Thesis title: Identifying imaging signature and neurotransmitter dynamics of neuromodulatory interventions in chronic pain

URL: /Offres/Doctorant/UPR3212-IPEYAL-007/Default.aspx
Reference : UPR3212-IPEYAL-007
Work Location: Strasbourg, Munich, UK
Contract Type: Fixed-term (PhD Candidate)
Contract Duration: 36 months
PhD Start Date: September 1, 2025
Work Schedule: Full-time
Salary: €3,038.74
CN Section(s): 25 - Molecular and Cellular Neurobiology, Neurophysiology
Scientific Supervisor: Ipek YALCIN (main supervisor), Markus Ploner, Katie Bates

This PhD position is supported by the Frontier Research Competences for Neuro-modulation and Oscillations in Pain (FRESCO4NoPain), an EU-funded Doctoral Network (DN) under the Marie Sklodowska-Curie Actions (MSCA). This program aims to provide a multidisciplinary training program for young researchers (PhD candidates) to explore innovative therapeutic strategies for the treatment of chronic pain. The program focuses on using cutting-edge, non-invasive techniques for neuro-modulation and the study of brain oscillations to better understand and manage chronic pain. in This particular PhD thesis will be focused on identifying imaging signature and neurotransmitter dynamics of neuromodulatory interventions in chronic pain.

Chronic pain affects approximately one in five individuals, representing a substantial economic and societal burden, often accompanied by emotional disorders. Despite its widespread impact, only a limited number of treatments have shown significant therapeutic efficacy. Dr. Ipek YALCIN's laboratory, where this PhD project will primarily take place, has developed a murine model of neuropathic pain that induces an anxious-depressive phenotype (cf. Yalcin et al., 2011; Barthas et al., 2015, 2017; Sellmeijer et al., 2018). This PhD thesis will focus on identifying the imaging signatures and neurotransmitter dynamics of neuromodulatory interventions in chronic pain. The candidate will be responsible of characterizing the structural and functional changes in brain circuits involved in the genesis of chronic pain and its comorbid anxiety-depressive consequences, using a murine neuropathic pain model.

This project will provide the candidate with strong expertise in brain circuits' neurophysiology and advanced technical skills, including MRI imaging, stereotaxic surgery, fiber photometry, optogenetics, and rodent behavior analysis. The PhD will be carried out in collaboration with two additional partners: an academic partner (at the Technical University of Munich, Germany) and a non-academic partner (NC3Rs, United Kingdom).

Skills

- Solid background in neuroscience.
- Strong experience in scientific research on animal models.
- An expertise in MRI imaging, stereotaxic surgery, optogenetic and fiber photometry will be a plus
- Good communication skills (written and oral).

Work Context

The candidate will be primarily based at the Institute of Cellular and Integrative Neurosciences (INCI, CNRS, Strasbourg), working within the "Pain and Psychopathology" team under the direction of Dr. Ipek YALCIN. Additionally, they will complete secondment at the Technical University of Munich, Germany (academic partner) with Dr. Markus Plnoer and a secondment at the National Centre for the Replacement, Refinement and Reduction of Animals in Research, United Kingdom (NC3Rs) (non-academic partner).

Constraints and risks

- The candidate will be expected to live in three different countries during the course of this PhD: France, Germany, and United Kingdom.
- Potential risks related to working with live animals (e.g., bites, exposure to allergens) and handling chemical and biological substances.
- The candidate will be required to work on certain weekends and public holidays.

Additional Information

Applicants must NOT have lived or carried out their main activity France for more than 12 months in the past 3 years immediately prior to the application deadline.

All the application should be done using CNRS platform:

https://emploi.cnrs.fr/Offres/Doctorant/UPR3212-IPEYAL-008/Default.aspx

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