women's Brain Health Initiative (WBHI) and Brain Canada have joined forces to launch the first ever Brain Canada-WBHI Expansion Grants: Considering Sex and Gender Program, a new initiative to support the implementation, or continuation, of sex and gender considerations for research. The program aims to help overcome current barriers in research and create a foundation for sex and gender considerations to become standard practice within the scientific community.

Building our Community

Paying it forward one puzzle at a time



Photo Credit: Patty Davidson, www.playfulpastimes.com

Patty Davidson is a Canadian designer and the founder of Playful Pastimes, a Canadian puzzle manufacturer, with a penchant for giving back. As a parent and grandparent, jigsaw puzzles have always been part of her family's weekend recreation. When Ms. Davidson founded her company, she set out to align her work with charitable giving, and selected Brain Canada as her charity of choice for brain research, making quarterly contributions based on the net profits of her puzzle sales.

Puzzling has the added benefit of providing great exercise for the brain and since charity has always been important to me, I decided to align this venture with charitable giving for mental health and brain research."

Patty Davidson, Donor

Building our Community

Third-party fundraisers



A family photo from A Ride to Remember 2017, the first year the event was held.

Since 2017, the Wener and Adler families have made it their collective mission to fund research on brain disorders, raising a total of \$83,000 for brilliant brain research through Brain Canada. In the past, the annual cycling event has appealed to serious cyclists, a race covering up to 125 kilometres between Montreal and Ottawa, but in 2020, due to restrictions around COVID-19, A Ride to Remember took on a new form as a virtual fundraiser, and opened to participants anywhere who wished to take part. Some who signed up biked short distances with their kids in tow; others covered a distance of 125km cumulatively in a series of daily rides.

Brain Canada views the brain as one and seeks to understand the different brain functions and dysfunctions as part of a single interconnected system. The one brain approach means that research advances and discoveries in an individual area can have a ripple effect across the spectrum of brain disorders.

"We believe in the cause very much. Brain Canada brings a high level of professionalism to research and how research funds are distributed. The work that Brain Canada supports is phenomenal. It's really important to have that interconnectedness of research on the brain, and on the central nervous system. Any advances gained in Alzheimer's and dementia research should be leveraged in other kinds of brain research as well," notes Dan Pfeffer, *A Ride to Remember* organizer and volunteer.

We started this event because there wasn't much awareness of Alzheimer's and dementia. We wanted to build something that would create awareness, and hopefully grow across the country, so that more people would know about Brain Canada and all that it does."

Matthew Wener,
A Ride to Remember organizer

Third-party fundraisers

On June 5, 2021, 29 year-old Matt Philion embarked on a 24 hour challenge to walk 100 km along the Ottawa River and raise \$5,000 for brain research. As a teen, Matt experienced feelings of loneliness, anxiety and depression which eventually led to substance use.

Now, a devoted father and successful mobility coach, Matt is looking to inspire hope for others while supporting research that will lead to improved brain health for all Canadians. With 28 minutes to spare (and some blisters on his feet) Matt made it to his destination.

Stepping out of our comfort zone is never an easy task, but for me it was the road to freedom, and I think it can be for others as well! We are grateful for your support for a cause that I think we can all agree deserves more attention. Together, we can make a real difference!"

Matt Philion, The Century Walk for Mental Health organizer

Building our Community Events and Conferences

On November 28, the Parkinson Association of Alberta, with the support of Brain Canada, through its partnership with The Growing Beaver Brevet (GBB), held a virtual conference at no cost to participants. The conference showcased leading experts in the field, including 2019 Future Leader in Canadian Brain Research, Dr. Janelle Drouin-Ouellet. The event aimed to leave attendees "feeling motivated with renewed hope for the future."



The Canadian Consortium on Neurodegeneration in Aging (CCNA) held its annual Partners Forum and Science Days 2020: Working Together to End Dementia in October of 2020. Brain Canada President and CEO Dr. Viviane Poupon participated in the Partners Panel "Working together to support the implementation and advancement of the National Dementia Strategy".

