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NeuroPSI

INSTITUT des NEUROSCIENCES PARIS-SACLAY



visit us at https://neuropsi.cnrs.fr

Understanding the functioning of neural circuits to explain how animals behave in their environment

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université PARIS-SACLAY

250 researchers, PhD students, postdocs, engineers, technicians and administratives

3 departments
22 research teams

High standard technical facilities

> 500 publications in the last 4 years

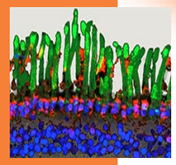


NeuroPSI, a new institute for interdisciplinary neurosciences : from embryo to adult, from molecules to cognition

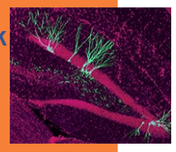
Our goal is to determine how cellular interactions lead to neuronal populations, how these populations assemble into functional circuits, and how such circuits respond to external stimuli and generate behaviors. These questions are mostly addressed in vivo to focus on the interactions between the brain and its environment. A wide range of experimental and theoretical models are used to understand how different types of neural architectures can compute, integrate sensory information, and produce behaviors. We also use comparative approaches to understand how natural selection drives the evolution of neural circuit design and function.

NeuroPSI at a glance

The department of Development, Evolution and Cell Signaling (DECS) studies molecular mechanisms underlying the formation, maintenance and regeneration of the nervous system, and how its function is shaped by evolution.



The department of Cognitive and Network Neuroscience (CNN) seeks to decipher the neural bases of behavior and cognition, and their alterations in neuropathologies.



The department of Integrative and Computational Neuroscience (ICN) identifies computational principles and mechanisms in cortical and sub-cortical networks leading to the emergence of high-level brain functions.



Technical facilities

Animal facility. Terrestrial (mice, rats, guinea pigs, several bird species) and aquatic (zebrafish, cavefish, xenopus), with genotyping service, in collaboration with TEFOR infrastructure.

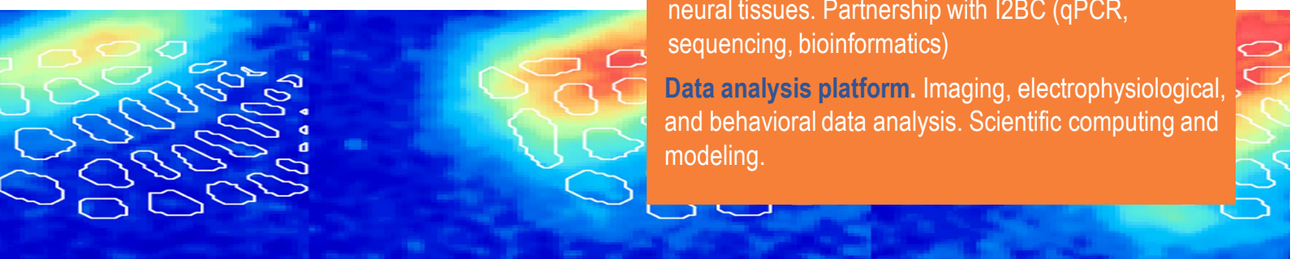
Behavioral platform. Behavioral setups for rodents, birds and zebrafish for analyses of various functions, such as stress management, locomotion, spatial learning, decision making, multisensory integration, social interactions.

Histology. Shared space, equipment, tissue sectioning, tissue clarification, immunolabeling, in situ hybridization.

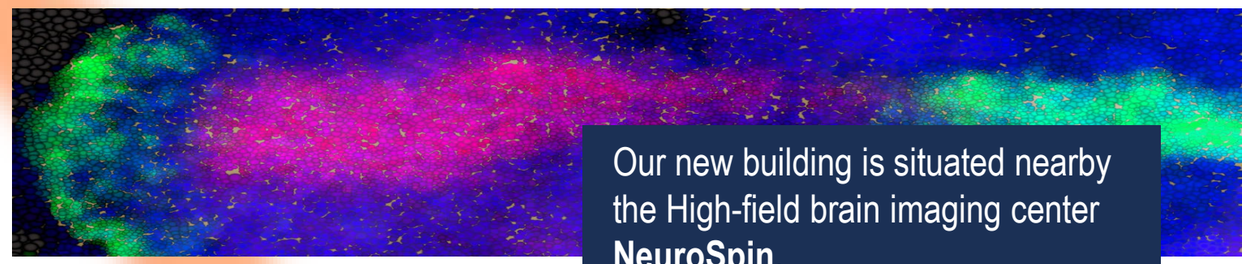
Imaging platform. Epifluorescence, light-sheet microscopy, laser-scanning confocal microscopy, 2-photon microscopy. Partnership with TEFOR, NeuroSpin and I2BC.

Molecular biology platform. Constructs for transgenesis, qPCR, Single-cell transcriptomics for neural tissues. Partnership with I2BC (qPCR, sequencing, bioinformatics)

Data analysis platform. Imaging, electrophysiological, and behavioral data analysis. Scientific computing and modeling.



A rich interdisciplinary environnement



Our new building is situated nearby the High-field brain imaging center **NeuroSpin**.
Https://joliot.cea.fr/drf/joliot/Pages/Entites_de_recherche/NeuroSpin.aspx



Our Institute is part of the new Paris-Saclay University, the first research university in France



4,500 doctorants
65,000 students
275 laboratories
9,000 scientists

NeuroPSI hosts the **European Institute for Theoretical Neuroscience**.
https://www.eitn.org/

NeuroPSI has strong research and teaching links with the **Grandes Ecoles** of the Saclay plateau.

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