



UNIVERSITY  
OF WARSAW

CeNT CENTRE  
OF NEW  
TECHNOLOGIES

invites to a seminar by

**Tomasz J. Nowakowski,**

**University of California, San Francisco**

***“Area-Specific Excitatory Neuron Development in the  
Human Cerebral Cortex”***

**September 28<sup>th</sup>, 2018 at 12 p.m.**

Venue: Centre of New Technologies, Banacha 2C,  
Lecture Hall 1130 (First floor)

Host: Łukasz M. Szewczyk

The cerebral cortex is the most highly evolved structure in humans and is thought to give rise to our unique cognitive capabilities including perception, language, and decision-making. Over a century ago, Santiago Ramon y Cajal appreciated the astonishing diversity of cell types in the brain, but even today it is unclear how the different neuronal cell types are assembled and distributed across the distinct anatomical areas of the cortex to support its diverse functions. In particular, the idea of a canonical cortical microcircuit that is repeated across different brain regions has served as a guiding principle in developmental and systems neuroscience. However, recent studies suggest that the constituent cell types of the cortex, particularly for excitatory neurons that comprise the major output of the circuit, vary widely across cortical areas and are specified at early stages of development.

In my talk I will discuss our work utilizing single cell genomics to study the developmental blueprint of human cortical arealization. Our findings suggest important revisions to the current models of cortical development and support a model of serial homology, where topographic hierarchy of neurodevelopmental programs orchestrates differences in excitatory neurons across individual cortical areas, and may contribute to inter-areal differences in microcircuit connectivity patterns to support higher-order information processing.