New international consortium aims to elucidate Rare Genomic Disorders Involved in psychiatric Conditions

Rare genomic disorders affect less than 1/2000 people in the general population, but collectively, they are a major cause of developmental and psychiatric conditions, such as autism spectrum disorder, schizophrenia, attention deficit hyperactivity disorder, and intellectual disability. Recent advances in genomic technologies and data sharing have revolutionized the identification and diagnosis of these rare variants. However, more detailed studies are needed to fully characterize their clinical presentation and determine the risk for particular developmental and psychiatric conditions in individuals with a rare genomic variant. Rare genomic disorders have large impacts, which allow researchers to interrogate the link between molecular function and psychiatric symptoms.

The "Genome to Mental Health" (GMH) consortium is a new initiative funded ($6 Million) under the RFA 'Rare Genetic Disorders as a Window into the Genetic Architecture of Mental Disorders' by the National Institute of Mental Health (NIMH) and the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD). It includes researchers from 14 institutions and seven countries from North America, Europe, and Africa.

The GMH consortium is structured around four projects that will study the behavioral and cognitive symptoms in individuals with rare genetic variants that confer high risk for neurodevelopmental psychiatric disorders. Participants will be identified in hospital clinics as well as in the general population across three continents.

The consortium aims to fill a critical knowledge gap. Most rare variants have been studied in isolation. As a result, essential information is sprinkled across many small studies that are difficult to compare. To accelerate discovery, the GMH consortium will collate and harmonize genetic data with quantitative measures of cognition and behavior across multiple genomic variants associated with increased risk of developmental and psychiatric outcomes. This coordinated effort across patients, families, researchers, clinicians and institutions, including rapid sharing of data, is required to translate discoveries into therapeutic potential.

Ultimately, studies conducted by the GMH consortium will pave the way for subsequent studies focused on improving early detection, initiation of services, prognosis, and support for patients. In the future, the clinical and genetic findings from this consortium may also contribute to therapeutic targets and outcome measures of clinical trials in patients with rare variants and psychiatric symptoms.

The sites participating in this consortium include the University of Pennsylvania, Children's Hospital of Philadelphia, University of California Los Angeles, The Hospital for Sick Children (SickKids), the University of Toronto, Sainte Justine Pediatric Hospital Montreal, University of California San Diego, Geisinger, Washington University - St. Louis, University of Washington, Boston Children's Hospital, Harvard Medical School, Maastricht University, University of

Leuven, Cardiff University, University of Cape Town, Red Cross War Memorial Children's Hospital, Cape Town.