

The Discovery Fund – Seed Funding Projects 2018/19

One of the Discovery Fund's first priorities was the Seed Funding competition, which will support investigators during the critical initial research start-up period until external peer-reviewed funding is secured. The goal is to fund high-risk, high-reward research that aligns with the strategic priorities of mental health research, which include:

- revolutionizing the understanding of the brain and the causes, biomarkers and treatments of mental illness
- transforming CAMH so every patient, clinician and stakeholder becomes a partner in research
- using evidence to drive system and social change to optimize care

Read more about these exciting projects below.

Dr. Alex Abramovich

Investigating Mental Health Care Utilization Trajectories & Mental Health Outcomes Among Transgender Individuals in Ontario

Transgender individuals face higher rates of mental health issues than the general population, including suicide, depression, and substance use—yet trans health continues to be understudied.

In the first study of its kind, Dr. Alex Abramovich, an Independent Scientist with the Institute for Mental Health Policy Research, is collecting health care data from up to eight clinics across Ontario in hopes of better understanding how transgender people are accessing mental health care. It's hoped the study will lead to a greater understanding of how best to intervene to improve mental health outcomes in this population, which still faces significant stigma, discrimination and structural violence.

“Trans people know what it feels like to be erased and made invisible by the health care system. This study aims to identify, recognize and value trans lives,



and create new knowledge that will lead to safe and competent health care for the trans population,” says Dr. Abramovich.

This will be the first study to use high-quality data from primary care and psychiatric settings to identify a large number of trans individuals throughout the lifespan, and also represents the first time trans people are identified in the Institute for Clinical Evaluative Sciences data repository.

The findings are expected to transform the understanding and treatment of mental illness in the trans population; create a greater understanding of the underlying mental health disparities; and lead to policies that improve the mental health care system and treatment of trans individuals.

Click [here](#) for more information about this study.

Dr. Etienne Sibille

Small Molecules Targeting Reduced Brain Plasticity in Psychiatric Disorders

Dr. Etienne Sibille, Deputy Director and Senior Scientist with the Campbell Family Mental Health Research Institute, is hoping to increase brain plasticity — critical to mental health and often affected in mental illnesses — by targeting the function of specific molecules in the brain.

His strategy is to increase the function of brain-derived neurotrophic factor (BDNF) and its receptor, tropomyosin-related kinase (TrkB), which is expected to lead to new treatments for cognitive and mood symptoms in depression, schizophrenia, Alzheimer’s disease and other disorders.

“Increasing brain plasticity is a holy grail in brain disorders, which has not been found yet,” said Dr. Sibille.

Through computational modeling, Dr. Sibille and his team have discovered binding pockets for small molecules on the outside of the BDNF/TrkB complex, and identified close to 200 molecules that may bind to these pockets.



These new molecules are expected to significantly advance mental health research in two important ways. First, they will represent first-in-kind tools to test the neuroplasticity hypothesis of mental illnesses. Second, Dr. Sibille intends to process a small series of these compounds through the pre-clinical studies necessary for the submission of an Innovative New Drug application to the FDA as the necessary next step to bring them to the clinic.

Click [here](#) for more information about this research.

Dr. Fang Liu

Nanoparticle delivery of a therapeutic peptide for PTSD

Post-traumatic stress disorder (PTSD) can develop after exposure to severe psychological trauma, and affects nine per cent of all Canadians. Patients are left with disabling anxiety, nightmares and flashbacks.

Current treatment includes cognitive behavioural therapy combined with serotonin reuptake inhibitor antidepressants, but overall functioning and outcomes are poor.

“Better prevention and treatments are desperately needed, but we simply don’t know enough about molecular mechanisms underlying PTSD,” says Dr. Fang Liu, Senior Scientist and Head, Molecular Neuroscience, Campbell Family Mental Health Research Institute. “We hope to change that through this work.”

Dr. Liu’s team has identified an interaction that is increased in patients with PTSD, but not in people exposed to trauma who did not develop PTSD, nor in other healthy people. The team has created a peptide that can disrupt this interaction to prevent and reverse fear memory-related behaviour in pre-clinical models of PTSD. Dr. Liu is now setting out to develop a nanoparticle delivery package, a proven strategy for getting drugs and peptides into the brain.



If successful, this will be the first PTSD treatment targeting a core element of the pathophysiology of PTSD and could be given to patients after trauma exposure, like an antidote, to prevent PTSD from even developing.

Click [here](#) for more information about this research.

