



Brain Canada  
Foundation

# one brain. one community.

annual report 2014

# 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; and
- Delivering transformative, original and outstanding research programs.

# values.

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



@BrainCanada



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Partnership Registration number: 86870 6326 RR0001  
Foundation Registration number: 89105 2094 RR0001

The Brain Canada Foundation (referred to throughout as "Brain Canada") is a national, charitable organization.

## Photos

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Cover, page 4, 24 bottom and 31, Teddy Chau  
Page 11 top, Owen Egan, Courtesy of McGill University  
Page 11 bottom, Katie Cooper, Medical Media Centre, St. Michael's Hospital  
Page 14 Andrew Nguyen, Lemongrass Films, Courtesy of Genome BC  
Page 16 Owen Egan, Courtesy of McGill University  
Page 18 top, Owen Egan  
Page 22 bottom, Aura McKay Photography, Courtesy of Genome BC  
Page 23 top, Martine Frigon, courtesy of CQDM and Canadian Association for Neuroscience

# highlights 2014.

## canadian cancer society

Initiated a partnership to support Canadian Cancer Society Impact Grants focused on brain and nervous system cancer research.

Announced a partnership with the Hotchkiss Brain Institute as part of the 2014 MIRI Sponsored Opportunity - \$3 M to co-fund two teams with at least one focused on mental health.

## alberta partnership



Inez Jabalpurwala joined world leaders and presented the Brain Canada model at the Global Dementia Event in London, UK.

## london, UK

## 32 projects

Announced \$51.4 M for funding of 32 groundbreaking projects through the 2014 MIRI and PSG programs with Health Minister Rona Ambrose.



february 7

may 1

may 12

may 26

june 19

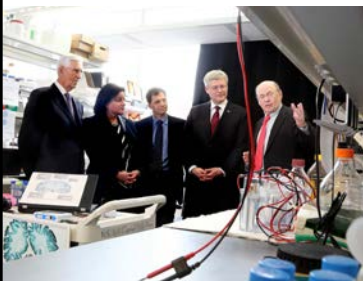
september 11

september 12

october 7

## may 1<sup>st</sup> event

Prime Minister Stephen Harper, along with members of the Chagnon Family and Azrieli Foundation, and representatives from Brain Canada, announced the support of five new projects in the areas of Alzheimer's disease, autism and Fragile X syndrome.



## cqdm/obi/brain canada

Launched the Focus on Brain program, a CQDM/OBI/Brain Canada partnership open to multidisciplinary research teams linking Canadian researchers to small and medium-sized enterprise sectors.



Inez Jabalpurwala introduced the Health Minister Rona Ambrose, at the 2014 Canada-France Global Dementia Event in Ottawa, ON.

## ottawa, canada

## Hotchkiss brain institute

Announced \$7.4 M in funding to support six brain and mental health projects in Alberta.





Inez Jabalpurwala was a panelist at "Changing the Global Care for Alzheimer's and Dementia" hosted by AARP.

# aarp 2014

The Barbara Turnbull Award honoured top spinal cord researcher Dr. Yves De Koninck.



# Barbara Turnbull Award



Announced the BC Alzheimer's Research Award with Genome BC, MSFHR and PARF to fund five projects totaling \$7.5 M.

# five projects

october 10

october 22

november 7

november 19

november 21

december 15

Initiated a partnership with Alzheimer's Society to launch "New Investigator and Career Change" grant.

# alzheimer's society partnership

# \$20 M ALS partnership

Announced \$20 M partnership with ALS Canada to match funds raised from Ice Bucket Challenge for ALS research.



Launched 2015 Team and Platform Support grants, and Phase II of Azrieli Neurodevelopmental Research Program Request for Applications.

# 2015 Team and Platform Support Grants

# message from the chair and president.



**Rupert Duchesne**  
Chair, Brain Canada

**Inez Jabalpurwala**  
President and CEO, Brain Canada

# There has never been a more exciting time to be part of the brain community.

Understanding the brain and brain diseases is a complex endeavor, requiring researchers from a range of science disciplines and clinical areas to collaborate in new ways. Equally important is the involvement of patients, families, caregivers, voluntary health organizations, business leaders, philanthropists and governments. They drive priorities and create a sense of urgency in moving research from novel ideas to outcomes that will benefit people.

The theme of this year's annual report, "one brain. one community." captures both Brain Canada's one system approach to understanding the brain—recognizing common mechanisms among the range of neurological diseases and disorders, mental illnesses, addictions, brain and spinal cord injuries—and the many people and organizations working as one community to accelerate progress.

Since launching the Canada Brain Research Fund in May 2012, Brain Canada and the Government of Canada have partnered to lead a transformation of brain research in this country, resulting in a more coordinated, collaborative brain community within Canada and with the rest of the world. This has included dialogue with leading Canadian and international scientists, and nationwide consultations with our stakeholders.

We are proud to report that, to date, Brain Canada's donors and 59 partners—including research institutes, provincial agencies and voluntary health organizations—have committed more than \$85 million towards our \$100-million goal, a dramatic increase from the \$45 million reported in our 2013 Annual Report. This is well ahead of our timeline to close the campaign by March 2017. The funds are being matched by the Government of Canada on a 1:1 basis and, of the total, we have already awarded more than \$106 million to support 77 research projects involving 406 researchers across 67 institutions. All projects were selected further to national, open calls and international peer review. When looking at our growth, keep in mind that the Government of Canada is providing about \$129 million per year for neuroscience research through its granting councils. The Brain Canada-Government partnership is therefore adding significantly to funding available to support excellent and innovative Canadian brain research.

The 77 projects we are currently funding cover a range of approaches to understanding brain function and dysfunction. These include:

- Using the latest imaging technology to map brain development and wiring;
- Dissecting the molecular underpinning of addictions and movement disorders;
- Constructing novel proteins to deliver drugs across the blood-brain barrier;
- Using bioengineering approaches to restore vision;
- Expanding a national biobank and database for patients with traumatic brain injury;
- Uncovering the interplay of genes regulating dopamine neuron degeneration in Parkinson's disease;
- Investigating the multifaceted influence of environmental conditions during development on mental health outcomes;
- Developing a novel intervention to prevent onset of Alzheimer's disease by combining cognitive therapy and noninvasive brain stimulation;
- Building the infrastructure for Canada's most comprehensive brain bank with over 3,000 samples from patients with diverse neurological and mental disorders.

Our cover features members of one of the teams that was awarded a grant in 2014. The Frontier Trial project, led by Dr. Laurie Morrison of University of Toronto, is bringing together neurologists, neuroscientists, biostatisticians and emergency medicine specialists from across Canada, to test a drug that can be administered by paramedics, aimed at reducing the devastating damage caused by stroke by up to 50%. This is just one example of "one brain. one community." in action, from basic research to patient care.

There has never been a more exciting time to be part of the brain community. We thank all of our supporters over the past year, especially the Government of Canada, and our dedicated Board and staff. In the coming year, we look forward to reaching our \$100-million goal and celebrating our \$200-million partnership with Government. This is the largest public-private partnership in Canadian history devoted to brain research. We will then set our sights on increasing this investment to meet the capacity of our world-class researchers who are working to unlock the mysteries of the brain, to the benefit of all Canadians.



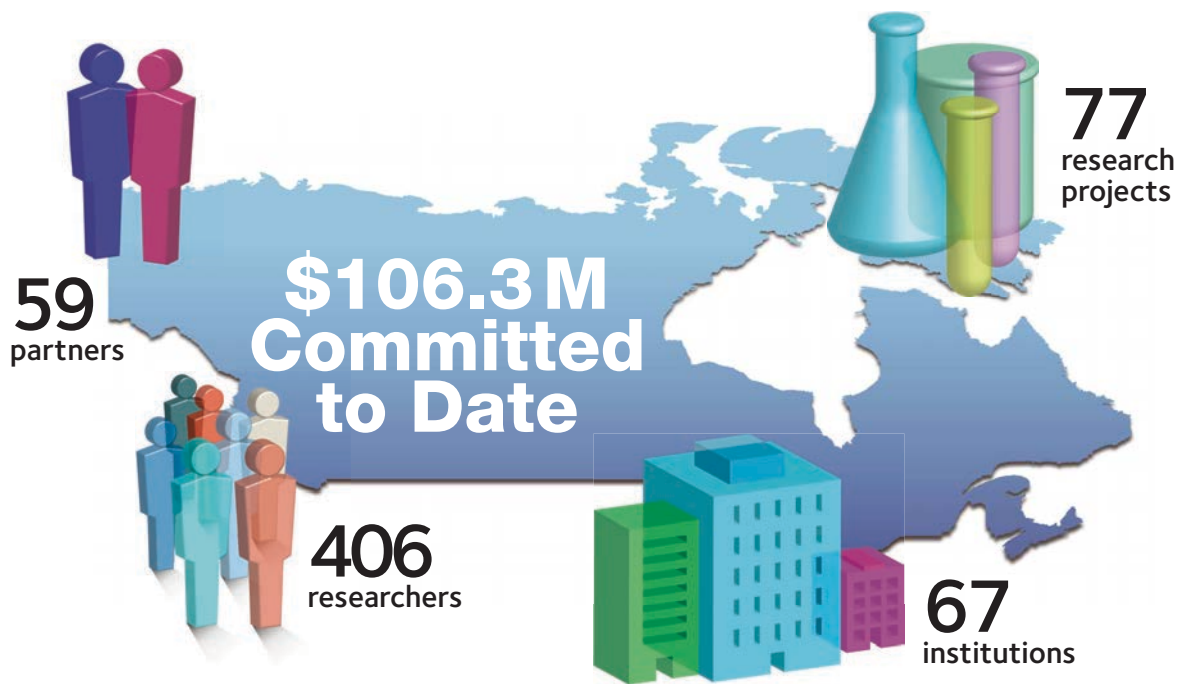
**Rupert Duchesne**  
Chair, Brain Canada



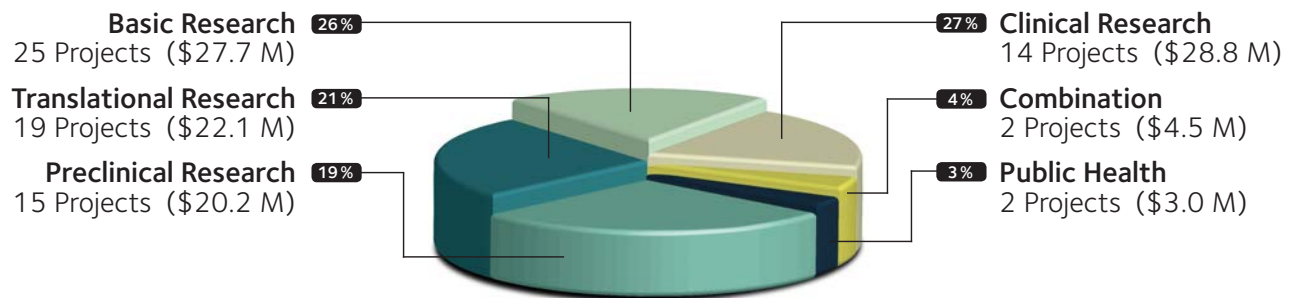
**Inez Jabalpurwala**  
President and CEO, Brain Canada

# brain canada.

Brain Canada is a national non-profit organization headquartered in Montreal, Quebec, that enables and supports excellent, innovative, paradigm-changing brain research in Canada. For more than one decade, Brain Canada has made the case for the brain as a single, complex system. Looking at the brain as one system has underscored the need for increased collaboration across disciplines and institutions, and a smarter way to invest in brain research that is focused on outcomes that will benefit patients and families.



