

Internship Proposal Academic Year 2019-2020

1. Host teams :

Research Unit (e.g. Department or Institute) : **Integrative Neuroscience and Cognition Center, INCC;**
Saints-Pères Paris Institute for the Neurosciences, SPPIN; CNRS UMR 8002-3 ;

Université Paris Descartes

Research Unit Director : **Florian Waszak / Martin Oheim**

Research Team Director : **Desdemona Fricker-Mathieu Beraneck / Céline Auger-Brandon Stell**

Team name : **Orientation Spatiale / Team 2 – Cerebellar Neurophysiology**

Address : **45 rue des Saints Pères, 75270 Paris Cedex 06, France**

Supervisor of the Research Intern for this project : **Desdemona Fricker / Michael Graupner**

Telephone : **01 42 86 38 33 / 06 63 76 05 87**

E-mail : **desdemona.fricker@parisd... / michael.graupner@parisdescartes.fr**

2. Internship project title:

**Fine scale population imaging of head direction activity
during free spatial exploration**

3. Internship Description :

We are proposing a collaborative M2 intership project starting September 2019 at the INCC and SPPIN labs (CNRS, Université Paris Descartes, 45 rue des Saints-Pères, Paris, France) under the co-supervision of Desdemona Fricker (PhD) and Michael Graupner (PhD). The candidate will be involved in an innovative project dedicated to studying the neuronal and microcircuit basis of the sense of orientation during navigation using calcium imaging in the awake, behaving animal.

The here proposed project will focus on the presubiculum, a cortical area at the center of the brain-wide head direction system. It is a key brain area for the integration of vestibular and visual information and feeds directional information to hippocampal place cells and entorhinal grid cells. But we still know very little about which subpopulations of neurons code for head direction or angular velocity, and how the head direction signal is implemented at the neuronal level in the presubiculum. The aim of the project is to study the activity patterns of pyramidal cell populations in the presubiculum through fiber-coupled 2-photon imaging. The proposed project will provide unique insights in the neural correlates of spatial coding.

Applicants should pursue studies in/or related to neuroscience. The ideal candidate has practical skills for experimental work, some background in neurophysiology, and a deep desire to understand the principles underlying the functioning of the nervous system. Good communication skills are a must.