

Government of Canada and Brain Canada Foundation announce 18 new brain research projects
Funded under the Canada Brain Research Fund

Through Budget 2011 and 2016, the Government of Canada committed up to \$120 million to the Canada Brain Research Fund, which is administered by the Brain Canada Foundation. Under the 2015 Multi-Investigator Research Initiative, Platform Support Grant, and the Azrieli Neurodevelopmental Research Program competitions, a total of 18 research grants have been awarded totalling approximately \$29M. A description of the projects announced today is provided below, along with the Principal Investigator and their affiliated institution.

2015 Multi-Investigator Research Initiative (MIRI) Team Grants
Total amount: \$9,809,582

This program aims to accelerate novel and transformative research that will fundamentally change our understanding of nervous system function and dysfunction and their impact on mental health. The ultimate goal is to reduce the social and economic burden of neurological and mental health problems by prevention, early diagnosis, and treatment. Team grants are awarded for multi-disciplinary and collaborative research, and cover mental health, neurodegenerative disease, stroke, and neurodevelopmental disorders.



Graham L. Collingridge
Lunenfeld-Tanenbaum
Research Institute, Mount
Sinai Hospital, Ontario

Novel Approaches to Understand the Role of cAMP and Co-Signaling Cascades in Synaptic Plasticity and Brain Disorders

Amount: \$1,850,000

Dr. Collingridge and his team aim to understand the underlying mechanisms of synaptic plasticity, a process where the strength of connections between nerve cells is changed by experience. They will specifically focus on long-term potentiation, which is the most widely studied form of synaptic plasticity. This process is important for forming memories and can lead to various brain disorders, such as Alzheimer's disease, chronic pain, and chronic anxiety, when it is disrupted. Studying this process will help understand how the brain works and will help develop better treatments for major brain disorders. Three institutions (five team members) in one province are involved.



Daniel Blumberger
Centre for Addiction and
Mental Health, Ontario

Cognitive Outcomes and Response/Remission Efficacy of Convulsive Therapies in Treatment Resistant Depression: The CORRECT-TRD Trial

Amount: \$1,387,424

Dr. Blumberger and his team aim to assess clinical efficacy of an alternative therapy for patients resistant to current anti-depressant therapy. This therapy, called Magnetic Seizure Therapy, is a new form of treatment that uses magnetic pulses to stimulate the brain. The team will also look for a biomarker, a biological characteristic that can serve as an indicator of biological state, to predict patient response to therapy. Five institutions (nine team members) across two provinces and a state in the U.S. are involved.



Douglas P. Munoz
Queen's University,
Ontario

Testing Therapeutic Approaches to Improve Cognitive Dysfunction in a Primate Model of Alzheimer's Disease

Amount: \$857,062

Dr. Munoz and his team aim to identify a strategy to slow the progression of Alzheimer's disease and delay disease onset. The team will track the impact of an Alzheimer's-related protein in an animal model to determine if it triggers disease symptoms. The team will then examine therapeutic strategies to promote recovery after the disease develops in this model. One institution (four team members) is involved.



Ruth Slack
University of Ottawa,
Ontario

Reshaping Mitochondrial Efficiency and Integrity to Treat Parkinson's Disease

Amount: \$1,387,500

Dr. Slack and her team aim to identify new ways to enhance the efficiency and resiliency of mitochondria, structures in the cell that provide energy, as a way to treat Parkinson's disease. In this disease, mitochondria behave abnormally and can cause cell death by producing toxic by-products, so restoring normal function could limit further damage and delay disease onset. Two institutions (four team members) across two provinces are involved.



Marie-Hélène Milot
Université de Sherbrooke,
Quebec

Combining Neurostimulation Technique with Tailored Interventions for the Affected Upper Extremity: Can it Promote Better Recovery in Stroke Survivors?

Amount: \$321,303

Dr. Milot and her team aim to improve the quality of life of stroke survivors by predicting an individual's potential for recovery after stroke using a method of non-invasive brain stimulation. This will help determine the optimal level of exercise to recover function in the arms (a substantial portions of stroke survivors are left with poor function in an arm) on a personalized level. The team will also examine whether response to strength training can be enhanced using another non-invasive brain stimulation technique. Three institutions (four team members) across two provinces are involved.