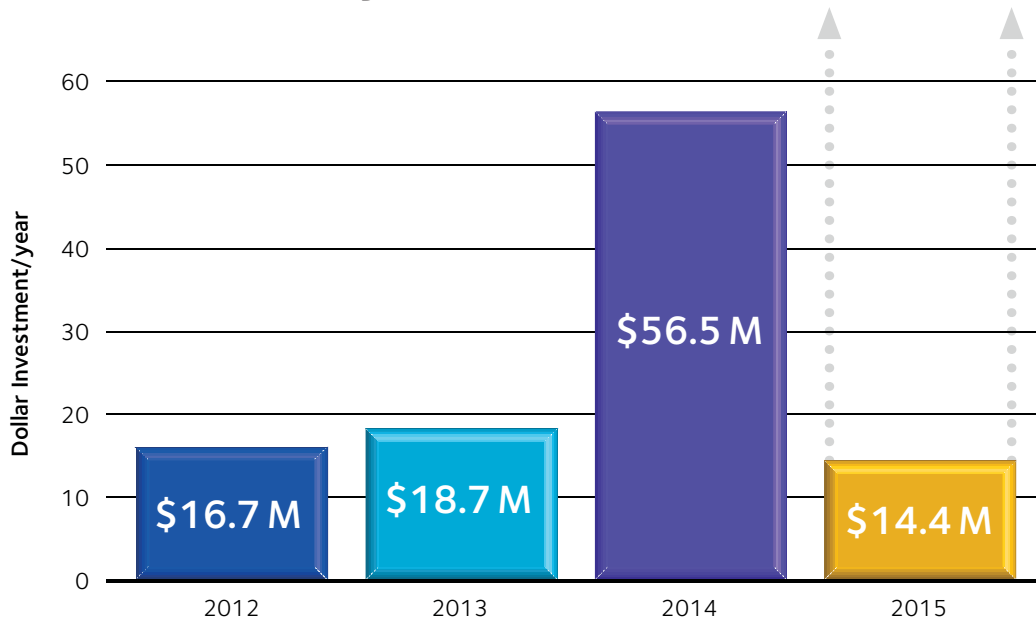
## Research Types Funded



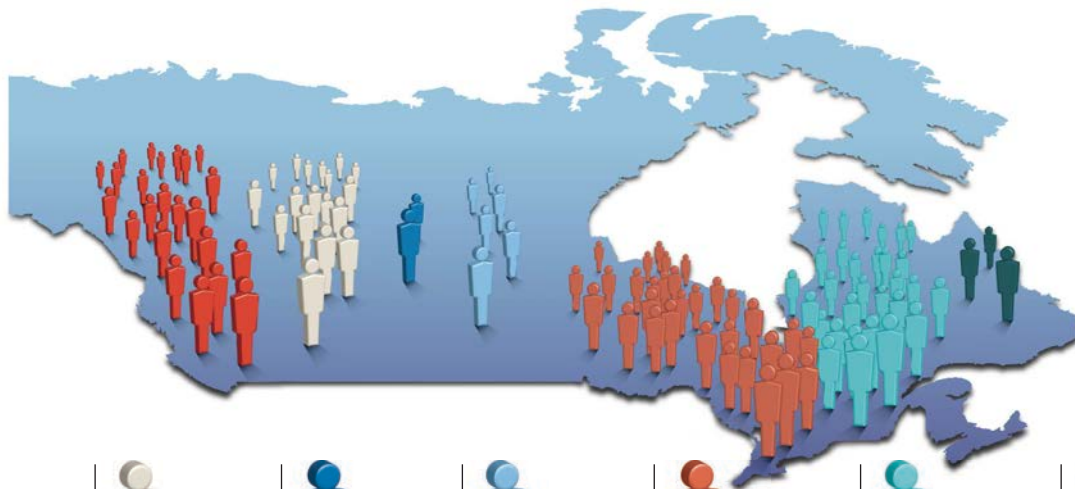
Stimulating increased awareness and investment in brain research.



## Yearly Research Commitment



## Provincial Distribution of Projects



**British Columbia**  
**\$20.4 M**  
 17 projects  
 73 researchers  
 /trainees



**Alberta**  
**\$7.9 M**  
 7 projects  
 59 researchers  
 /trainees



**Saskatchewan**  
 2 researchers  
 /trainees



**Manitoba**  
**\$0.3 M**  
 1 project  
 11 researchers  
 /trainees



**Ontario**  
**\$48.2 M**  
 34 projects  
 151 researchers  
 /trainees



**Quebec**  
**\$29.5 M**  
 18 projects  
 104 researchers  
 /trainees



**Atlantic Canada**  
 6 researchers  
 /trainees

Bringing the best minds together—new thinking, new approaches.

# one brain. a systems approach.

The brain is the most critical organ in the body, but the least understood. Brain disorders impact **1 in 3 Canadians** and impose a **\$60 billion burden** on the Canadian economy every year – an impact that is greater than cancer and cardiovascular disease combined.

There are about 1,000 diseases, disorders and injuries of the brain and nervous system. These disorders can occur at any stage in life.

There are commonalities across these conditions, such as cell loss, abnormal functioning of nerve cells, and chemical and molecular imbalances in the brain. Looking at the brain as one system can lead to breakthroughs that will have impact on multiple conditions.

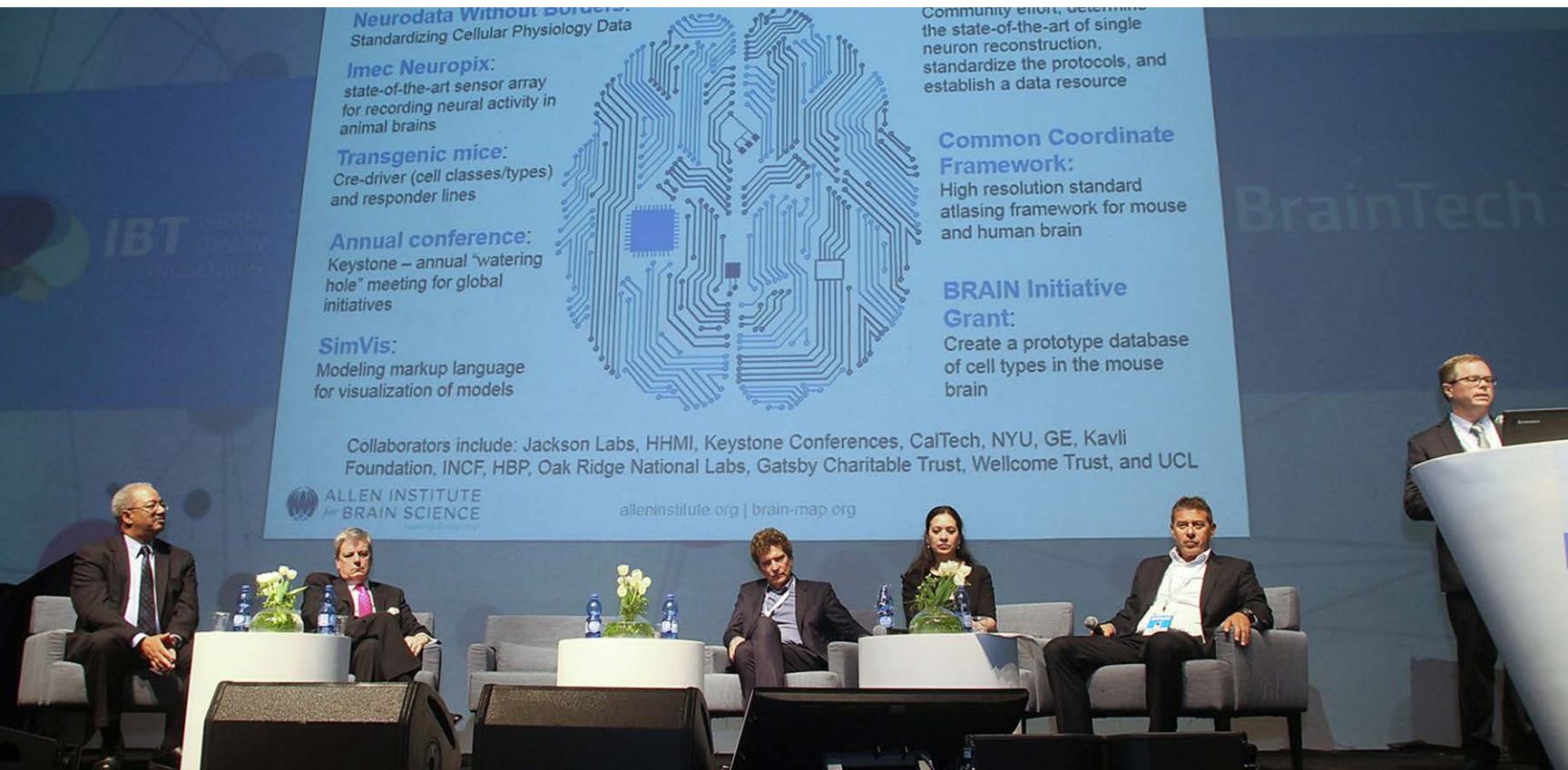
depression  
alzheimer's disease  
brain tumours  
schizophrenia  
parkinson's disease  
multiple sclerosis  
autism  
epilepsy  
chronic pain  
bipolar disorder  
addiction  
memory impairment  
brain damage  
spinal cord damage  
post-traumatic stress

## A systems approach – One brain

- enabling innovative, integrated and collaborative brain research;
- across disciplines and institutions;
- and on a range of diseases, disorders and injuries.

# one community.

Collectively, the diseases of the brain are the major health challenge of the 21<sup>st</sup> century. The burden that brain disorders pose on society requires a consolidated and strong commitment of support from the global community. Over the past few years, world leaders, patient advocates, scientists and major philanthropists have realized this and risen to the challenge, bringing unprecedented attention and resources to accelerate the pace of brain research aimed at understanding brain function and dysfunction.



BrainTech 2015 conference in Tel Aviv, Israel. From left to right: Rep. Chaka Fattah, U.S. Congressman; Mr. John Jeans, Life Sciences Champion for MedTech Appointed by Prime Minister (UK); Dr. Henry Markram, Director, Blue Brain Project & EU Human Brain Project; Ms. Inez Jabalpurwala, President and CEO, Brain Canada; Dr. Rafi Gidron, Founder and Chairman, Israel Brain Technologies; Dr. Allan Jones, Chief Executive Officer, Allen Institute for Brain Science.

