
OPTOGENETICS CONTROL OF NEURONAL ACTIVITY IN RODENTS COUPLED WITH *IN VIVO* ELECTROPHYSIOLOGY - HANDS-ON COURSE

Dates: November 23rd-25th, 2016 (Duration: **3 days-21 hours**)

Location: Neurocentre Magendie, 146 Rue Léo Saignat, 33000 Bordeaux, France

This course covers the **theory and practice** of optogenetics coupled to electrophysiology *in vivo* in behaving rodents.

Optogenetics aims to identify and manipulate the activity of specific neuronal populations that have been genetically modified to express light-sensitive ion channels. Optogenetics uses a combination of techniques to control and monitor the activities of individual neurons, and to measure in real-time the effects of those manipulations on the rodent behavior. Coupled with simultaneous electrophysiological recording of several brain structures during a behavioral task, this technique allows understanding how information is processed, integrated and then transmitted between different brain areas.

The applications of this new scientific field are limitless. We will see how optogenetics can help to understand the role of neuronal microcircuits in normal and pathological brain functions. More particularly, we will discuss its application in the context of research about fear responses, traumatic memories and drug addiction mechanisms. During hands on courses, students will be taught all the necessary steps to implement optimally optogenetics techniques coupled to electrophysiology *in vivo* in behaving rodents. For information, electrophysiology techniques on brain slices or anesthetized animal (glass pipettes) will not be taught during this training.

Wednesday, November 23, 2016

08h30 – 09h00	Reception of participants
09h00 – 12h30	Theoretical courses on optogenetics principles and applications
12h30 – 14h00	Lunch
14h00 – 17h30	2 parallel workshops– 5 participants each Workshop 1: Group 1: optical fibers manufacture for implantation Workshop 2: Group 2: electrodes and optrodes manufacture

Thursday, November 24, 2016

09h00 – 12h30	2 parallel workshops– 5 participants each Workshop 1: Group 2: optical fibers manufacture implantation Workshop 2: Group 1: electrodes and optrodes manufacture
12h30 – 14h00	Lunch
14h00 – 17h30	2 parallel workshops– 5 participants each Workshop 3: Group 1: Neurons optical stimulation for behavior testing and electrophysiological recording in real time Workshop 4: Group 2: Stereotaxic cannula implantation and cerebral injection*

Friday November 25, 2016

09h00 – 12h30	2 parallel workshops– 5 participants each Workshop 3: Group 2: Neurons optical stimulation for behavior testing and electrophysiological recording in real time Workshop 4: Group 1: Stereotaxic cannula implantation and cerebral injection*
12h30 – 14h00	Lunch
14h00 – 17h30	Results analysis and discussion (Groups 1 and 2)

Maximum number of participants enrolled in each course: 10

This training is for postdoctoral students and researchers with knowledge in molecular genetics, optoelectronic, rodent behavioral analysis, clinical and ethical concepts (* Certification in experimental surgery is a prerequisite for workshop 4).

COST

(Does NOT include: lodging, evening meals, transportation)

Inserm staff: 1200€ HT (VAT not applied) = 1200 € All Taxes included

Academic - Bordeaux University: 1200€ + 20% VAT = 1440€ All Taxes included

Academic (neither from Inserm nor Bordeaux University): 1700 € + 20% VAT = 2040€ All Taxes included

Industry: 4200 € + 20% VAT = 5040€ All Taxes included

Application opens: June 15, 2016

<http://optopath.equipex.u-bordeaux.fr>

Application deadline: September 16, 2016