Master de Sciences et Technologies
Mention Biologie Intégrative et Physiologie
Parcours : Neurosciences
Responsable : Professeur Régis Lambert

Internship Proposal
Academic Year 2019-2020

1. Host team :

Research Unit (e.g. Department or Institute) : UMR8246/U1130 Neuroscience Paris-Seine
Research Unit Director : Hervé Chneiweiss
Research Team Directors : Catalina Betancur/ Sophie Gautron
Team name : Neurobiology of Psychiatric Disorders

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2. Internship project title:

Low-affinity monoamine transporters as novel therapeutic targets for mood disorders

3. Internship Description :

In the brain, the high-affinity monoamine transporters play an important role by ensuring the rapid reuptake of the released transmitters into the presynaptic terminals. Consequently, number of potent psychoactive compounds like drugs of abuse and antidepressants target these transporters, namely, the dopamine, serotonin or noradrenaline transporters. Our team focuses on other, atypical, monoamine transporters, the polyspecific organic cation transporter (OCT) family and the plasma monoamine transporter (PMAT).

Mood disorders represent widespread and invalidating disorders, yet antidepressants currently used to treat depression, like serotonin (5-HT) and norepinephrine (NE) reuptake inhibitors, do not provide positive treatment outcomes for all patients. Our recent work identified organic cation transporter 2 (OCT2) as a potential pharmacological target for mood disorders therapy. Notably, we showed that this transporter modulates the response to antidepressants both acutely and on the long-term in a validated chronic depression model [1, 2]. Our ongoing studies aim to i) determine the mechanisms underlying the role of OCT2 in antidepressant efficacy, in particular the contribution of aminergic and intracellular signaling pathways, ii) analyze the behavioral effects of new OCT ligands with antidepressant potential and characterize its mechanism of action in the brain. These questions are addressed by multiple approaches: mouse behavior, pharmacology, Western blot, as well as in collaboration by electrophysiology and microdialysis.

1. Bacq A, et al. (2012) Organic cation transporter 2 controls brain norepinephrine and serotonin clearance and antidepressant response. Mol Psychiatry 17:926-939.
2. Courousse T, et al. (2015) Brain organic cation transporter 2 controls response and vulnerability to stress and GSK3beta signaling. Mol Psychiatry 20:889-900.