*“One brain. One community. captures the spirit and the state of brain research: a global quest to understand the brain, across disciplines, across sectors, and across countries. I am exhilarated by the community that has come together to work towards preventing, diagnosing, treating, and one day curing brain disorders—the major health challenge of our time. And I am proud of Canada’s contributions to this effort.”*

– Inez Jabalpurwala, President and CEO, Brain Canada

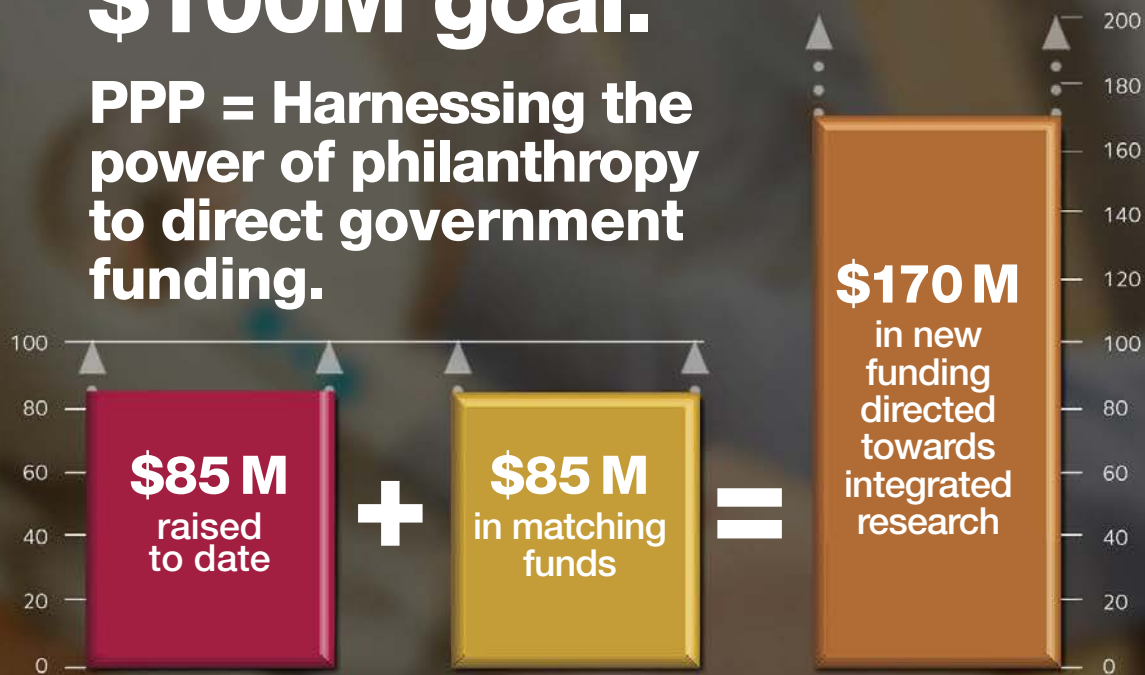
# canada brain research fund.

The Canada Brain Research Fund (CBRF) is a public-private partnership (PPP) designed to encourage Canadians to increase their support of brain research, and maximize the impact and efficiency of those investments. Brain Canada committed to raising \$100 million from private and non-governmental sources, which is being matched by Government on a 1:1 basis, up to \$100 million over six years (2011-2017).

This visionary commitment by the Government of Canada will ensure that Canada continues to be among the leaders in the global challenge to understand brain function and brain diseases.

## funds raised towards \$100M goal.

**PPP = Harnessing the power of philanthropy to direct government funding.**



Business approach to science: outcome-focused, efficient.

# working with government.

Since the establishment of the Canada Brain Research Fund in 2011, Brain Canada and the Government of Canada have been working in partnership to fund brain research that has the best potential of making a real impact on the lives of Canadians.

## May 1<sup>st</sup>, 2014

Prime Minister Stephen Harper, along with members of the Chagnon Family and Azrieli Foundation, and representatives from Brain Canada, announced the support of five new projects in the areas of Alzheimer's disease, autism and Fragile X syndrome.

“These exceptional gifts will provide critical funding and because of the public-private partnership between your foundations, Brain Canada and our Government, the impact of your investments will be doubled. That's what I call a win-win situation.”

– The Rt. Hon. Stephen Harper, Prime Minister of Canada



From left to right: Mr. André Chagnon; Dr. Naomi Azrieli; Dr. Benoit Mulsant, Centre for Addiction and Mental Health; The Rt. Hon. Stephen Harper; Dr. Nahum Sonenberg, McGill University.

## September 12<sup>th</sup>, 2014

The Honourable Rona Ambrose, Minister of Health, announced the joint funding of 17 Platform Support Grants (PSGs) and 15 Multi-Investigator Research Initiative (MIRI) projects, which represent a total investment of more than \$51 million over three years. The projects and platforms cover research areas such as neurodegeneration, mental health, stroke, traumatic brain and spinal cord injury, and vision restoration.

“The Fund supports the very best Canadian neuroscience research and accelerates discoveries to improve the health and quality of life for Canadians who suffer from brain disease and mental disorders.”

– The Honourable Rona Ambrose, Minister of Health



From left to right: Dr. Laurie Morrison, Clinician Scientist at St. Michael's Hospital; Dr. Arthur S. Slutsky, VP of Research at St. Michael's Hospital; Dr. Xiao-Yan Wen, Scientist at St. Michael's Hospital; The Hon. Rona Ambrose, Minister of Health.

# research program.

A national research-funding program that fosters collaboration and leads to transformative and original insights.

**The Canada Brain Research Fund is supporting three types of programs:**

- **MIRI - team grants;**
- **platform support grants;**
- **training awards and mentorship.**

**Grants are awarded to teams showing:**

- Innovation and originality;
- Multidisciplinarity and teamwork;
- Potential for impact;
- Feasibility.

## **Dr. James Johnson**

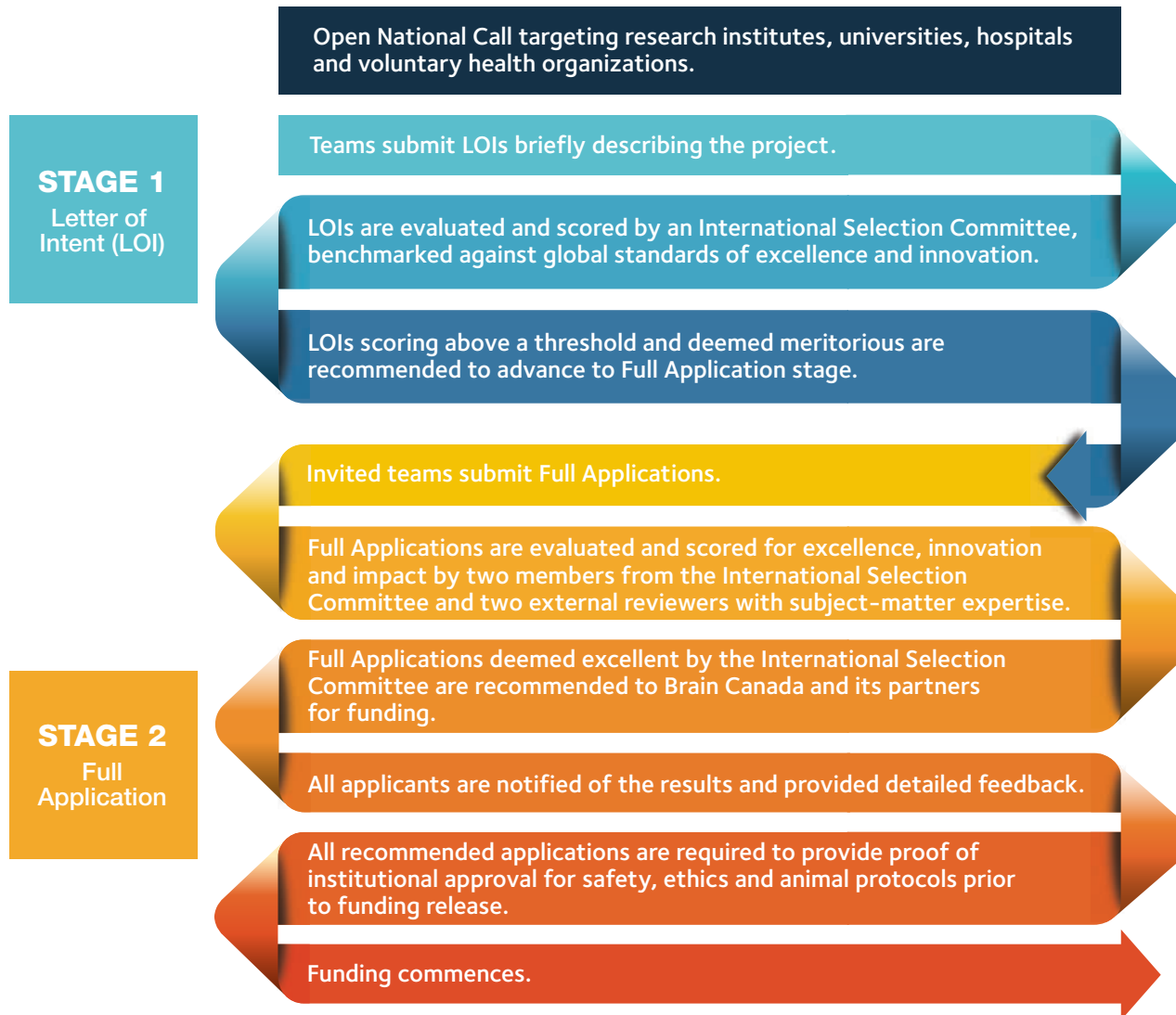
University of British Columbia

Recipient of a 2014 MIRI team grant for a project entitled *Locally produced brain insulin in memory and Alzheimer's disease: A multi-disciplinary approach to a key question.*