Eric Smith
Alberta Innovates – Health
Solutions and Hotchkiss
Brain Institute, University
of Calgary, Alberta

Novel Blood and Neuroimaging Markers for Alzheimer's Disease and Cerebral Amyloid Angiopathy

Amount: \$1,387,500

Dr. Smith and his team aim to develop and validate diagnostic tests for Alzheimer's disease and cerebral amyloid angiopathy (a sister condition caused by the buildup of one of the proteins known to cause Alzheimer's), using a blood sample and an MRI scan. This project has the potential to develop the first accurate blood test to diagnose these two conditions, and a brain scan technique to evaluate patient prognosis. Three institutions (11 team members) are involved.



Sébastien Jacquemont
Sainte-Justine University
Hospital Research Centre,
Quebec

Montreal Integrated Neuropsychiatric Cohort: Identifying Subtypes of Autism and Schizophrenia Integrating Genomics, Endophenotypes, and Cohorts of High-Risk Genetic Variants

Amount: \$1,387,500

Dr. Jacquemont and his team aim to establish an integrated cohort using recent genetic discoveries to classify patients with autism and schizophrenia. This study will advance knowledge on how particular mutations lead to psychiatric symptoms and the differences between individuals who carry mutations on different genes. This study has the potential to translate into diagnostic and counseling strategies, and to help practitioners in the interpretation of genetic variants, and in the identification of individuals who could benefit from early intervention programs. Five institutions (11 team members) across two provinces are involved.



Art Petronis
Centre for Addiction and
Mental Health, Ontario

The Aging Brain: Circadian, Transcriptomic, and Epigenomic Dimensions

Amount: \$1,231,293

Dr. Petronis and his team aim to understand how and why the brain ages. The body's circadian rhythm (changes in physiology that occur on a 24h cycle) deteriorates as we age and is controlled in part by changes to the epigenome i.e., the regulation of genes by the environment. This project aims to catalogue the changes in DNA regulation that occur in the brain as we age, and to understand how these changes relate to aging brain disease. Two institutions (4 team members) are involved in one province.

2015 Platform Support Grants (PSG)

Total amount: \$14,363,172

Support major research platforms at the local, regional, and national levels to provide enhanced technical and research capability to multiple investigators across Canada working in the brain sciences. Thematic areas include: multidisciplinary, collaborative research, platforms and infrastructure, stroke, brain cancer, neuroimaging, and neurodegenerative disease.



Mark Bayley
Toronto Rehabilitation
Institute, Ontario

Canadian Partnership for Stroke Recovery Clinical Trials Platform

Amount: \$2,775,000

Dr. Bayley and his team aim to expand existing resources (e.g. Heart and Stroke Foundation Canadian Partnership for Stroke Recovery and Stroke Patient Recovery Research Database (SPReD)) to create Canada's first coordinated large-scale stroke recovery clinical trials platform at eight leading sites across Canada. An efficient large-scale trial platform will strengthen Canadian research collaborations, increase Canadian competitiveness and productivity in clinical stroke recovery research, and provide a wealth of data that can be accessed and linked to by complementary research initiatives within Canada and internationally. Ten institutions (10 team members) across five provinces are involved.



Faith Davis
University of Alberta,
Alberta

Brain Tumour Registry of Canada

Amount: \$303,359

Dr. Davis and her team aim to enhance Canadian research capacity in the area of brain cancer by supplementing provincial cancer registries and creating a first Canadian brain tumour surveillance registry. The initiative addresses Canada's recognised gap in reporting nonmalignant brain tumours. The regions included in this project will allow the team members, within a relatively short period of time, to provide data on 90% of the expected brain tumours in Canada to the neurooncology and brain tumour research communities. Six institutions (10 team members) across five provinces are involved.



Steven Beyea
IWK Health Centre, Nova
Scotia

BIOTIC: The BIOMedical Translational Imaging Centre

Amount: \$416,108

The BIOMedical Translational Imaging Centre ("BIOTIC") is the only hospital-based imaging lab in Canada with an explicit mandate to translate brain science innovations through commercial partnership. Dr. Beyea and his team aim to improve accessibility to a range of neuroimaging expertise and infrastructure so that companies can demonstrate efficacy of their technology and/or collaborate to develop new technologies. The role of BIOTIC is to help bridge the gap between early-stage research and clinical trials thereby accelerating the path from brain science discoveries to commercialization of new brain products. Two institutions (seven team members) in one province are involved.



Sylvain Baillet
McGill University, Quebec

The McConnell Brain Imaging Centre: a Hub of Scientific Excellence for Translational Neuroimaging

Amount: \$3,885,000

The McConnell Brain Imaging Centre is in the top three largest brain imaging service platforms worldwide. Dr. Baillet and his team aim to add capacity for data acquisition and sharing, expanding capacity for different imaging modalities, and emphasizing dissemination, open-access, and training of highly qualified personnel. One institution (20 team members) in one province is involved.



