

Learning and Plasticity in Neuronal Networks

PSL-Qlife Winter School in Quantitative Biology – March 25th-29th, 2024

Monday, March 25th

8:45 - 9:00 am Coffee break - Cafeteria

9:00 - 9:20 am **Laurent Bourdieu, Patrick Charnay**
Introduction
Favard Room

9:20 - 10:10 am **Nicolas Gervasi**
Using machine learning to decipher animal behavior
Favard Room

10:10 - 11:00 am **Laëtitia Mony**
Optopharmacological approaches for in vivo control of brain receptors
Favard Room

11:00 - 11:30 am Coffee break - Cafeteria

11:30 - 12:20 pm **Guillaume Dugué**
Rhodopsin-based optogenetic neuromodulation techniques
Favard Room

12:20 - 1:45 pm Lunch
Room 305

1:45 - 2:45 pm
Students flash talks
Room 306

2:45 - 6:00 pm
Digital workshop
Design of learning protocols
K. Benchenane
Room 313

2:45 - 6:00 pm
Digital workshop
Getting Started with Behaviour Analysis with DeepLabCut
N. Gervasi
S. Belhadj-Younes
Room 321

2:45 - 6:00 pm
Workshop
Setting up optogenetic experiments: tools and pitfalls
L. Mony
G. Dugué
Room 306

6:00 - 6:30 pm Coffee break - Room 305

6:30 - 7:30 pm **Anne Urai**
Rethinking science in a time of climate crisis
Room 306

Tuesday, March 26th

8:45 - 9:00 am Coffee break - Cafeteria

9:00 - 9:50 am
Aurélien Wyngaard & Boris Barbour
Multielectrode extracellular recordings: spike sorting and cell tracking
Favard Room

9:50 - 10:50 am **Srdjan Ostojic**
Linking structure and function in recurrent neural networks
Favard Room

10:50 - 11:15 am Coffee break - Cafeteria

11:15 - 12:15 pm **Anne Urai**
Behavioral modelling as a window into neural computations
Favard Room

12:15 - 1:30 pm Lunch
Room 305

1:00 - 4:00 pm
Digital workshop
Data-driven modeling of neuronal population activity across learning
S. Wolf
A. Lourdiane
Room 313

1:30 - 4:30 pm
Digital workshop
Spike-sorting: hands-on
A. Wyngaard
B. Barbour
Room 321

1:30 - 4:30 pm
Workshop
Setting up optogenetic experiments: tools and pitfalls
L. Mony
G. Dugué
Room 306

4:30 - 5:00 pm Coffee break - Room 305

5:00 - 6:00 pm **Alexandre Mourot**
Manipulating brain neurotransmitter receptors and associated behaviors with light
Favard Room

6:00 - 8:00 pm
**Poster session I
Wine & Cheese**
Room 306

Wednesday, March 27th

8:45 - 9:00 am Coffee break - Cafeteria

9:00 - 10:30 am
Alex Cayco Gajic
Dimensionality reduction in neuroscience: Finding structure in high-dimensional data
Favard Room

10:30 - 11:00 am Coffee break - Cafeteria

11:00 - 12:00 pm **Christian Machens**
Dimensionality reduction for interarea communication
Favard Room

12:00 - 1:30 pm Lunch
Room 305

1:30 - 4:30 pm
Digital workshop
Linear decoding of population activity
Y. Boubenec
H. Tissot
Room 313

1:30 - 4:30 pm
Digital workshop
Advanced dimensionality reduction
A. Cayco Gajic
L. Agueci
Room 321

4:30 - 5:00 pm Coffee break - Room 305

5:00 - 6:00 pm **Kishore Kuchibhotla**
Insights and strategies during sensorimotor learning
Room 306

7:30 pm
Speakers / TAs dinner

Thursday, March 28th

8:45 - 9:00 am Coffee break - Cafeteria

9:00 - 10:00 am **Lisa Roux**
Studying hippocampal sharp-wave ripples with closed-loop optogenetic manipulations
Favard Room

10:00 - 10:45 am Coffee break - Cafeteria

10:45 - 12:00 pm **Laurent Bourdieu**
Chronic imaging of neuronal activity during learning
Favard Room

12:00 - 1:30 pm Lunch
Room 305

1:30 - 4:30 pm
Digital workshop
Feedforward networks
R. Monasson
F. Schönsberg
Room 321

1:30 - 4:30 pm
Digital workshop
Training and analysing recurrent neural networks, part1
J. Barbosa
Room 313

4:30 - 5:00 pm Coffee break - Room 305

5:00 - 6:00 pm **Athena Akrami**
Cross-species study of learning and exploiting sensory statistics
Room 316

6:00 - 8:00 pm
Poster session II
Cocktail
Room 306

Friday, March 29th

8:45 - 9:00 am Coffee break - Cafeteria

9:00 - 10:15 am **Rémi Monasson**
Learning from sensory inputs: from rules to features
Favard Room

10:15 - 11:00 am Coffee break - Cafeteria

11:00 - 12:00 pm **Nathalie Rochefort**
Learning to see: Plasticity in the visual cortex
Favard Room

12:00 - 1:30 pm Lunch
Room 305

1:30 - 4:30 pm
Digital workshop
Recurrent networks
R. Monasson
F. Schönsberg
Room 321

1:30 - 4:30 pm
Digital workshop
Training and analysing recurrent neural networks, part2
J. Barbosa
Room 313

4:30 - 5:00 pm Coffee break - Room 305

5:00 - 6:00 pm **Karim Benchenane**
Behavioral analysis, brain-body interaction and the study of fear and anxiety in rodent
Room 306

6:00 - 6:30 pm
Conclusion
Room 306