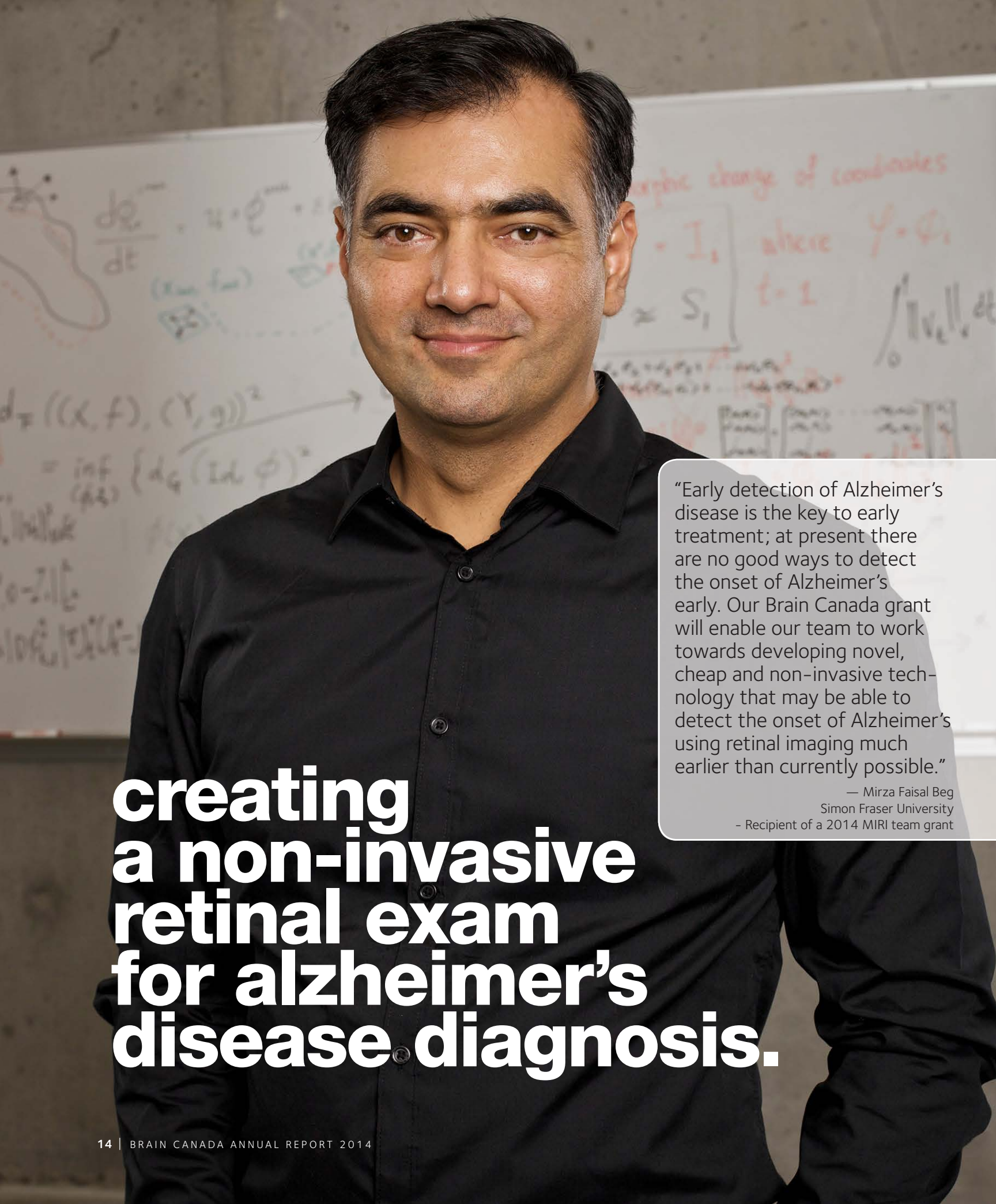
Research focused on outcomes to benefit patients and families.

# international review process.

Funding recipients are selected through open and partnered competitions and rigorous international peer review. Brain Canada funding is allocated, first and foremost, on merit. Only applications judged to be above the high standard of excellence set by the relevant selection committees are funded.



Benchmarked against international standards of excellence and innovation through consultation and peer review.



# creating a non-invasive retinal exam for alzheimer's disease diagnosis.

“Early detection of Alzheimer’s disease is the key to early treatment; at present there are no good ways to detect the onset of Alzheimer’s early. Our Brain Canada grant will enable our team to work towards developing novel, cheap and non-invasive technology that may be able to detect the onset of Alzheimer’s using retinal imaging much earlier than currently possible.”

— Mirza Faisal Beg  
Simon Fraser University  
- Recipient of a 2014 MIRI team grant



# Multi-Investigator Research Initiative (MIRI)

MIRI grants support the direct operating costs of research and are awarded to proposals from multidisciplinary teams of investigators undertaking innovative and excellent research with high potential for impact.

## Highlights of 2014 competition

- 52 applications were received;
- 28 teams invited to submit full applications;
- 15 grants were recommended for funding;
- Funding totaled almost \$30 million for the 2014 competition;
- To date, funding through the MIRI program has totaled \$63 million;
- Third MIRI competition was launched in December 2014.

## Novel Retinal Biomarkers for Alzheimer's Disease

Detecting the beginning of Alzheimer's disease in an individual is difficult as the changes in behavior are subtle and hidden. Early and accurate diagnosis is the key to successful treatment. Imaging can show that a brain is filled with a protein called amyloid, which accumulates beyond normal limits in Alzheimer's. However, brain imaging exams for amyloid are expensive, can be invasive, and are not widely available. Some studies have suggested that amyloid also accumulates in the retina of individuals with Alzheimer's.

Dr. Beg is leading a team of nine researchers to collaboratively develop a new retina imaging device, which uses laser light to show the presence of amyloid in the retina. Their work could lead to an inexpensive, non-invasive and widely deployable retinal exam that could be used to screen individuals on a regular basis for the earliest signs of amyloid indicative of Alzheimer's.

Strengthening the neuroscience research community by increasing collaborations among multidisciplinary researchers and decision-makers.

## 2014 MIRI Team Grant Recipients

### Team Leads

**Jean Addington**, Hotchkiss Brain Institute, University of Calgary  
*Adolescent Mental Health*

**Jaideep Bains**, University of Calgary  
*Understanding stress to improve mental health*

**Mirza Faisal Beg**, Simon Fraser University  
*Novel retinal biomarkers for Alzheimer's disease*

**Rod Bremner**, Lunenfeld-Tanenbaum Research Institute, Mount Sinai Hospital  
*Stimulating endogenous regeneration of photoreceptors as a potential cure for blindness*

**Neil Cashman**, Brain Research Centre, University of British Columbia  
*Targeting amyloid propagation in Alzheimer disease: Structures, immunology and extracellular vesicle topology*

**Ann Marie Craig**, Brain Research Centre, University of British Columbia  
*Targeting the synaptic pathway in neurodevelopmental and psychiatric disorders*

**Zafiris Daskalakis**, Centre for Addiction and Mental Health  
*Canadian rTMS Treatment and Biomarker Network in Depression (CARTBIND) Trial*

**Doris Doudet**, University of British Columbia  
*Neurobiological correlates of TMS*

**James Johnson**, University of British Columbia  
*Locally produced brain insulin in memory and Alzheimer's disease: A multi-disciplinary approach to a key question*

**Brian Kwon**, University of British Columbia  
*Biomarkers for crossing the translational divide in acute spinal cord injury*

**Kari Hoffman**, York University  
*Modulating memory circuits: focal DBS treatments to improve medial temporal lobe function*

**Jeffrey Mogil**, McGill University  
*Distinct neuro-immune interactions drive sex differences in chronic pain*

**Laurie Morrison**, University of Toronto  
*The Frontier Trial - Field Randomization of NA-1 Treatment in Early Responders*

**Christian Naus**, University of British Columbia  
*Validation of connexins and pannexins as a target for Alzheimer's disease*

**David Vocadlo**, Simon Fraser University  
*Preclinical development of a disease modifying small molecule therapy for Alzheimer disease*

\* For the full list of team members for each project, please visit [www.braincanada.ca/MIRI](http://www.braincanada.ca/MIRI)



“CBRAIN is an engine for the common good. The techniques we are using are allowing us to build up large databases of information from across the globe to attack diseases such as Alzheimer’s, autism and Parkinson’s.”

— Alan Evans  
Montreal Neurological Institute and Hospital  
McGill University  
- Recipient of a 2014 PSG grant

**sharing  
imaging  
resources  
to accelerate  
progress.**

Accelerating the development of new technologies to enable transformative research.

# Platform Support Grants (PSGs)

PSGs are designed to sustain and enhance the capabilities and accessibility of research platforms essential for tomorrow's brain research.

The grants are intended to fill a funding gap for operations and maintenance of major research platforms that provide national or regional technical capability to multiple neuroscience investigators from a number of institutions.

## Highlights of 2014 competition

- 31 applications received;
- 17 PSGs team funded;
- Funding totaled just over \$27 million for the 2014 competition.

## CBRAIN: Canadian Brain Research And Informatics Platform

Advances in neuroimaging over the past several years have provided researchers with unprecedented access into the inner workings of the brain. Such data can be collected non-invasively from human subjects so that dynamic changes in brain and behavior can be captured during normal development, aging, learning and plasticity. However, the collection and analysis of such detailed information requires an enormous amount of data and processing capacity. Dr. Evans and his team have developed the Canadian Brain Imaging Research Platform (CBRAIN), a web portal that provides researchers with the tools to overcome the large-scale data processing challenges of neuroimaging. The platform connects 300+ researchers in brain imaging centres across Canada and around the world, enhancing the ease with which researchers can share complex 3D and 4D brain imaging data collected from large multi-centre research projects. The platform is currently being used to uncover the underpinnings of key neurological disorders impacting society, including autism, Alzheimer's disease, Parkinson's disease and multiple sclerosis. Beyond this, CBRAIN provides a framework that can be configured to accept and analyze data from any discipline, in line with Dr. Evans' ultimate goal of establishing Canada as a global hub for "big data" research into the normal and abnormal brain.

