

ASHBi SEMINAR

Neurodiversity in a dish: scaling up organoid modelling of human neurodevelopment to dissect gene environment interactions

Lecturer: **Nicolò Caporale**, Ph.D.
Postdoctoral Associate, Human Technopole, Italy



Date **Friday, 4 April 2025**

Time **17:00 – 18:00 [JST]**

Venue **Conference Room Onsite Only***
B1F, Faculty of Medicine Bldg. B



Abstract

Human brain development is susceptible to both genetic alterations and environmental insults contributing to neurodevelopmental disorders (NDDs).

As opposed to previous studies focusing on single compounds, we unraveled the neurodevelopmental impact of a mixture of endocrine disruptors (EDCs), pervasive compounds that alter hormonal signalling. We integrated epidemiological data with in vitro cortical brain organoid (CBO) modelling and discovered convergent mechanisms between genetic and environmental factors in the pathogenesis of NDDs.

To understand inter-individual diversity in response to environmental factors, we developed and validated multiplexing methods for CBO modelling, scaling up the number of individuals profiled and linking neurodevelopmental trajectories to genetic variation.

Recently, we carried out multi-omics profiling of CBOs upon exposure to hormones and EDCs, towards a multi-modal atlas of hormonal signaling in human neurodevelopment.

Our work is making the genetic and environmental basis of human neurodiversity experimentally tractable, leveraging organoids and scaling them up to tackle its complexity.

Organizer : Graduate School of Medicine

Institute for the Advanced Study of Human Biology (WPI-ASHBi), Kyoto University

Contact: Prof. Mitinori Saitou

[E-mail] ashbi-event@mail2.adm.kyoto-u.ac.jp