Dr. George Foussias

Immersive Virtual Reality Based Assessment and Treatment of Cognitive Deficits in Schizophrenia

Schizophrenia affects a great number of Canadians and is associated with enduring disability. Difficulties with attention, memory and executive function are critical predictors of this disability, yet there are no treatments.

Computerized cognitive training is a promising approach, but has typically relied on drill-and-practice using abstract cognitive tasks and with limited real-world benefits for patients.

Dr. George Foussias, a Clinician Scientist with the Campbell Family Mental Health Research Institute, is testing immersive virtual reality in hopes of ultimately improving cognition and community functioning in people with schizophrenia.

In this study, Dr. Foussias will test bWell, a new immersive virtual reality-based cognitive training platform developed by the National Research Council of Canada, to evaluate its usefulness in rapidly assessing and treating cognitive deficits in people with schizophrenia. It's hoped this platform will be engaging, have limited side-effects and lead to better cognition and community functioning.

Click [here](#) for more information about this research.



Dr. Lena Quilty

Online Cognitive Behavioural Therapy for Addiction: Efficacy and Cost-Effectiveness In a Pragmatic Clinical Trial

Heavy alcohol and drug use is reported by a large number of Canadians and accounts for billions of dollars to Canadian society each year. Yet, few are able to access the specialized services they need to recover. Evidence-based psychological treatment, such as cognitive behavioural therapy (CBT), is simply not available widely enough to meet demand.

Through this project, Dr. Lena Quilty, a Scientist with the Campbell Family Mental Health Research Institute, will test the cost-effectiveness and efficacy of computer-based interventions in delivering the content of CBT. It's hoped this method will do so with high fidelity, leading to greater therapeutic benefits and lower health-care costs than treatment -as-usual.

“This study is a crucial step in actually bringing computer-based CBT to the patients who urgently need treatments for substance use disorder,” says Dr. Quilty. “Our study will help determine the feasibility and value of implementing such a program province-wide.”

Computer-based CBT has already been examined as an adjunctive treatment in this population in the U.S., but there has been limited study into its impacts and costs as a stand-alone treatment. This study will compare computer-based CBT to treatment-as-usual in outpatients seeking treatment for substance use disorder.

Click [here](#) for more information about this study.

Dr. Leon French

Neuroanatomical Focus, Drug Enrichment and Discovery from Depression Genome Wide Association Results



In Canada, almost one in 20 people over 15 years old reported symptoms of major depressive disorder in the preceding year, and the World Health Organization says depression is the largest contributor to years lived with disability.

Dr. Leon French, an Independent Scientist with the Campbell Family Mental Health Research Institute, hopes to pinpoint where depression processes occur in the brain so that treatments that better target the illness can be developed.

“Depression can have a tremendous impact on people’s lives,” Dr. French said. “We need to better understand the brain if we’re going to find new and improved treatments.”

The Psychiatric Genomics Consortium recently published the largest genetic study of major depressive disorder, which involved over 450,000 participants and revealed 44 locations in the genome that increase risk for major depressive disorder.

Dr. French will use transcriptomic studies that measured expression of many genes to study the potential major depressive disorder genes near these 44 markers across disease, brain anatomy and responses to drugs.

In this way, Dr. French hopes to determine whether these genes have different expression levels in the brains of those with major depressive disorder; are specifically expressed in certain brain areas; and can be used to find new treatments.

Click [here](#) for more information about this research..

Dr. Marco Battaglia

A Study of Amiloride Intranasal Spray for Panic Attack



Dr. Marco Battaglia, Associate Chief, Division of CAMH's Child and Youth Psychiatry, is set to test whether Amiloride nasal spray can block panic attacks in people with panic disorder, a condition striking six per cent of the population with recurrent panic attacks that include severe shortness of breath, choking sensations and fear.

The study will test Amiloride in patients being treated with antidepressants (the treatment of choice for the disorder), but who are still experiencing panic attacks. Antidepressants have been shown to be an efficient first-line treatment for panic attacks, but do not eliminate all panic attacks in all patients.

“Panic attacks can impact severely on our lives,” says Dr. Battaglia. “As of today, doctors can rely on a limited array of medications, sometimes with mixed results. Through this study, we hope to expand treatment options and improve people’s quality of life.”

The study targets the prodromal — or very early — phases that precede a full-blown panic attack. These early phases are characterised by respiratory instability and rising anxiety, and the new treatment could be a game changer, as suggested by Dr Battaglia’s research on preclinical models of panic.

This study is aimed at demonstrating Amiloride’s efficacy as a safe, effective, portable and non-addictive treatment to prevent attacks. Antidepressants are slow to produce change while benzodiazepines are associated with tolerance and addiction challenges.

Click [here](#) for more information about this research.