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Maintaining Neuronal Homeostasis: The Role of Autophagy in Health and Disease

Neuronal homeostasis is fundamental to brain function, integrating mechanisms that regulate neuronal differentiation, synaptic connectivity, neurotransmission, and survival throughout life. Our research investigated the molecular mechanisms underlying neuronal and synaptic homeostasis during cortical development and aging, with a particular focus on autophagy and its contribution to neurodevelopmental disorders (NDDs), including Rett syndrome (RTT). We demonstrated that the precise developmental regulation of autophagic pathways is essential for proper cortical maturation, while its disruption contributes to RTT pathology. Furthermore, restoring autophagy-lysosomal function ameliorated neurological phenotypes in a Rett syndrome model. By combining transcriptomic, proteomic, and molecular approaches, we uncovered dynamic shifts in autophagy-related pathways during corticogenesis and identified key synaptic components involved in circuit maturation. Collectively, our findings offer new insights into the cellular mechanisms governing brain homeostasis and their implication in NDDs.



Thursday
October 15, 2026



U1 building
room 10



4.30 pm
to 5.30 pm

Host:
Silvia Barabino



The certificates of attendance for the seminar are also valid for the acquisition of CFU credits
For information, please visit the seminar's webpage

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