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THE HOSPITAL FOR SICK CHILDREN

Clinical Research Fellowship in Neurodevelopmental Child & Youth Psychiatry and Genetics

The Hospital for Sick Children is offering a unique training fellowship opportunity in Neurodevelopmental Child and Youth Psychiatry under the supervision of Dr. Jacob Vorstman and Dr. Louise Gallagher.

Neurodevelopmental Psychiatry is a growing area of interest in psychiatry with a focus on understanding the mental health and behavioural needs of individuals with Neurodevelopmental Disorders (NDDs). NDDs affect brain development and include, for example, conditions such as learning or intellectual disabilities, ADHD, and autism spectrum disorders (ASD). NDDs may range from mild to severe and are associated with higher risks for mental health disorders. Genomics has revolutionised our understanding of these conditions and increasingly we recognise rare genomic disorders that contribute to the development of NDDs in a proportion of cases and are increasingly recognized in the context of routine care.
It can be challenging to identify and diagnose mental health co-occurring conditions in the context of NDDs and the management of mental health and behaviour may be more complex compared to in the typically developing population. In addition, the uptake of genetic testing in pediatric practice, increasingly identifies individuals at risk for NDDs very early in life, prior to the emergence of neurodevelopmental or behavioural concerns. The recognition of genetically mediated NDD risk very early in life poses novel challenges to the clinic.

Research in NDDs encompasses the exciting and vibrant areas of genomics, clinical neuroscience and psychiatry. The study of genomics is complex and requires greater understanding of the combination of genetic and environmental factors that may contribute to the development and course of many of these conditions. Additionally, novel pharmacological therapies are emerging, particularly in the context of rare genomic disorders but we are challenged for whom and when is the optimal time to implement interventions. Clinical neuroscience approaches have been helping to identify brain-based biomarkers that can progress our understanding of more precise approaches to therapeutics in NDDs. The ability to identify genetically mediated risk very early in life, combined with a growing insight into the underlying biology, derived from the involvement of specific genes in NDDs, opens exciting new opportunities to develop precision medicine strategies.

This clinical research fellowship offers a child and adolescent or adult psychiatrist, or pediatrician with an interest in neurodisability, the opportunity to gain greater clinical expertise in the assessment and diagnosis of NDDs, co-occurring mental health and behavioral disorders and their intersection with genetic vulnerability. The clinical experience will go hand in hand with the opportunity to conduct research in the exciting fields of genomics and clinical neuroscience.
Fellows will join two leading research groups and their clinical multidisciplinary teams; DAGSY and BeACon. They will be working together with a psychologist Dr. Jane Summers and child psychiatrists & clinician scientists Dr. Vorstman, and Dr. Gallagher to integrate psychiatric findings with results of a comprehensive psychological and academic assessment and interpret these findings against what is known about the specific genetic disorder of the child. Additionally, fellows will participate in the ongoing research programs associated with the DAGSY clinic and have an opportunity to develop research interests.

The opportunity: We are seeking applications from physicians with at least 3 years specialty training in child and adolescent psychiatry or other recognised subspecialities outside Canada (e.g. psychiatry of intellectual disability, paediatrics and a strong interest in neurodisability, etc) to join our research teams for a two-year fellowship program. **Applicants should have a strong interest in research and intending to pursue a career as a clinician scientist.**

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The fellowship offers an exciting opportunity to work in an inter-disciplinary clinical and research environments at the Hospital for Sick Children and at the within the Sick Kids Research Institute. The fellowship will provide training in:

- Assessing children and youth with various degrees of intellectual disability and other neurodevelopmental conditions (autism, language disorder etc), in the context of rare genetic disorders
- Diagnostic assessment of children *at risk* for neurodevelopmental and psychiatric conditions
- Structured clinical interviewing and observational assessment, e.g. KSADS, ADI, DAWBA, ADOS
- Clinical research methods (eye-tracking and EEG data acquisition)

Current ongoing funded projects include:

- The study of very young children (12 – 24 months) identified as carriers of high-risk genetic variants associated with autism and/or other neurodevelopmental outcomes.
- The study of children and youth (6 – 18 years) diagnosed with deletions or duplications at 16p11.2 or 22q11.2, *NRXN1* deletions
- The study of individuals with syndromal obesity and relationships between hyperphagia, mental health and behaviour
- The study of resilience in the context of genomic risk for NDDs, including children with very rare genetic conditions

Various funding opportunities are available to support this salaried position. Interested candidates are encouraged to send their application (cover letter, CV including 2 recent references) **before March 25th 2023** to:

Jacob Vorstman, MD, PhD, Associate Professor Psychiatry, Department of Psychiatry, University of Toronto, Director of the Autism Research Unit at the Hospital for Sick Children (jacob.vorstman@sickkids.ca)

and

Louise Gallagher MB BCh, PhD, Professor Psychiatry, Department of Psychiatry, University of Toronto, Chief of the Child and Youth Mental Health Collaborative (louise.gallagher@sickkids.ca)

DAGSY: Developmental Assessment of Genetically Susceptible Youth. PI: Dr. Jacob Vorstman. At DAGSY we provide full clinical outpatient service focused on diagnosis and recommendations for children between 1 and 18 years with a genetic diagnosis. Children seen at DAGSY have genetic variants known to be associated with an increased risk for neurodevelopmental and/or psychiatric disorders. We work as a multidisciplinary team (psychiatrist, psychologist, psychometrist, genetic counsellor), integrating comprehensive cognitive and developmental assessment with the psychiatric evaluation of behavioural concerns.

DAGSY research team: Jacob Vorstman (PI), Ny Hoang (Research lead), Jane Summers (Clinic lead), Laura Goldhopf, Sarah McGaughey, Elaine Chang, Thanuja Selvanayagam, Katrina Palad, Nishi Patel, Patricia Ambrozewicz, Ariel Ho. Current Fellow: Polina Perlman. Previous Fellow: Danielle Baribeau.

BeACoN Group: Biomarkers to Advance Care for Neurodevelopmental disorders. PI: Dr. Louise Gallagher.
The mission of the BeACoN Group is to develop and validate stratification and treatment biomarkers of mental health and behavior for autism and related NDDs to personalise treatments and measure outcomes. This is studied in the context of factors that promote resilience as well as risk and include sex and gender as important factors influencing outcome. We also aim to ensure our research is accessible and relevant through strong participant involvement and co-creation and engages the NDD community.

Research Program: The BeACoN research group uses multimodal approaches incorporating genomics and deep phenotyping. We investigate associations between genomics and cognitive, behavioral and mental health outcomes in large population-based data sets and rare syndrome cohorts. We use genotype-first deep phenotyping strategies in individuals with neurodevelopmental disorders involving brain-based (MRI and EEG), neurocognitive and behavior characterisation to identify endophenotypes to aid stratification and to ultimately inform clinical biomarker development.