## 2014 PSG Grant Recipients

### Team Leads

**Christopher Anderson**, University of Manitoba  
*Manitoba Neuroimaging Platform*

**Yves De Koninck**, Université Laval  
*The Canadian Neurophotonics Platform*

**Simon Duchesne**, Université Laval  
*Le Consortium d'Imagerie en Neurosciences et santé mentale de Québec : leader régional en neuroimagerie humaine*

**Jeff Dunn**, University of Calgary  
*The Experimental Imaging Centre: a Local Brain Canada Platform for Preclinical MR Neuroimaging*

**Alan Evans**, Montreal Neurological Institute and Hospital, McGill University  
*CBRAIN: Canadian Brain Research And Informatics Platform*

**Chester Ho**, University of Calgary  
*Building the Rick Hansen Alberta Spinal Cord Injury Registry*

**Jamie Hutchison**, The Hospital for Sick Children  
*A National biobank and database for patients with traumatic brain injury*

**Deborah Kurrasch and Jong Rho**, University of Calgary  
*A Novel Zebrafish-Based Platform for Anticonvulsant Drug Development*

**Gregory Lodygensky**, Sainte-Justine University Hospital Research Centre  
*The Canadian Neonatal Brain Platform*

**Art Petronis**, Centre for Addiction and Mental Health  
*The Ontario Brain Epigenomics Platform*

**Jack Puymirat**, Université Laval  
*Human inducible pluripotent stem cells (iPSC) platform*

**Amir Shmuel**, Montreal Neurological Institute and Hospital, McGill University  
*Montreal Functional Brain Imaging Platform*

**Karun Singh**, McMaster University  
*A research platform to study animal and human cellular models of neurological disorders*

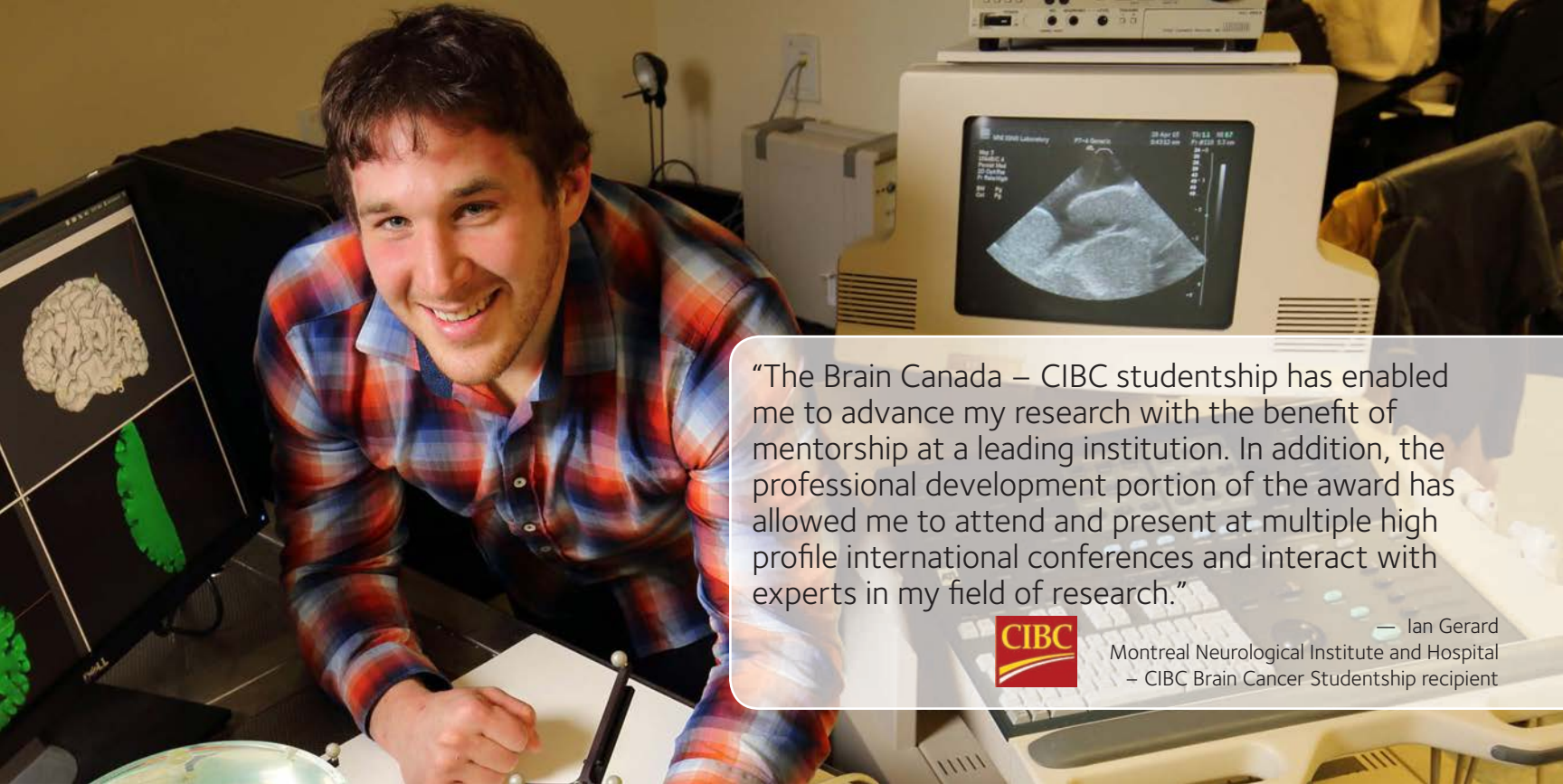
**Gustavo Turecki**, Douglas Hospital Research Centre  
*Douglas-Bell Canada Brain Bank, an essential platform for brain research in Canada*

**Fidel Vila-Rodriguez**, University of British Columbia  
*Integrated Neurostimulation Platform for Neuropsychiatric Research*

**Patrick Whelan**, University of Calgary  
*Regeneration Unit in Neurology: A platform for research and training in advanced microscopy and behavioural approaches*

**Xiao-Yan Wen**, St. Michael's Hospital  
*Z-BRAIN: A Zebrafish Drug Screening Platform Targeting Brain Disorders*

\* For the full list of team members for each project, please visit [www.braincanada.ca/platform\\_support\\_grants](http://www.braincanada.ca/platform_support_grants)



“The Brain Canada – CIBC studentship has enabled me to advance my research with the benefit of mentorship at a leading institution. In addition, the professional development portion of the award has allowed me to attend and present at multiple high profile international conferences and interact with experts in my field of research.”



— Ian Gerard  
Montreal Neurological Institute and Hospital  
– CIBC Brain Cancer Studentship recipient

# rising stars in the canadian brain research community.



“With the Training Award support from Brain Canada and Bell, I have been able to continue my career in science, and pursue my research interest in neurodevelopmental diseases. It has given me the opportunity to collaborate with many excellent scientists who are leaders in the field and provided me with essential support during my transition from a research trainee to an independent principal investigator.”



— Guang Yang  
The Hospital For Sick Children  
– Bell Mental Health Fellowship recipient

Supporting the next generation  
of brain researchers.

# Training Awards

Brain Canada's Training Awards are designed to promote the next generation of Canadian neuroscience researchers by providing them with guidance, mentorship and training under the direction of world-leading researchers. The awards are given to outstanding doctoral and postdoctoral fellows conducting innovative research to uncover the origins and consequences of neurological and/or psychiatric diseases and conditions.

## Mr. Ian Gerard

For patients undergoing an operation to remove a brain tumour, image guidance in the form of a neuronavigation system is commonly used. These systems are analogous to a GPS for the brain where images are used to guide a surgeon to a specific target. A major drawback of these systems is the loss of accuracy throughout the surgery due to brain movement during the operations, making the GPS unreliable. Mr. Gerard's research aims to solve this problem through the use of intraoperative ultrasound imaging (iUS). After acquiring these new real-time images using iUS, the original images can be warped to match the new shape of the brain and the neuronavigation system becomes reliable once again. In addition, through a visualization technique called augmented reality, Mr. Gerard's work will also enable surgeons to look beyond the visible surface of the patient. By providing a surgeon with highly accurate and enhanced visualization tools the research will allow surgeons to perform more complicated surgeries with greater confidence while maintaining minimal invasiveness.

## Highlights

- Launched in 2012;
- 7 Bell Mental Health Research Awards;
- 7 Brain Canada-CIBC Brain Cancer Research Training Awards;
- Fellowships: \$50,000/yr plus \$5,000/yr career development supplement;
- Studentships: \$30,000/yr plus \$3,000/yr career development supplement;
- Total award support: \$1.7 million over three years.

## Dr. Guang Yang

Autism is a spectrum of closely-related neurodevelopmental disorders that affect one out of 68 children. While the causes of autism are unknown, perturbations in certain genes, that may be important for brain function, have been identified in some children with autism. Understanding how these autism-related genes work in the brain can provide important insights into autism and potential therapeutic strategies. Dr. Yang's research focuses on the developing brain at an early embryonic stage when neurons, the basic working unit of the brain, are being produced from their parental cells, called neural stem cells. He has helped discover that the number of neurons made from neural stem cells is altered by genetic defects in some of these autism-related genes. This early alteration during brain development disrupts normal brain structure and may thus lead to behavioural and cognitive deficits. Strategies targeting this early component of brain development may have therapeutic value for treating autism.

# Training Award Recipients

## Bell Mental Health Research Training Awards

### FELLOWSHIPS

**Steven A. Connor**, University of British Columbia  
*Characterization of the role of LRRTMs in synaptic plasticity and memory formation*

**Cornelia Walther**, Western University  
*CRF receptor-mediated sensitization of 5-HT2A receptor signalling*

**Guang Yang**, Hospital for Sick Children  
*The role of translational control in cortical dysgenesis in mammalian brain*

### STUDENTSHIPS

**Corey Baimel**, The University of British Columbia/ Hotchkiss Brain Institute – University of Calgary  
*The effects of optogenetically activated orexin/hypocretin neurons on the mesolimbic reward pathway*

**Nancy Butcher**, University of Toronto  
*Antipsychotic treatment in a genetic subtype of schizophrenia: Novel insights from neuroimaging and pharmacogenetics*

**Jennie Pouget**, Centre for Addiction and Mental Health  
*The role of immune genes in schizophrenia*

**Andrea Tyrer**, Centre for Addiction and Mental Health  
*Season, light exposure and serotonin transporter binding*

## Brain Canada-CIBC Brain Cancer Research Training Awards

### FELLOWSHIPS

**Deena Gendoo**, The Hospital for Sick Children  
*Drug repurposing in medullo-blastoma using integrated functional genomic, epigenomic, and transcriptomic approaches*

**Nadine Richard**, Princess Margaret Hospital  
*Validation of cognitive rehabilitation program adapted to the needs of adults with brain cancer and adult survivors of childhood brain cancer*

**Katherine Rowland**, The Hospital for Sick Children  
*Role of YAP/Hippo and Wnt signaling in human gliomagenesis and glioma tumour-initiating cells*

### STUDENTSHIPS

**Vincy Chan**, University of Toronto  
*The profile and trajectory of brain tumours across the continuum of care in Ontario, Canada: A population based study*

**Ian Gerard**, Montreal Neurological Institute and Hospital, McGill University  
*Nonlinear MR-US registration for image guide neurosurgery of brain tumours*

**Nishani Rajakulendran**, University of Toronto  
*Wnt signalling circuits in glioma progression*

**Mohini Singh**, McMaster University  
*Identification of brain metastasis initiating cells and regulators of brain metastasis from lung cancer*

# our partners.

In addition to our private and corporate donors, Brain Canada is deeply grateful to the following partners:

## **Voluntary Health Organizations**

Alberta Paraplegic Foundation  
 ALS Society of Canada  
 Alzheimer Society of Canada  
 Canadian Cancer Society  
 Heart and Stroke Foundation of Canada  
 The Marigold Foundation

## **Provincial Agencies**

Alberta Innovates Health Solutions  
 Capital District Health Authority  
 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)  
 Ontario Neurotrauma Foundation (ONF)  
 Ontario Brain Institute (OBI)  
 Pacific Alzheimer Research Foundation (PARF)  
 Quebec Pain Research Network