Following the event, participants collaborated on an op-ed on this topic, published on December 3 in the Montreal Gazette. The op-ed was entitled, *Opinion: Canada is ill-prepared for the impending dementia crisis.*

The WalrusTalks@Home: Mental Health

In March 2021, Brain Canada served as the presenting sponsor of The WalrusTalks@Home: Mental Health. Brain Canada-funded researcher Dr. Andres Lozano joined writers and advocates to explore the impact that the COVID-19 pandemic has had on our collective mental health. In the one-hour conversation broadcast online at no cost to attendees, speakers shared their own lived experience of mental illness and their unique perspectives on addressing the next wave of the pandemic – the mental health crisis.

More than 500 people tuned in live from across Canada and around the world, to attend The WalrusTalks@Home.

96% of respondents said The WalrusTalks@Home: Mental Health was worthwhile.

84% of respondents said they will talk to others about something they heard at The WalrusTalks@Home: Mental Health.

82% of respondents said that The WalrusTalks@Home: Mental Health provided them with a different perspective.

“Accessing mental health services has been a privilege and not a right – leaving many individuals without essential support.”

The WalrusTalks@Home: Mental Health Panelist and Jack.org Network Representative for Nunavut, Sope Owoaje, March 25, 2021

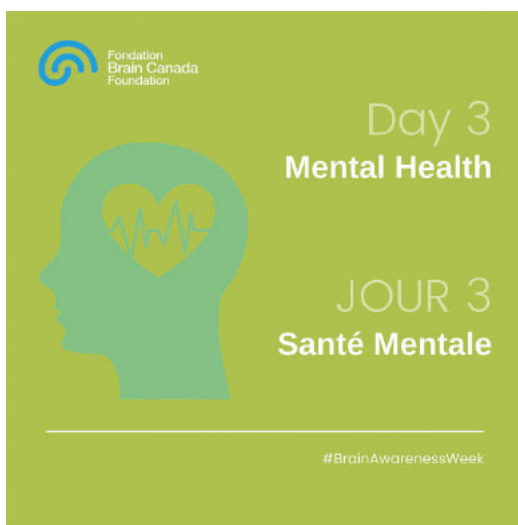







Digital Campaigns

Brain Canada's 2020 digital campaign.

We kicked it off on Giving Tuesday and sent a series of emails over the course of the month focused on supporting brain research including mental health research.

In parallel with our email series, we ran a Facebook lead generation campaign also on this theme. Our outreach extended an invitation for people to learn more about Brain Canada and the brain research we support.



-  [@BrainCanada](https://twitter.com/BrainCanada)
-  linkedin.com/company/brain-canada
-  facebook.com/brain.canada
-  [@braincanada](https://instagram.com/braincanada)
-  [@braincanada](https://tiktok.com/@braincanada)

We are currently active on five social media platforms, follow us today today on Twitter, LinkedIn, Facebook, Instagram and TikTok!



Our Donors

It is thanks to the steady support from donors and partners alike that Brain Canada can continue the quest to better understand the brain in illness and in health. Through Brain Canada's public-private funding model, which develops collaborative partnerships across the country and encourages new private sector investments, we are building capacity for the next generation of investigators and ultimately improving these health outcomes for all people in Canada. Currently, Brain Canada relies on the support from donors and partners to cover its operating expenses.

Lead Donors

(cumulative giving 2011-2021)

We recognize the cumulative contributions of our lead donors, who have generously supported Brain Canada on an ongoing basis.

The Azrieli Foundation	\$12,575,000
The Chagnon Family	\$5,000,000
Krembil Foundation	\$4,100,000
W. Garfield Weston Foundation	\$3,000,000
Bell Canada/Bell Let's Talk	\$2,600,000
Anonymous (2)	\$1,931,000
The Estate of Donna Canary	\$1,078,000
RBC Foundation	\$795,500
Rossy Foundation	\$505,000
CIBC	\$500,000

June 1st, 2020 – May 31, 2021

\$100,000

Arrell Family Foundation
 The Alvin Segal Family Foundation
 The Estate of John Borrowman

\$25,000 to \$99,999

Mario Bottero
 George Cope
 The Estate of Maria C. Jonker
 Wheeler Family Foundation

\$10,000 to \$24,999

Martha Marnie Mackay
 Orbis Investments
 Meir J. Rotenberg
 United Way East Ontario

\$1,000 to \$9,999

Earl Adler
 Wayne E. Bossert
 Jacqueline Czender
 Barrett Family Foundation
 The Benevity Community Impact Fund
 Todd Burke
 Canadian Parents for French BC-Yukon
 Frank Falcone
 Toby Fouks
 Kim Girtel
 Anthony Gornik
 Laura Hawthorn
 Helene Lieberman
 Daphne McCulloch
 Nicole McGinn

