External seminars - Stefanie Schirmeier

Laboratoire de l'invité/Laboratory of the speaker
TU Dresden, Germany

Invité par/Invited by
Pavel Melentev

Date
March 17th, Salle Condorcet, 11 am

Titre de la présentation/Title of the presentation
Metabolic flexibility of the Drosophila nervous system

Résumé/Short abstract
Neuronal function consumes large amounts of energy. This energy needs to be provided in order to maintain homeostasis. To deal with this disproportionate demand, glial cells support neurons metabolically. Like their mammalian counterparts, Drosophila glial cells are very glycolytically active and provide lactate to the neurons under optimal conditions. Upon suboptimal conditions, several aspects of brain metabolism can be adapted. On the one hand, nutrient uptake into the nervous system is regulated to ensure nervous system function. On the other hand, glial cellular metabolism can adapt to changing conditions. E.g. when carbohydrate supply is not sufficient to meet the metabolic needs of the neurons, the glial cells switch to ß-oxidation of fatty acids and produce ketone bodies as an alternate fuel that they supply to neurons. It turns out that glial metabolism can be adapted to different conditions, like starvation or cold exposure, in different ways to ensure neuronal function.

Mini-CV/Short CV


Stefanie Schirmeier graduated from the University of Bayreuth (Germany) and joined Dominique Ferrandon's team at the University of Strasbourg (France), where she studied host-pathogen interactions using *Drosophila melanogaster* as a model. She contributed to a genome-wide genetic screen and discovered the compensatory proliferation of intestinal stem cells in response to gut infection, as well as identifying a bacterial virulence factor required to counteract the cellular immune response.

She then moved to the University of Münster (Germany) for a postdoctoral position, joining Christian Klämbt's team and later establishing her own research group there. Stefanie focused on investigating the physiology and metabolism of glial cells and uncovered their role in neuronal nutritional support via the astrocyte-neuron lactate shuttle.

Since 2021, Stefanie has been a professor at Dresden Technical University, where she leads the Department of Zoology and Animal Physiology. Her research team investigates nutrient homeostasis in the Drosophila nervous system and the metabolic communication involved in neuron-glia cooperation.