## **Corporations**

Atuka, Inc.  
 Eli Lilly & Company  
 Life Chemicals, Inc  
 Treventis

## **Research Network**

Canadian Stroke Network

## **Other Agencies**

CQDM

## **Institutions**

Alberta Children's Hospital Research Institute (ACHRI)  
 Baycrest  
 BC Children's Hospital BioBank  
 Centre de Recherche Institut universitaire de gériatrie de Montréal (CRIUGM)  
 Centre for Addiction and Mental Health (CAMH)  
 Centre for Heart Lung Innovation, UBC and St. Paul's Hospital  
 Centre hospitalier de l'Université de Montréal (CHUM)  
 Children and Women's Hospital (C&W) - CFRI and UBC  
 CHU Sainte-Justine Foundation  
 CRCHUS, Université de Sherbrooke  
 Dalhousie University  
 Djavad Mowafaghian Centre for Brain Health  
 Douglas Hospital Research Centre  
 Hotchkiss Brain Institute  
 International Collaboration On Repair Discoveries (ICORD)  
 Institut universitaire en santé mentale du Québec (IUSMQ)

Le Réseau québécois sur le suicide, les troubles de l'humeur et les troubles associés (RQSHA)

McGill University  
 McMaster University  
 Montreal Neurological Institute and Hospital  
 St. Michael's Hospital  
 The Hospital for Sick Children  
 Toronto General & Western Hospital Foundation  
 UBC Mental Institute of Health  
 Université de Montréal  
 Université Laval  
 University Health Network  
 University of Alberta  
 University of British Columbia  
 University of Calgary  
 University of Manitoba  
 University of Ottawa Brain and Mind Research Institute (UOBMRI)  
 University of Saskatchewan  
 University of Western Ontario  
 Vancouver Coastal Health Authority (VCHA)  
 York University

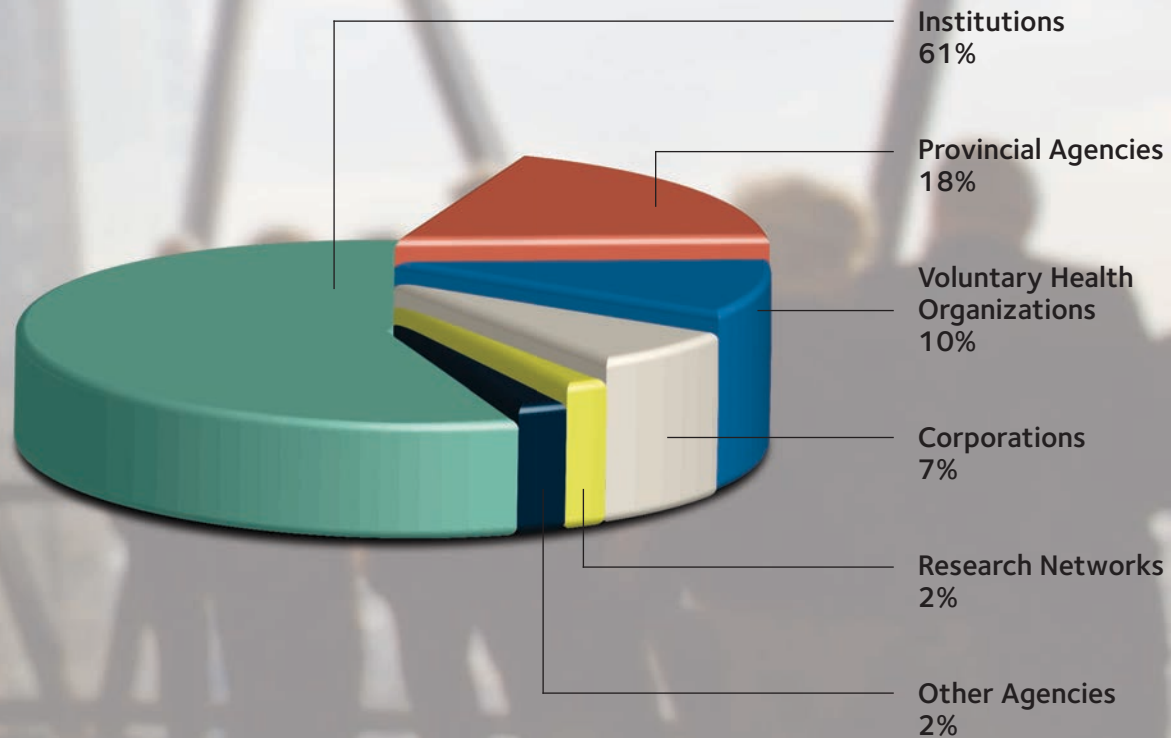
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**59 partners**

# partnerships.

Partnerships are a central component of the Canada Brain Research Fund (CBRF) and Brain Canada is committed to working with funding partners with interests across the entire range of neurological diseases and injuries, mental illnesses and addictions. We are proud to count more than 50 research institutions, provincial agencies and voluntary health organization as strategic, intellectual and financial partners—resulting in a more coordinated, collaborative brain community. Together we will have an impact on the lives of all Canadians by enabling our researchers and clinicians to make paradigm shifts that will benefit millions of people around the world.

In the coming pages we highlight just a few of our many valued partnerships, but would like to take this opportunity to thank and acknowledge all of our partners, from long-standing to most recent.



Building strong and lasting partnerships based on mutual respect and benefits.

# strategic partnerships.

## ALS Partnership – Ice Bucket Challenge

A partnership between the ALS Societies and Brain Canada has resulted in the largest one-time investment in the ALS Society of Canada's research program history. This partnership is leveraging taxpayer's dollars to:

- Double the \$10 million directed to research from the Ice Bucket Challenge, for a combined \$20-million investment in a national research program;
- Accelerate progress by attracting the best minds from the entire brain research community to research ALS and related disorders which share common underlying mechanisms;
- Multiply impact by applying discoveries to a broader grouping of neurodegenerative diseases.

"We are incredibly grateful for all of the support and awareness for ALS in the last four months as a result of the ALS Ice Bucket Challenge. We know donors and our community will be pleased we have demonstrated strong stewardship of the gift we have received, and that, with the matching research funds from Brain Canada, the total impact of the ALS Ice Bucket Challenge is \$26 million".

– Tammy Moore, CEO, ALS Canada



From left to right: Ms. Inez Jabalpurwala, President and CEO, Brain Canada; Ms. Tammy Moore, CEO, ALS Society of Canada; Dr. Heather Durham, Chair of the Research Council, ALS Society of Canada; Mr. Brian Parsons (person living with ALS).

## British Columbia Alzheimer's Research Award Program

The British Columbia Alzheimer's Research Award Program is a partnership of four organizations that came together to harness BC's vibrant research community, and fund research into Alzheimer's disease that currently affects over 700,000 Canadians.

- Brain Canada, the Michael Smith Foundation for Health Research (MSFHR), Genome British Columbia (Genome BC), and The Pacific Alzheimer Research Foundation (PARF) created a \$7.5-million fund to seek solutions to Alzheimer's disease and related dementias;
- In November of 2014, five multi-disciplinary teams were each awarded \$1.5 million funding over three years.

"This opportunity to invest in Alzheimer's disease research is extremely welcome particularly with the strong partnerships involved from British Columbia and Brain Canada. The application of research to making a difference to persons affected by this insidiously progressive neurodegenerative disorder is imperative and BC researchers will have an impact."

– B. Lynn Beattie  
President, The Pacific Alzheimer Research Foundation



From left to right: Dr. Alan Winter, President and CEO, Genome BC; Dr. Diane Finegood, President and CEO, Michael Smith Foundation for Health Research; Dr. B. Lynn Beattie, President, Pacific Alzheimer Research Foundation; and Dr. David Kaplan, Brain Canada Board Director.



## CQDM and OBI “Focus on Brain”

Brain Canada, CQDM and the Ontario Brain Institute (OBI) launched a joint funding program to support the development of innovative tools, technologies and platforms to accelerate the discovery of new, safe and effective drugs for disorders of the brain and nervous system.

- The Focus on Brain program is a \$12.5-million partnership open to multi-disciplinary research teams linking researchers in Quebec with other Canadian researchers, and the academic sector with the small and medium-sized enterprise sector;
- This unique partnership hopes to develop strong collaborations between academic researchers and the pharmaceutical industry, and better align research with the needs of the industry;
- To date, six multi-disciplinary teams have been awarded a total of \$8.4 million through this innovative program.

“We are delighted to partner with Brain Canada to launch our second pan-Canadian funding initiative to engage the best researchers throughout Canada in translational research, this time in the field of neuroscience. The drug discovery process in neuroscience is paved with major hurdles. Brain Canada’s footprint in brain research, as well as its strong presence in Canada, are crucial elements to the success of this new funding initiative.”

– Diane Gosselin, President and CEO of CQDM



From left to right: Dr. Diane Gosselin, President and CEO, CQDM; Dr. Rémi Quiron, Quebec Chief Scientist; Dr. Sam David, President of the Canadian Association for Neuroscience; Ms. Inez Jabalpurwala, President and CEO, Brain Canada.

## Canadian Cancer Society Impact Grants

Brain Canada has partnered with the Canadian Cancer Society Research Institute to encourage and support more brain cancer research through Impact Grants.

- The joint funding platform is designed to fund new research that will quickly adopt innovations and accelerate the application of new knowledge to address problems in brain cancer;
- This partnership between two leading research funders will result in increased investment in brain cancer research and encouraged collaboration between scientists from the cancer and neuroscience fields;
- The announced model will match funds raised from donors and partners of the Canadian Cancer Society Research Institute for a total investment of \$5 million.

“Brain cancer is the most common cause of cancer death in young children. There is a huge need for more research on brain cancers, both in children and adults, so that we can save people’s lives and ensure that their lives are of good quality with minimal side effects of treatment. This money will help us to make real and significant progress against this disease. We are very grateful for the support from Brain Canada, as well as from our generous donors who are making this possible.”

– Pamela Fralick, President and CEO, Canadian Cancer Society



From left to right: Ms. Inez Jabalpurwala, President and CEO, Brain Canada; Dr. Janet Rossant, Chief of Research, The Hospital for Sick Children; Dr. Uri Tabori, researcher and recipient of a grant, The Hospital for Sick Children; The Hon. Rona Ambrose, Minister of Health; Dr. Michael Taylor, researcher and recipient of a grant, The Hospital for Sick Children; Ms. Pamela Fralick, President and CEO, Canadian Cancer Society; Mr. Carl Cadogan, CEO, Brain Tumour Foundation of Canada.

# brain philanthropists.

Private donors and foundations are an important part of the brain community. Their philanthropy goes beyond making a financial donation: they are partners that can set program priorities by virtue of how they direct their giving. The Brain Canada public-private partnership funding model is a bottom-up approach whereby Brain Canada works closely with donors to design programs that match their interests in particular disease groupings or mechanisms. Government then matches their donations on a 1:1 basis. Through Brain Canada's open call process and reach to the entire brain research community, what gets funded is at the intersection of donor interests and the very best Canadian researchers and clinicians presenting novel, paradigm-changing ideas.