Lloyd Burns McInnis LLP
 Keigan Macdonell
 Shireen and Edna Marcus Foundation
 Mary Martin
 Lou Nanne
 Yissachar Radcliffe
 Provincial Employees Community
 Services Fund
 Graham DP Scott
 The Mireille and Murray Steinberg
 Family Foundation
 Thomas Ward
 Whitelaw Twining Law Corporation
 Catherine Zahn
 Zachary Zeiler

We would like to thank the donors who have loyally supported Brain Canada throughout the years.

We would also like to express our appreciation and gratitude to the many individuals who have made donations in honour of a loved one.

List of Partners

As a national convenor, facilitator and driver of innovation, Brain Canada, brings together visionary philanthropists and foundations, corporations, institutes, government agencies and volunteer organizations to fund the brightest and most innovative breakthroughs in brain research.

HEALTH CHARITIES

Alberta Paraplegic Foundation
ALS Society of Canada
Alzheimer Society - Alberta
and Northwest Territories
Alzheimer Society of Canada
Alzheimer's Association US
Brain Tumour Foundation of Canada
Canadian Cancer Society
Capitalize for Kids
CHU Sainte-Justine Foundation
Douglas Mental Health
University Institute Foundation
Fondation CERVO
Heart and Stroke Foundation
of Canada
Heart and Stroke Foundation Canadian
Partnership for Stroke Recovery (CPSR)
Huntington Society of Canada
Jewish General Hospital Foundation
The Marigold Foundation
Mount Sinai Hospital Foundation
of Toronto
MS Society of Canada
Parkinson Society of Canada
SickKids Foundation
Sunnybrook Health Science
Foundation
UHN Toronto General & Western
Hospital Foundation
University Hospital Foundation
Vitae Foundation
Women's Brain Health Initiative (WBHI)

PROVINCIAL AGENCIES

Alberta Health Services
Alberta Innovates Health Solutions
Fédération québécoise de l'autisme
Fonds de recherche du Québec -
Santé (FRQS)
Genome BC
Manitoba Health Research Council
Michael Smith Foundation for Health
Research (MSFHR)
Network of Applied Medical Genetics
(RMGA)
Nova Scotia Health Authority
Ontario Brain Institute (OBI)
Ontario Neurotrauma Foundation
(ONF)
Pacific Alzheimer Research
Foundation (PARF)
Vancouver Coastal Health Authority
(VCHA)

CORPORATIONS

Alnylam Pharmaceuticals, Inc.
Atuka, Inc.
Biogen
Corbin Therapeutics

Eli Lilly & Company
Life Chemicals, Inc
Magventure
Merck
Regeneron Pharmaceuticals, Inc.
Roche Canada
Teventis

RESEARCH NETWORKS

Age Well
Campus Alberta Neuroscience
Canadian Partnership for
Stroke Recovery
Canadian Stroke Consortium
Canadian Stroke Network
Consortium Québécois sur la
Découverte du Médicament (CQDM)
Kids Brain Health Network
(NeuroDevNet)
Le Réseau québécois sur le suicide,
les troubles de l'humeur et
les troubles associés (RQSHA)
Quebec Pain Research Network

OTHER ORGANIZATIONS

Canadian Institute for Advanced
Research (CIFAR)
Government of Alberta
Healthy Brains, Healthy Lives
Les Grands Ballets
Martin Family Initiative
Medavie Health Foundation
Mental Health Commission of Canada
National Institutes of Health (NIH)

INSTITUTIONS

Alberta

Alberta Children's Hospital Research
Institute (ACHRI)
Hotchkiss Brain Institute
University of Alberta
University of Calgary
Women & Children's Health Research
Institute

British Columbia

BC Children's Hospital Research
Institute
BC Women's Hospital & Health Centre
Centre for Heart Lung Innovation
(UBC and St. Paul's Hospital)
Djavad Mowafaghian Centre for
Brain Health
Institute of Mental Health
International Collaboration On Repair
Discoveries (ICORD)
Providence Health Care Society
Simon Fraser University
St Paul's Foundation
University of British Columbia