Ravi Menon
Western University,
Ontario

Centre for Functional and Metabolic Mapping

Amount: \$2,775,000

The Centre for Functional and Metabolic Mapping (CFMM) is an imaging spectroscopy facility that operates some of the most sophisticated MRI instrumentation in the world. Dr. Menon and his team will aim to enhance research capabilities and operations of the CFMM to benefit the Canadian neuroscience community by providing cost-effective access to imaging opportunities for all researchers, enhancing the ability to share imaging data with national and international consortia, and allowing the piloting and development of new neuroimaging applications. Ten institutions (84 team members) across three provinces are involved.



Gabrielle deVeber
The Hospital for Sick
Children, Ontario

Canadian Paediatric Stroke Imaging Research Platform: Harnessing an International Focus

Amount: \$1,433,750

Dr. deVeber and her team aim to establish a multicenter neuroimaging platform to allow Canadian researchers to conduct studies on stroke in the developing brain. This platform will enable acquisition, pooling and shared analysis of comprehensive imaging data across multiple sites. This approach will inform the development of targeted interventions to improve outcome from childhood stroke. Seven institutions (12 team members) across four provinces and two states in the U.S. are involved.



Morris Freedman
The Rotman Research
Institute, Baycrest Centre,
Ontario

The Toronto Dementia Research Alliance Dementia Clinical Research Database: A Platform in Neurodegenerative Diseases

Amount: \$2,774,955

Dr. Freedman and his team will aim to create a clinical research platform that will provide a consistent and efficient approach to managing research and clinical care in patients with neurodegenerative conditions. This will lead to better management and evaluation of public health interventions including health promotion and risk reduction, all of which can have an impact on decreasing costs to the healthcare system. Eight institutions (44 team members) in one province are involved.

2015 Azrieli Neuro-developmental Research Program in partnership with Brain Canada Total amount: \$4,862,836

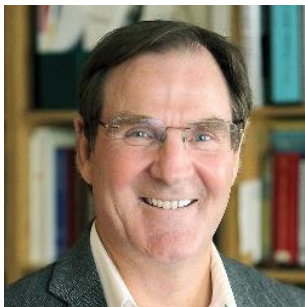
Support excellent systems or translational research in the area of neurodevelopmental disorders, with a special focus on Autism Spectrum Disorder (ASD) and Fragile X Syndrome (FXS). The goal of this initiative is to develop new diagnostics, treatments, and prevention strategies, to reduce the economic and social burden on Canadians, and to improve quality of life for those affected. Thematic areas include: neurodevelopmental disorders, neuroinformatics, neuroimaging, and early detection.



Lonnie Zwaigenbaum
University of Alberta,
Alberta

Novel Approaches to Early Detection and Treatment of ASD (Team Grant) **Amount: \$2,086,742**

Dr. Zwaigenbaum and his team are studying how infants at risk of autism (ASD) direct their attention and regulate their emotions, and how this relates to their ability to communicate and interact with others. Based on their findings, the team plans on training health professionals to better identify the earliest signs of ASD, and work with community partners to implement new interventions to help these children reach their potential. Six institutions (eight team members) across three provinces and institutions in the United Kingdom and Israel are involved.



Alan Evans
Montreal Neurological
Institute, McGill
University, Quebec

A National Coordinating Neuroinformatics Framework for Autism and Related Conditions (PSG) **Amount: \$1,552,398**

Dr. Evans and his team aim to build a national neuroinformatics network for integration of clinical and basic research on autism and related neurodevelopment disorders. The network will unite a community of internationally-regarded autism researchers in Canada through an existing national IT infrastructure and will promote the sharing of data, ideas, expertise and trainees across that community. Nine institutions (10 team members) across three provinces are involved.



Jason Lerch
The Hospital for Sick
Children, Ontario

Mouse Brain Imaging for Neurodevelopmental Disorders (PSG) **Amount: \$1,223,696**

The Mouse Imaging Centre combines state-of-the-art digital imaging technologies for the characterization of mouse models of human disease and phenotype discovery. For this platform grant, Dr. Lerch and his team will enhance the capabilities of the Mouse Imaging Centre for a pan-Canadian high-throughput neuroimaging platform and to develop web-based infrastructure to allow for data analysis and user training. This platform will provide novel resources to Canadian researchers engaged in mouse model work in neurodevelopmental disorders and link them into a large international network of collaboration. Eight institutions (10 team members) across three provinces are involved.
