Symposium Wednesday, November 20, 2019

Polygenic Scores, Genetics & Brain Imaging

Wednesday, 20 Nov. 2019 from 8:30 am – 17:30 pm

Location: Jeanne Timmins Amphitheatre @ The Neuro, 3801 University St, Montréal, QC, H3A 2B4

FREE – Register is mandatory: Eventbrite or http://ludmercentre.ca/events. Open to faculty, students and staff of academic institutes in the greater Montreal area, and professionals in related fields of business.

Poster Session: To register your poster see details at http://ludmercentre.ca/events.

Genome-wide association studies (GWAS) have uncovered multiple genetic variants implicated in normal brain function (e.g. educational attainment), neurological illness (e.g. Parkinson’s Disease), and mental illness (e.g. schizophrenia), enabling the development of polygenic risk scores (PRS). Large data-sharing initiatives and novel methodologies for brain imaging analysis are also advancing understanding of brain disorders. This symposium brings together experts in genetics, GWAS, PRS, brain function and neuroimaging.

Organiser: Dr Alain Dagher and the Ludmer Centre

Confirmed Speakers, Program

Each speakers will present for 30 minutes followed by 15-minute Q&A.

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<th>Time</th>
<th>Activity</th>
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<tr>
<td>8:30-9:00</td>
<td>Registration &amp; Coffee (Poster session set-up)</td>
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<td>9:00-9:05</td>
<td>Guy Rouleau, OQ, MD, PhD, FRCPC, FRSC. Director, Montreal Neurological Institute-Hospital (The Neuro), Montreal, Canada</td>
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<td>Welcome Remarks</td>
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<td>9:05-9:20</td>
<td>Alain Dagher, MD: Professor, Neurology and Neurosurgery at McGill University and Neurologist at The Neuro, Montreal, Canada</td>
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<td>Talk: Introduction: Polygenic Scores &amp; Brain Imaging</td>
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Dr Dagher is a neurologist specializing in movement disorders and functional brain imaging. His research aims to understand the function of the basal ganglia, with a particular emphasis on appetitive behaviours. He employs various neuroimaging techniques to examine pathological states related to a disruption in dopamine function, from motor disease (Parkinson’s) to addictive disorders (gambling, smoking, obesity).

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### Symposium: Polygenic Scores, Genetics & Brain Imaging

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<tr>
<th>Time</th>
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<tr>
<td>9:20-10:05</td>
<td>Daniel Benjamin, PhD.</td>
<td>Gene discovery and polygenic prediction from a genome-wide association study of educational attainment in 1.1 million individuals</td>
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<td>10:05-10:50</td>
<td>Alicia Martin, PhD</td>
<td>Polygenic risk scores in diverse populations</td>
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<td>11:00-11:50</td>
<td>Philipp Koellinger, PhD</td>
<td>Genetic insights into risky behaviors and their links with health</td>
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<td>11:50-12:35</td>
<td>Gideon Nave, PhD</td>
<td>Neuroanatomic Differences Partly Mediate Genetic Associations with Risk Tolerance</td>
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<td>12:35-13:15</td>
<td>Patricia Pelufo Silveira, MD, MSc, PhD</td>
<td>Biologically informed polygenic scores - exploring the effects of gene networks</td>
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**Coffee Break & Poster Session**

**Lunch in Foyer & Poster Session**

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Symposium: Polygenic Scores, Genetics & Brain Imaging

the co-morbidity between metabolic and psychiatric diseases in the context of an early-life-adversity focuses on gene networks—rather than single SNPs or genes—as the unit of interest.

14:00-14:45 Hugh Garavan, PhD, Associate Professor, Department of Psychology/Psychiatry, University of Vermont, USA
Title: Gene-brain associations and substance use in the Open Science Era.
Dr Garavan's research applies functional brain imaging to understanding human cognition. He has a specific interest in the cognitive control functions performed by the prefrontal cortex, and how their dysfunction might be relevant for clinical conditions, such as addiction. His research utilised large brain/gene datasets including the EU IMAGEN and Adolescent Brain Cognitive Development (ABCD) studies.

14:45-15:00 Coffee Break

15:00-15:45 Uku Vainik, PhD, Research Fellow, Department of Experimental Psychology, Institute of Psychology, University of Tartu, Estonia
Title: Obesity causes personality - evidence from polygenic scores and twins
Dr Vainik researches focuses on genetics, brain imaging and heritability in pursuit of precise measurements of impulsivity and self-control. His current research centers on how obesity intertwines with behaviour. While many eating-related behaviours explaining obesity, such as food addiction, disinhibition and emotional eating, are based on both statistics and definitions, his research suggest that these behaviours can be aggregated into a single broad trait—Uncontrolled Eating, which he found summarises important behavioural aspects of obesity.

15:45-16:45 Student Presentations

16:45-17:30 David Glahn, PhD, Associate Chief for Research, Depart of Psychiatry; Director, Tommy Fuss Center for Neuropsychiatric Disease Research; Director, Early Psychosis Investigation Center; Director, Neuropsychiatric Genetics Program; Endowed chair in Behavioral Science Research, Boston Children’s Hospital; and Professor, Psychology, Department of Psychiatry, Harvard Medical School
Title: The good the bad and the ugly of polygenic scores for risk prediction
Dr Glahn’s research aims to discover genes and environmental mechanisms that predispose affective and psychotic disorders in children and adults. He develops and applies neuroanatomic, functional neuroimaging, and neurocognitive endophenotypes in large-scale family-based studies. PRS methods underpin his research.

17:30-17:35 Closing remarks - Alain Dagher, MD, PhD

17:35-18:00 Reception & Poster Session, foyer

POSTER SESSION, Wednesday, Nov. 20, 2019: [Click here] to register to present your scientific poster. Please plan to attend the symposium.

HACKATHON, Thursday, Nov. 21, 2019: [Click here] to register for the Hackathon Open Science in Action: Approaches to Genetics, Brain Imaging & Polygenic Risk Score

Contact: Joanne Clark, Administrative Director, Ludmer Centre @ McGill University
E joanne.clark@mcgill.ca | Cell +1 514 265 3408

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