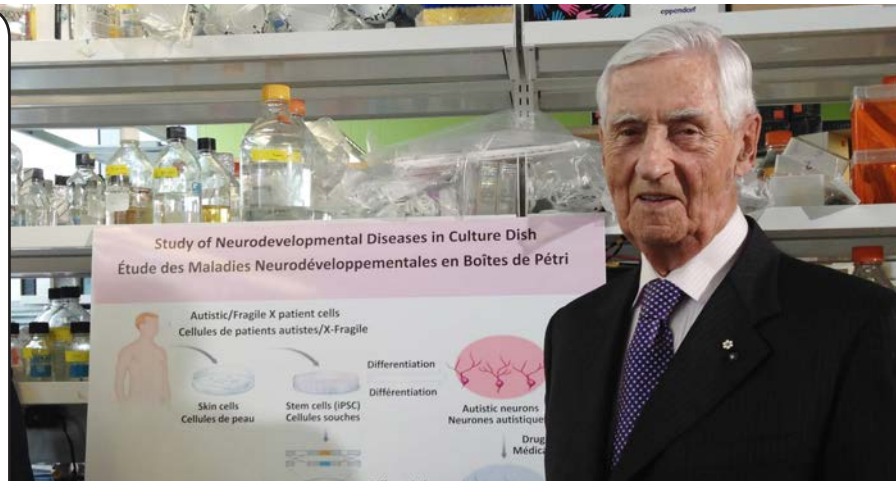
We would like to thank all of our generous, visionary private donors and foundations. We highlight four of them here.

## Chagnon Family

On December 21, 2012, a joint venture between the Chagnon Family of Quebec and Brain Canada was announced, to support novel and transformative intervention research that will improve the prevention of Alzheimer Disease and Related Disorders. To date, one Chagnon Family - Brain Canada Interventions for Prevention of Alzheimer Disease and Related Disorders team grant has been awarded. The team is receiving \$10 million over five years. This represents the largest single grant in the area of prevention of Alzheimer's disease ever made in Canada.

"Brain Canada seemed like the ideal organization with which to develop a research partnership that would produce credible and verifiable results. The Brain Canada team has demonstrated its professionalism, availability and openness. Together, the Chagnon family, Brain Canada and the Government of Canada are proud to be contributing \$10 million to this research project over a five-year period."

– André Chagnon, O.C., O.Q.



Mr. André Chagnon, O.C., O.Q.

## The Krembil Foundation

The Krembil Foundation has funded grants across Canada for a wide range of charitable purposes benefiting all Canadians. Their mandate is centered on helping people by supporting medical research and education, and they have made major contributions to research and to neuroscience research in particular, which are transforming the field. The Krembil Foundation is funding two MIRI teams focused on memory and on blindness. The total grant for these two teams is \$3 million over three years. The Foundation also provided funding to allow one of Brain Canada's Brain Repair Program teams to continue their research on uncovering the causes of Parkinson's Disease for an additional three years.

"Through their programs, Brain Canada has designed a platform that has the potential to create opportunity for countless scientific collaborations that will likely result in the discovery of many life altering medical breakthroughs. As long-time supporters of Brain Canada, we strongly believe in their efforts and recognize the benefits and leveraging opportunities the Canadian Brain Research Fund brings to our organization."

– Mark Krembil, President, The Krembil Foundation



Mr. Mark Krembil, President, The Krembil Foundation and Mrs. Stacy Krembil, Director, The Krembil Foundation.

Listening to the voices of patients, families and caregivers.

## The Azrieli Foundation

The Azrieli Foundation supports a wide range of initiatives and programs in the fields of education, architecture and design, Jewish community, Holocaust commemoration and education, scientific and medical research, and the arts.

In 2012, a partnership between the Azrieli Foundation and Brain Canada was announced. Through this joint venture, the partners aim to support excellent translational research in the area of neurodevelopmental disorders, with a special focus on Autism Spectrum Disorder and Fragile X syndrome. The Foundation donated \$4.25 million to Brain Canada, which was matched by the Government of Canada to fund four Azrieli Neurodevelopmental Research Program team grants under the MIRI program (total grant support \$8.7 million over five years). In 2014 the Foundation increased their support by \$3.25 million, and in December of 2014, the second phase of the Azrieli Neurodevelopmental Research Program was launched. This second program has an emphasis on linking Canadian researchers with international collaborators. The Azrieli Foundation's generous commitment is the largest private donation to date to support neurodevelopmental research – \$7.5 million, matched for a total of \$15 million.

*"We know that Canada is home to some of the world's foremost neuroscientists and that we have the potential to be a world leader in neurodevelopmental research. By providing scientists with significant financial support, we are providing the lifeblood of advanced research."*

– Naomi Azrieli, Chair and CEO, The Azrieli Foundation



Dr. Naomi Azrieli, Chair and CEO, The Azrieli Foundation and Dr. Nahum Sonenberg, recipient of an Azrieli Brain Canada MIRI grant.

## The W. Garfield Weston Foundation

The W. Garfield Weston Foundation has a long legacy of supporting medical research going back to the 1960s. The Foundation was one of the early contributors to Brain Canada following the announcement of the Canada Brain Research Fund and, in 2011, provided \$3 million to enable Brain Canada to launch the first MIRI grant program. With the match, \$6 million was made available, and with additional funding from the Krembil Foundation, five grants were awarded in April 2013. Each team is receiving \$1.5 million over three years. The teams include researchers from among Canada's top universities, hospitals and institutes, pursuing novel, transformative research aimed at improving our understanding of human nervous system function and dysfunction, and its impact on health.

*"Brain Canada has an outstanding track record of funding breakthroughs in neuroscience. We are delighted to be the first to support Brain Canada, and are confident the research of these five exceptional teams will benefit the millions of Canadian patients and caregivers affected by brain disorders. This program continues our long history of support for medical research, from funding the Banting and Best Institute in the 1960s to the new Dalglish Family Hearts & Minds Clinic."*

– W. Galen Weston, Chairman and President  
The W. Garfield Weston Foundation



From left to right: Mr. Rupert Duchesne, Chair, Brain Canada, The Hon. Hilary M. Weston, Mr. W. Galen Weston, Ms. Claudia Hepburn, The Hon. Leona Aglukkaq, Former Minister of Health, Mr. Robert Vaux, Ms. Wendy Rebanks, Ms. Inez Jabalpurwala, President and CEO, Brain Canada.

# other partnerships.

In addition to our partnerships through the Canada Brain Research Fund, Brain Canada is proud of our longstanding relationships with both the Barbara Turnbull Foundation and the van Tol family.

## Barbara Turnbull Award for Spinal Cord Research

This award, in support of Canadian research on spinal cord injury, is funded by the Institute of Neurosciences, Mental Health and Addiction (INMHA) of the Canadian Institutes of Health Research (CIHR) in partnership with Brain Canada and the Barbara Turnbull Foundation, and is valued at \$50,000. From among CIHR-funded investigators, the award recipient is selected to be conducting the most promising and exciting spinal cord research. The 2014 award went to Dr. Yves De Koninck at Université Laval for his project entitled "*Plasticity of inhibition in spinal sensory pathways*".

"I am deeply honoured to receive this award. Barbara Turnbull's courage and relentless advocacy efforts to promote spinal cord research are an inspiration to us all and I sincerely hope our work will have a significant impact on the development of therapeutic strategies to alleviate chronic pain, a terrible condition that afflicts the majority of patients with spinal cord injury and is reported as their most prevalent subject of grievance."

– Yves De Koninck, Université Laval



From left to right: Ms. Barbara Turnbull, President, Barbara Turnbull Foundation; Dr. Yves De Koninck, Université Laval; Ms. Inez Jabalpurwala, President and CEO, Brain Canada; Dr. Nathalie Gendron, Assistant Director, INMHA.

## Dr. Hubert van Tol Travel Fellowship

The neuroscience community lost a brilliant, well-respected scientist when Dr. Hubert van Tol died suddenly in a bicycle accident on April 20, 2006. To honour him, his family set up the Dr. Hubert van Tol Fund at Brain Canada, through which the Dr. Hubert van Tol Travel Fellowship was established. The fund has received more than \$30,000 in donations since it was established. The \$5,000 fellowship enables Ph.D. students and postdoctoral fellows performing research as part of a Brain Canada MIRI team or Training award to attend major international conferences, symposia or training courses. The 2014 Dr. Hubert van Tol Award was awarded to Ms. Nancy Butcher, a doctoral candidate who is conducting research using advanced brain imaging techniques to measure levels of the brain chemical dopamine, to differentiate between Parkinson's disease and other motor neuron defects.

"Brain imaging is a critical tool in my research investigating antipsychotic treatment side effects in patients with schizophrenia at the Centre for Addiction and Mental Health. Through the support of the Dr. Hubert van Tol Travel Fellowship, I had the opportunity to attend a course on positron emission tomography (PET) pharmacokinetics and data analyses, where I trained with world experts in the latest imaging methods and analytic techniques. I believe this training was invaluable to the successful completion of my PET neuroimaging project for my doctoral studies and will provide a platform for further developing my career as a scientist in mental health research."

– Nancy Butcher, University of Toronto



Ms. Nancy Butcher, University of Toronto, and supervisor Dr. Anne Bassett, Professor of Psychiatry, University of Toronto.

# brain canada in the world.

It is important for Brain Canada to connect with the global brain community, to share the public-private partnership model, seek opportunities to further leverage funds and ideas, and ensure that Canadian researchers continue to make important contributions to advancing brain initiatives around the world.

Below are a few of the global events in 2014 where Brain Canada had a presence:



Ms. Inez Jabalpurwala, President and CEO, Brain Canada, speaking at the G8 Global Action Against Dementia Legacy Summit in London, UK, on June 19, 2014.

**Global action against dementia legacy summits** were ignited by discussions held at the G8 Summit on Dementia in London, UK on Dec 11, 2013. The goals of these legacy events are to explore collaborative opportunities for research into novel diagnostic, pre-emptive and therapeutic approaches, and new models of care for dementia by bringing together academia and industry; provide a better understanding of the impact of the paradigm shift in pharmaceutical research on the development of new treatments against dementia; and to foster a collective approach to problem solving through the pooling and sharing of resources. The first legacy event on finance and social investment was held in London, UK on June 19, 2014.

Inez Jabalpurwala, Brain Canada's President and CEO, gave a presentation outlining the public-private partnership model, the impact of the model on the philanthropic space for brain research support, and how these investments will achieve maximum impact. The second legacy event, cohosted by the French National Alliance for Life Sciences and Health (AVIESAN) and the Canadian Institutes of Health Research (CIHR), was held on September 11, 2014 in Ottawa, Canada. Ms. Jabalpurwala provided the opening remarks about Canada's contributions to the global effort, its leadership in brain health and research, and introduced Canada's Minister of Health, The Honourable Rona Ambrose.