Manitoba

Health Sciences Centre
University of Manitoba

Nova Scotia

Dalhousie University
Izaak Walton Killam (IWK)
Health Centre

Ontario

Baycrest Centre for Geriatric Care/
Baycrest Hospital
Brock University
Centre for Addiction and Mental
Health (CAMH)
Holland Bloorview Kids Rehabilitation
Hospital
McMaster University
Ottawa Hospital Research Institute
Queen's University
Sunnybrook Health Sciences Centre
St. Michael's Hospital
The Hospital for Sick Children
University Health Network
University of Ottawa
University of Ottawa Brain and
Mind Research Institute (uOBMRI)
University of Toronto
University of Western Ontario
York University

Québec

Centre de Recherche Institut
universitaire de gériatrie
de Montréal (CRIUGM)
Centre for Interdisciplinary Research
in Rehabilitation of Greater
Montréal (CRIR)
Centre hospitalier de l'Université
de Montréal (CHUM)
CERVO Brain Research Centre
(CIUSS de la Capitale-nationale)
CHU Sainte-Justine Research Centre
CIUSS du Centre hospitalier universitaire
de Sherbrooke
CIUSS du Nord-de-l'Île-de-Montréal
Douglas Hospital Research Centre
École polytechnique de Montréal
Institut de Cardiologie de Montréal
Institut de recherches cliniques
de Montréal (IRCM)
Institut universitaire en santé mentale
du Québec (IUSMQ)
Jewish Rehabilitation Hospital
Montreal Neurological Institute
The Royal Institution for the
Advancement of Learning/
McGill University
Université de Montréal
Université Laval
Saskatchewan
University of Saskatchewan

Financial Accountability & Transparency

Discussion & Analysis

Governance & Financial transparency

The financial statements are consistent with the Canadian accounting standards for not-for-profit organizations. For the twelve-month fiscal year ending December 31, 2020, the auditors E&Y have issued an unqualified, or clean opinion, on the financial statements. The financial statements prepared by Brain Canada, present fairly in all material respects, the financial position and results of the Foundation.

You can view our full audited financial statements online at www.braincanada.ca/about-us/audited-financial-statements

Financial Highlights

The year 2020 was one of transition and adaptation for Brain Canada. A transition as we come to the end of our first funding cycle with Health Canada for the Canada Brain Research Fund which started in 2011 and ended on March 31, 2020. And it is also the beginning of a new \$40 million funding cycle with the federal Government and for which we have already identified several donors and partners interested in investing with Brain Canada.

The effect of this new funding on research dollars will be noticeable from 2021 to 2024. This transition also includes a renewal of leadership with the arrival of a new President and CEO and the addition of more experienced people with diverse skills to better position the Foundation for the future. Along with the addition of staff members and the professional fees for hiring, fees for legal advisors to help with the renewal of agreements with Health Canada, donors and partners, explain most of the growth in our operating expenses during this period.

The research sector had to adapt to face the pandemic and this new reality. The pandemic has either delayed new competitions planned for 2020 or slowed down the funding of existing research projects, which contributed to the postponement of some of the research disbursements budgeted for 2020.

We continue to manage donations from the federal government, donors and our stakeholders in a prudent manner. Our Expenses Ratio for Fundraising and Administration continues to be low at 5% and 6% respectively. In 2020, for each dollar disbursed, \$0.89 was used to support neuroscience research in Canada.

Mario Chartrand, CPA, CA
Brain Canada Director of Finance

89 cents
of every dollar we spend
goes to research.

