ESR 8

THE PROJECT

Decoding chronic pain induced depression circuitry using a smart integrative wireless multimodal platform.

Objectives

1/ To determine the distinct role of gabaergic and glutamatergic neurons of the anterior cingulate cortex,

 2/ To characterize the inputs of the ACC such as the basolateral amygdala or ventral tegmental area,

3/ To study the outputs of the ACC such as the habenula in the comorbidity of chronic pain and mood disorders in both female and male mice.

Methodology

Peripheral nerve injury model will be used as a model of chronic neuropathic pain induced depression in mice. A battery of behavioural tests will be used to evaluate the mechanical hypersensibility, anxiety and depressive-like behaviours. The first implantable, wireless brain machine interface (BMI) combining optical stimulation for optogenetics and electrophysiological recording technology within a single device for multimodal brain probing of freely moving animals will be used.

Expected Results

Characterisation of specific circuitries and network interactions encoding the comorbidity of chronic pain and mood disorders.

Supervisors and host organisations

Main supervisors and recruiting organisation:
Ipek Yalcin

CNRS, Institut des Neurosciences Cellulaires et Intégratives (INCI, UPR3212), University of Strasbourg, Strasbourg, France

Co-supervisor (academic partner):
Yves de Koninck

Cervo, University Laval, Quebec City, Canada

Co-supervisor (non-academic partner):

Jean-Luc Néron, Doric Lenses, Quebec City, Canada

CNRS, France: 18 Mo Inducing neuropathic pain in mice, implanting and using BMI, behavioural tests

ULaval, Canada: 12 Mo Electrophysiological analysis, data mining and optimizing wireless platform

Doric Lenses, Canada: 3 Mo Optimizing the wireless platform in term of size and performance.

Enrolment in Doctoral degrees:

University of Strasbourg / University Laval.

THE POSITION

Duration

36 mo

Salary

3 783,39 €/ per month (gross)

Allowance

Mobility allowance 600/per month (gross), family allowance if applicable 500/per month (gross)

THE CANDIDATE PROFILE

Academic prerequisite

We are looking for a student with a Master degree in Biology or related fields.

Knowledge on specific topics

Candidates should have a strong background in Physiology and Neuroanatomy. A good knowledge of Neurosciences is expected.

Technical skills

Prior experience in neuroscience research or at least in biology is desirable, as well as experience in the experimental manipulation of living animals, in particular rodents. Experience in electrophysiology or optogenetic approaches is a plus. Programming skill in Matlab or Python is necessary.

Exclusion criteria

Nationality is not a criterion: Researchers can be of **any nationality**. Rather the location of the researcher's residence or main activity during the 3 years prior to their recruitment is determining. Indeed, the candidate **must not have resided** or carried out their main activity (work, studies, etc.) **in France** (the country of the recruiting beneficiary) for more than 12 months in the 3 years

immediately before the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention1 are not taken into account.

The candidate shall, at the time of recruitment, be in the **first four years** (full-time equivalent research experience) of their research careers and **have not been awarded a doctoral degree**.

Apply for this position at https://happy-form.u-strasbg.fr/
before the 1ˢᵗ of August 2021