



Centre de Neurosciences Psychiatriques

CNP SEMINAR

ANNOUNCEMENT

Thursday February 22nd 2024, 11:00 to 12:00 am

Neurodevelopmental Disorders (NDD), epigenetics and miRNA: Mechanisms and future innovation

By : **Adrian HARWOOD**

Professor, Neuroscience and Mental Health Innovation Institute - Cardiff University (UK) & Mental Health and Neuroscience - Maastricht University (NL)

Summary :

The inheritance of risk for neurodevelopmental disorders (NDD), such as intellectual disability (ID), ADHD, ASD and schizophrenia is well established and offers a route to identify the biological causes of these psychiatric conditions. Cell biology studies based on patient iPSC and/or CRISPR engineering of human iPSC offer a major opportunity to look at the effects of genetic risk on neurodevelopment and subsequent human neuronal function. As risk in the general patient population is highly polygenic, with accumulated risk spread over 100s of genes, all individually conferring only small effects, the challenge is to convert human psychiatric genetics into gene function. Patients carrying chromosomal structural variants (SVs), have a much higher penetrance at a single gene locus and hence a strong correlation between psychiatric risk and the identifiable mutation. These easily translate to human iPSC studies, and present powerful cases in which to study the cell biology of psychiatric disorders.

Prof. Harwood will describe how study of Kleefstra Syndrome, has identified how risk for ID and schizophrenia is linked to dysfunction of both the regulation of repressive histone modification and miRNA. He will expand on what this means for control of neurodevelopment, and risk for mental health.

Invited by : ines.khadimallah@chuv.ch

Short Bio :

Adrian J Harwood is a Professor and co-Director of the Neuroscience and Mental Health Research Institute (NMHRI) at Cardiff University, UK, and newly appointed Professor of Integrative Neuropsychiatric Cell Biology at Maastricht University. He was Chair the European COST Action MINDDS (Maximizing Impact of Research in Neurodevelopmental disorders: <https://mindds.eu>), a collaborative network to enhance all aspects of research of NDD patients possessing a pathogenic CNV. Adrian has an extensive track record in cell biological research, and for the last 20 years focused on mental health, and is championing the use of iPSC -derived cell systems for NDD patient phenotyping. In 2020, he co-founded the mental health precision medicine spin-out company, MeOmics.

Publications:

- 1) Alsaqati, M. et al. 2022. NRSF/REST lies at the intersection between epigenetic regulation, miRNA-mediated gene control and neurodevelopmental pathways associated with Intellectual disability (ID) and Schizophrenia. *Translational Psychiatry* 12, article number: 438. (10.1038/s41398-022-02199-z)
- 2) Chapman, G. et al. 2022. Using induced pluripotent stem cells to investigate human neuronal phenotypes in 1q21.1 deletion and duplication syndrome. *Molecular Psychiatry* 27, pp. 819-830. (10.1038/s41380-021-01182-2)
- 3) Sanders, B. et al. 2022. Transcriptional programs regulating neuronal differentiation are disrupted in DLG2 knockout human embryonic stem cells and enriched for schizophrenia and related disorders risk variants. *Nature Communications* 13(1), article number: 27. (10.1038/s41467-021-27601-0)

Salle de séminaire 1er étage - CNP