Schedule - Grants and Awards Expenses and Operating Expenses

YEAR ENDED DECEMBER 31, 2020

	2020	2019
	\$	\$
Grants and awards		
Canadian Open Neuroscience Platform	2,174,484	2,238,010
ALS Society of Canada research programs	1,186,739	4,255,279
Azrieli Future Leaders in Canadian Brain Research	965,060	-
Multiple Sclerosis Progression Cohort	844,168	1,273,825
Multi-Investigator Research Initiative	819,907	4,871,978
Canadian Cancer Society research programs	763,714	1,343,165
MFI - Early Years Intervention on a First Nations Reserve	674,000	624,000
WBHI - Knowledge translation and exchange	606,000	572,090
Platform Support Grants	576,250	3,805,746
Canadian Parkinson Network and Registry	498,000	504,000
Chagnon Family - Alzheimer's disease and related dementias - MIRI	391,849	1,806,326
Azrieli Early-Career Capacity Building	382,950	270,500
CQDM/OBI - Focus on Brain Program	257,115	859,953
Huntington Society of Canada research programs	158,500	554,000
National Institutes of Health - BRAIN Initiative	78,316	250,827
MHCC/The Rossy Foundation	36,638	250,000
Kids Brain Health Network training awards	32,000	301,833
Azrieli Neurodevelopmental Research Program - MIRI	25,873	990,444
The Henry & Berenice Kaufmann Foundation Initiative	25,000	-
CIFAR - global call for ideas	-	4,200,452
Alzheimer Society of Canada research program	-	246,935
Alzheimer's Association research programs	-	145,507
RBC - Research Partnership in Mental Health	-	109,789
Heart and Stroke Foundation research programs	-	56,671
Turnbull-Tator Award	-	50,000
Other	-	15,432
	10,496,563	29,596,762
Operating expenses		
Salaries and wage levies	2,142,144	1,425,490
Professional fees	448,411	188,369
Communications	352,035	221,115
Rent	245,295	241,178
Program expenses	130,175	17,579
Fundraising and partnership activities	74,122	65,113
Administration	42,980	47,197
Insurance	26,777	23,843
Office expenses	21,868	24,396
Website	20,723	33,682
Board	12,722	45,752
Travel	2,045	31,287
	3,519,297	2,365,001

Brain Canada Foundation Statement of Financial Position

AS OF DECEMBER 31, 2020

	2020 \$	2019 \$
ASSETS - CURRENT		
Cash and cash equivalents	5,554,149	6,940,303
Short-term investments	3,455,000	825,000
Accrued interest receivable	15,089	22,589
Advance payments on grants and awards	-	91,500
Other receivables	226,563	79,700
Grants and awards reimbursement receivable	1,875	45,484
Prepays and deposits	48,278	48,670
	9,300,954	8,053,246
Tangible capital assets	104,052	100,399
	9,405,006	8,153,645
LIABILITIES AND NET ASSETS - CURRENT		
Accounts payable and accrued liabilities	49,905	50,936
Salaries and benefits payable	561,296	342,320
Current portion of deferred contributions	4,899,332	5,034,694
	5,510,533	5,427,950
Deferred contributions	974,412	320,593
	6,484,945	5,748,543
NET ASSETS		
Unrestricted net assets	2,816,009	2,304,703
Invested in capital assets	104,052	100,399
	2,920,061	2,405,102
	9,405,006	8,153,645

Brain Canada Foundation Statement of Operations

YEAR ENDED DECEMBER 31, 2020

	2020	2019
	\$	\$
REVENUES		
Restricted contributions	13,578,215	32,092,198
Unrestricted contributions	690,528	1,194,845
Government wage subsidy	257,746	-
	14,526,489	33,287,043
FUNDRAISING EVENTS		
Revenues	35,634	1,194,450
Direct costs	13,710	420,135
	21,924	774,315
	14,548,413	34,061,358
EXPENDITURES		
Grants and awards	10,496,563	29,596,762
Operating expenses	3,519,297	2,365,001
Administrative expenses charged by other organizations	-	113,372
Amortization of tangible capital assets	17,594	17,063
	14,033,454	32,092,198
Excess of revenues over expenditures	514,959	1,969,160

Our Team

Another year of brilliant brain research would not have been possible without the dedication of the Brain Canada team. Over the course of a challenging period, the staff's passion, energy and resilience all played a pivotal role in contributing to Brain Canada's growth and

commitment to fuel impactful research that will improve the lives of people in Canada. We're proud of the work we've accomplished together but acknowledge that there is still so much more to be done to transform the brain research landscape.



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Photos: Owen Egan / Joni Dufour and Michelle Little

What's Next?

Guided by our mission to serve as a national convener, the team will continue to be a driving force in enabling and supporting brain research across the country by building transformative brain research programs, cultivating new and existing partnerships and promoting collaborative multi-disciplinary efforts that bring together the best minds in neuroscience and beyond.

Stay in touch to learn more about our funded projects, upcoming events and breakthroughs in brain research. Subscribe to our electronic monthly newsletter, Brain News.


www.braincanada.ca/brain-news-newsletter/

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This Impact Report is also available in French.
An online version can be downloaded at www.braincanada.ca.



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