M2 / PhD project, starting as early as September 2017

Exploring cerebellar molecular layer interneuron network activity and function during locomotion

We are proposing a M2 internship/3 year PhD project starting as early as September 2017 at the Brain Physiology Lab (CNRS UMR 8118, Université Paris Descartes, 45 rue des Saints-Pères, Paris, France) under the supervision of Michael Graupner (PhD) and Brandon Stell (PhD). The candidate will conduct a multifaceted project dedicated to studying the cerebellar interneuron network during locomotion using calcium imaging and electrophysiologic recordings in the awake, behaving animal.

The cerebellum plays a crucial role for the timing and coordination of movements. It is thought that the cerebellar microcircuit processes sensorimotor inputs and makes immediate alterations of ongoing movements. The cellular underpinnings of such a task remain largely unknown. We study the role of the cerebellar molecular layer interneuron (MLI) network in awake mice walking on a treadmill. The project takes advantage of the recent advent in in vivo recording techniques as well as optogenetic approaches and proposes to combine activity measurements in an ensemble of MLIs through calcium-sensitive dyes with whole-cell patch-clamp recordings in the awake behaving animal. Our goal is to understand the functional role of the MLI population during locomotion and adaptation to environmental changes. The results will advance our understanding of the cerebellar microcircuit and its involvement in generating coordinated movements in mammals.

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.

We will accompany the candidate in requesting funding for a PhD at an École Doctorale (Cerveau-Cognition-Comportement or Frontières du Vivant), which means that the project will be presented in a competitive recruitment process.

Applicants should submit a letter detailing her/his motivation and skills with a curriculum vitae including two to three references to Michael Graupner (PhD) michael.graupner@parisdescartes.fr and Brandon Stell (PhD) brandon.stell@parisdescartes.fr .

http://www.biomedicale.parisdescartes.fr/~mgraupe/