SORBONNE UNIVERSITÉ

2026 SPRING SCHOOL
Neurophysiology in Action: Linking Brain Dynamics to Behaviour

Overview

Our understanding of brain function is advancing rapidly, driven by cutting-edge methods that enable the study of neural mechanisms in real-time during behavior. A multidisciplinary approach combining neurophysiology, cognitive science and advanced data analysis techniques is necessary to uncover the intricate relationships between neural activity and behavior. Join us to explore these exciting frontiers and gain hands-on experience with the tools shaping the future of neuroscience.

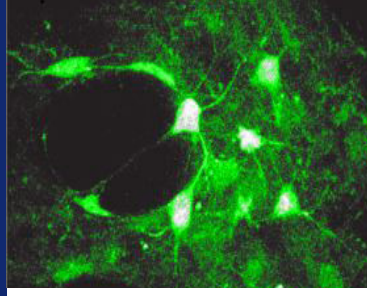
Participants will be matched into small groups and collaborate during the spring school. They will develop a biological question focused on the prefrontal cortex and design experiments to address it. Each group will create a behavioral paradigm, record neuronal activity during the behavior, and analyze the data. They will utilize machine learning techniques to extract behavioral data and apply the latest methods for analyzing fiber photometry.

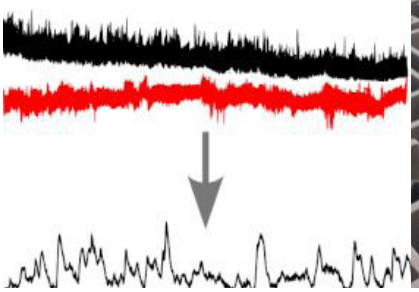
- Mornings: lectures (scientific background, methods, specializations...)
- Afternoons: hands-on training and group discussions

OBJECTIVES OF THE SPRING SCHOOL

- Offer advanced training for PhD candidates and post-docs looking to refine their skills in linking neuronal dynamics to precise behavioral patterns using fiber photometry.
- Provide comprehensive guidance on designing robust behavioral experiments, with a focus on mouse models.
- Teach methods for extracting, analyzing and interpreting data collected using fiber photometry.

Program





Lectures

Pr Stéphanie Daumas, Dr Nicolas Gervasi

- Role of the prefrontal cortex in behavior
- In vivo imaging of neuronal dynamics
- Behavior analysis using machine learning

Research seminars

Céline Nicolas, Jérome Epsztein

- Using fiber photometry to decipher anxiety
- Navigation, exploration, and hippocampal dynamics: insights from in vivo electrophysiology

Demonstration and hands-on training

Pr Stéphanie Daumas, Dr Nicolas Gervasi, Dr Christelle Rochefort, Dr Véronique Fabre, Elisa Kaci and Jérémy Peixoto

- Identify the biological question
- Design behavioral experiments using different tasks: one-shot learning, social interaction tasks, spatial memory task
- Record neurophysiological and behavioral data to monitor neuronal activity associated with behavior

Computational analysis

Dr Nicolas Gervasi, Pr Stéphanie Daumas, Dr Christelle Rochefort, Elisa Kaci and Clémence Daleux

- Using DeepLabCut to extract behavioral sequences
- Data preprocessing (filtering, movement and bleaching correction...), event-aligned analysis and statistical testing
- Project presentations and collective discussions

Social activities in Paris

Organizers

PR STÉPHANIE DAUMAS (NEUROSU, IBPS, SORBONNE UNIVERSITÉ)

DR NICOLAS GERVASI (CIRB, COLLÈGE DE FRANCE)

DR CHRISTELLE ROCHEFORT (NEUROSU, IBPS, SORBONNE UNIVERSITÉ)

DR HÉLÈNE CHEVAL (PARIS BRAIN INSTITUTE, SORBONNE UNIVERSITÉ)

Dates

13 - 24 April 2026

Location

Institut de Biologie Paris Seine (IBPS), Campus Pierre et Marie Curie, Sorbonne University

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Apply here by 23 February 2026

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