**Changing the Global Care for Alzheimer's and Dementia** was a conference co-hosted by the American Association for Retired Persons and the Global CEO Initiative on Alzheimer's disease. Ms. Jabalpurwala gave a presentation outlining the public-private partnership model, the impact of the model on the philanthropic space for brain research support, and how these investments contribute to the research environment addressing the challenges of Alzheimer's disease and dementia.

Brain Canada is proud to be a member of the following international initiatives: Global CEO Initiative on Alzheimer's disease; Institute of Medicine Forum on Neuroscience and Nervous System Disorders; and the International Alzheimer's Disease Funders Consortium.

# thanks to our supporters.

With the launch of the Canada Brain Research Fund (CBRF) public-private partnership, Brain Canada embarked on a \$100-million, national fundraising campaign. **All funds** raised from private and non-governmental sources will be matched by Government on a **1:1 basis**. The fundraising total to date is over \$85 million.

Brain Canada encourages all organizations raising funds for brain research to either contribute directly to the CBRF and have their donor dollars matched, or to partner on research programs to further leverage the public-private match.

Brain Canada has always taken pride in keeping non-research related expenses to the minimum required for operational efficiency and good governance. Brain Canada Directors have also made generous gifts to operations. Through these efforts, \$0.85 to \$0.90 of every dollar raised is disbursed directly to Canadian researchers.

We thank the lead donors listed below and all of our other donors across the country.

## Individuals and private Foundations

### Lead donors

The Chagnon Family - \$12.5 million

The Azrieli Foundation - \$7.5 million

The W. Garfield Weston Foundation - \$3 million

The Krembil Foundation - \$1 million

### \$100,000 – \$249,000

The Max Bell Foundation

The Jim Pattison Foundation

The Rotman Family Foundation

The Lawrence and Judith Tanenbaum Foundation

### \$50,000 – \$99,999

Michael H. Wilson

### \$25,000 – \$49,999

Rupert Duchesne

Marianne Seger

Allan R. and Shirley Taylor

The Henry and Berenice Kaufmann Foundation

The Barbara Turnbull Foundation

### \$10,000 – \$24,999

The Ira Gluskin & Maxine Granovsky Gluskin

Charitable Foundation

The Hon. John and Mrs. Joan MacKenzie

## Corporations

### \$600,000

RBC Foundation

### \$500,000

Bell Canada

CIBC

### \$200,000

National Bank of Canada

### \$100,000

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### Gifts were made to honour

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Violet Jeeves Lecavalier

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Shannon Peden

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# science advisory council.

Provides key input to Brain Canada in the form of intelligence about developments in the field, in Canada and internationally, and a broad assessment of Brain Canada's research program.

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Professor, Department of Molecular Genetics  
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& Therapeutics, McGill University  
Director, Division of Cellular & Molecular Neuroscience, Institut universitaire en santé mentale de Québec (QC)  
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[Area of expertise: Psychiatry/Behavior/Leader in optogenetics](#)

### Arnold Kriegstein, M.D., Ph.D.

Director, Eli and Edy, the Broad Center of Regeneration Medicine and Stem Cell Research,  
Department of Neurology, UCSF School of Medicine (CA, USA)  
[Area of expertise: Development/photonic, Neural Stem Cells and Embryonic Cortical Development](#)

### Lorne Mendell, Ph.D.

Distinguished Professor, Stony Brook University (NY, USA)  
[Area of expertise: Pain, neuroplasticity of the mammalian spinal cord](#)

### Klaus-Armin Nave, Ph.D.

Head Max-Planck Gottingen, Glial biology and neurodegeneration, Max Planck Institute for Experimental Medicine, Göttingen (GER)  
[Area of expertise: Glial biology and neurodegeneration](#)

### Bill Newsome, Ph.D.

Arman Family Provostial Professor and Professor of Neurobiology and, by courtesy, of Psychology, Stanford School of Medicine (CA, USA)  
[Area of expertise: Visual perception and visually-based cognition, neural mechanisms of decision making](#)

### Angela Roberts, Ph.D.

Professor of Behavioural Neuroscience, Department of Physiology, Development and Neuroscience, Cambridge (UK)  
[Area of expertise: Prefrontal cortex/behavior/psychiatric diseases](#)

### Bruce Rosen, M.D., Ph.D.

Professor of Radiology at the Harvard Medical School  
Professor of Health Science and Technology at the Harvard-MIT Division of Health Sciences and Technology, Director of the Athinoula A. Martinos Center for Biomedical Imaging at Massachusetts General Hospital (MA, USA)  
[Area of expertise: World leading expert in functional neuroimaging](#)

### Rosalind Segal, M.D., Ph.D.

Professor of Neurobiology, Dana Farber Cancer Institute, Harvard (MA, USA)  
[Area of expertise: Cellular and molecular neuroscience/oncology](#)

### D James Surmeier, Ph.D.

Chair, Department of Physiology,  
Nathan Smith Davis  
Professor of Physiology, Northwestern (IL, USA)  
[Area of expertise: Basal ganglia/cell metabolics and neurodegenerative disease; Molecular Biology; Movement Disorders; Neuroscience; Parkinson's disease; Physiology; Schizophrenia](#)

### Li-Huei Tsai, Ph.D.

Director, The Picower Institute for Learning and Memory, Picower  
Professor of Neuroscience, Department of Brain and Cognitive Sciences, Senior Associate Member, Broad Institute, Massachusetts Institute of Technology, Department of Brain and Cognitive Sciences, Picower Institute for Learning and Memory (MA, USA)  
[Area of expertise: Neurodegeneration](#)



# thanks to Allan R. Taylor.



Mr. Allan R. Taylor (bottom row, second from right), surrounded by Brain Canada Directors and staff, at our June 3, 2015 Annual General Meeting.

On June 3, 2015, Allan R. Taylor stepped down from the Board of Brain Canada, after nearly 20 years as a dedicated volunteer. Over that period, Mr. Taylor served in different capacities, including as Chair of the Board, and as Chair of the Governance, Nominating and Ethics Committee. As one of Canada's most trusted and accomplished leaders, he spent his professional career at RBC, rising to the office of the Chairman and CEO. He has always given back to his community, whether on non-profit boards or as a champion of corporate philanthropy and increased Government investments in research.

Mr. Taylor's contributions to Brain Canada have been enormous; his leadership on governance was central to our transformation from the NeuroScience Network Centre of Excellence to the NeuroScience Canada Partnership and Foundation, and to the present Brain Canada Foundation. In 2006, this excellence in governance was recognized when we received The Conference Board of Canada/Spencer Stuart National Awards in Governance award in the non-for-profit category.

Mr. Taylor often says that good governance is the foundation upon which a vision becomes a reality. For those of us who have had the great privilege of being part of Brain Canada during the era of Mr. Taylor, we are most grateful that he helped to build our solid foundation, which positioned us well for a partnership with the Government of Canada.

Thank you Mr. Taylor; everyone touched by this organization owes a great deal to you, and you will always be part of our future success.

# financial report.

## NeuroScience Canada Partnership Brain Canada Foundation

Combined Financial Statements

At December 31	2014	2013
	\$	\$
<b>ASSETS</b>		
<b>Current Assets</b>		
Cash and cash equivalents	6 116 134	5 182 679
Short term investments, including accrued interest	29 609 021	28 816 530
Other receivables	67 769	45 496
Prepays and deposits	7 735	97 566
	35 800 659	34 142 271
Computers, software, furniture and equipment	101 183	5 733
	<b>35 901 842</b>	<b>34 148 004</b>
<b>LIABILITIES AND NET ASSETS</b>		
<b>Current liabilities</b>		
Accounts payable and accrued liabilities	84 726	35 514
Salaries and benefits payable	102 550	125 228
Deferred contributions	26 329 306	10 291 035
	26 516 582	10 451 777
<b>Non-current liabilities</b>		
Deferred contributions	9 278 494	23 589 158
	<b>35 795 076</b>	<b>34 040 935</b>
<b>NET ASSETS</b>		
Unrestricted net assets	5 583	101 336
Invested in capital assets	101 183	5 733
	106 766	107 069
	<b>35 901 842</b>	<b>34 148 004</b>

For the year ended December 31	2014	2013
	\$	\$
<b>REVENUES</b>		
Contributions	9 039 967	2 776 030
Add amount recognized	1 232 629	935 216
	10 272 596	3 711 246
Interest income	18 439	4 677
<b>Total Revenues</b>	<b>10 291 035</b>	<b>3 715 923</b>
<b>EXPENDITURES</b>		
Grants and awards	8 498 432	2 079 225
Operating expenses	1 779 298	1 634 573
Amortization	13 608	2 429
<b>Total Expenditures</b>	<b>10 291 338</b>	<b>3 716 227</b>
<b>Excess of expenditures over revenues</b>	<b>(303)</b>	<b>(304)</b>

The financial statements of NeuroScience Canada Partnership and Brain Canada Foundation are audited by KPMG LLP and are available upon request.

# remembering Barbara Turnbull.



**Barbara Turnbull**  
1965 - 2015

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Everyone at Brain Canada was deeply saddened by the death of Barbara Turnbull on May 10<sup>th</sup>, 2015.

Through her foundation, The Barbara Turnbull Foundation for Spinal Cord Research, Barbara was Brain Canada's longest-standing partner, and believed in this organization and supported us from the beginning. She was a guiding light who inspired us and taught us that life is a gift that we too often take for granted, and that how we deal with adversity is the real test of our character. And yet, she was never impatient with those who failed to act with the same grace, kindness and courage as she always showed. She reminded us that research must serve people, and that every discovery along the way to a cure carries the potential of improving lives.

Barbara brought joy and optimism to all among us who had the privilege of knowing her. She made our lives better. She made us better. She will be missed beyond words. Our thoughts and prayers are with her devoted and loving family.





# one brain. one community in action.

**The front cover** features researchers, paramedics, a donor and other participants involved in *The Frontier Trial - Field Randomization of NA-1 Treatment in Early Responders* project, one of the recipients of a 2014 Brain Canada Multi-Investigator Research Initiative grant. This project advances a key scientific discovery from “bench to curbside” by putting a drug discovered in the lab into the hands of front line paramedics. This drug, when administered by paramedics in the critical early timeframe following a stroke, has the potential to reduce the consequences of a stroke by up to 50%.

From left to right:

- Ms. Kate Byrne, Research Program Manager, Rescu;
- Mr. Mark Krembil, Brain Canada donor, Brain Canada and NoNO Inc. Board Director;
- Dr. Michael Salter, co-founder and Vice President, Finance of NoNO Inc.;
- Dr. Laurie Morrison, Professor and Clinician Scientist, University of Toronto, Director, Rescu;
- Dr. Richard Verbeek, Hospital Medical Director, Toronto EMS Primary Care Paramedic Program and Toronto Fire Service Emergency Patient Care Program;
- Mr. Adam Byers, Research Coordinator, Rescu;
- Ms. Ellen Ironside, Peel Regional Paramedic Services;
- Ms. Ornella Guizzo, Toronto Paramedic Services;
- Ms. Tatyana Yavorska, Research Assistant, Rescu.