



Centre de Neurosciences Psychiatriques

CNP SEMINARS

ANNOUNCEMENT

Friday, October 23, 2020, 9:00 – 10:00

Synaptic Plasticity of Inhibition for Reward Learning

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Synaptic plasticity is the major neuronal substrate for learning and memory. In many rodent models of neuropsychiatric disorders, plasticity mechanisms deteriorate and drive cognitive deficits reminiscent of symptoms observed in human patients. Therefore, identifying basic mechanisms of synaptic plasticity, the specific circuits where they occur, and how they support cognition is paramount to the comprehension, and eventual treatment of brain diseases.

In this talk, I will introduce how the combination of *ex vivo* and *in vivo* physiology, circuit manipulation, and behavior in head-fixed mice, allows the study of neuropsychiatric disease-related neural plasticity. In the first part, I will present ongoing work demonstrating a link between synaptic plasticity of inhibitory transmission and reward learning in the lateral habenula, a brain nucleus involved in motivation and depression. In the second part, I will discuss published and new results supporting the unexpected cognitive function of motor thalamus and its potential contribution to cognitive symptoms of schizophrenia. Based on these observations, I will lay out hypotheses and goals for my independent research program. I will present arguments supporting the idea that motor thalamus-specific circuit and synaptic defects lead to cognitive impairments in schizophrenia models, and that design of circuit-based approaches may rescue cognitive deficits.

Invited by Chin-Bin Eap

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Related publications

Lalive et al., *eLife*, 2018, doi: 10.7554/eLife.34032

Trusel et al., *Neuron*, 2019, 10.1016/j.neuron.2019.01.025

Roseberry et al., *Cell*, 2016, doi: 10.1016/j.cell.2015.12.037