



Graduate School Event

Thesis Defense: Mapping developmental dynamics of autism spectrum disorder mouse models at single-cell resolution

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Host: Tim Vogels

In recent years, numerous studies have revealed a diverse array of genes associated with autism spectrum disorder (ASD), raising critical questions about how mutations across various genes result in similar clinical presentations. Here, we employed single-nucleus multi-omics sequencing to analyze and compare 251 samples obtained from eleven distinct monogenic mouse models of ASD across developmental stages, sexes, and two brain regions. We discovered that ASD mutations commonly affect the progression of radial glial cells, resulting in a delay rather than a permanent alteration in neural lineage specification. The most significant gene expression changes occurred at early postnatal stages, primarily impacting neurons. These changes included a downregulation of synaptic and ion channel-related genes, suggesting potential homeostatic adaptations. Despite these similarities, our analysis showed that each mutant is found in a distinct state with unique and shared molecular changes. Importantly, our study highlighted sex-specific gene expression alterations, with females often showing larger effect sizes than males. Altogether, our findings provide a comprehensive view of the cellular and molecular dynamics in different ASD models, revealing both common and unique features across different genetic contexts.

Friday, April 4, 2025 01:00pm - 02:00pm

Sunstone Bldg / Ground floor / Big Seminar Room B (I23.EG.102) and Zoom



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: <https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.

