

# PhD position in the field of neural stem cell metabolism

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Metabolism has emerged as a key player in the regulation of stem cells. Our laboratory's main focus lays on neural stem cells, which generate neurons and astrocytes during brain development and persist throughout adulthood. We are studying the intrinsic and extrinsic metabolic regulation of neurogenesis, with a specific interest in lipid metabolism. We have recently shown that lipid droplets (LDs), the lipid storing organelles, play a crucial role for adult neural stem cells (Ramosaj Madsen et al. Nat. Commun. 2021). We have generated an exciting novel endogenous LD reporter mouse line (Madsen et al., in preparation), which allows the staining free visualization of LDs in living and fixed tissues and cells. Our findings that LDs differ substantially in neural stem cell states and upon differentiation (Ramosaj Madsen et al. Nat. Commun. 2021) suggests that LDs might be linked to fate or cellular state. By analyzing LD coat proteins in proliferating neural stem cells, we have identified interesting candidates involved in cell cycle regulation (Ramosaj et al., in preparation). We are using innovative techniques such as virus-mediated gene expression in vitro and in vivo, time-lapse imaging, single cell RNA sequencing, as well as proteomic, metabolomic and lipidomic approaches. To tackle our questions, we use various mouse models and mouse primary cell cultures as well as human iPSC-derived neural stem cells and brain organoids.

## **Job information**

Starting date: 01.06.2022

Contract length: 1 year, renewable 3x, maximum 4 years Occupation: 100 %

Working place: Lausanne, quartier UNIL-Bugnon

## **Your responsibilities**

This PhD project will focus on the role of LDs for cellular identity. We will study LDs in different neural stem cell-derived cell types using proteomic and lipidomic approaches. We will elucidate their role in cellular identity by direct reprogramming of mouse astrocytes into neurons, using our novel LD reporter mouse.

## **Your qualifications**

Master degree in life science or equivalent;

Strong interest in cell and developmental biology, neurobiology and metabolism;

Fluency in English (oral and written);

Previous research experience in molecular and cell biology (desirable);

Experience in cell culture and live-imaging (desirable);

**Highly motivated candidates should send their application and include a letter of motivation, CV and 2 reference letters. Deadline : 30.04.2022**

**To apply, click here: [PhD Position](#)**