

# Program for Advanced Course in Computational Neuroscience

## Introductory Class

1. Brain function and clinical issues, examples (October 4)  
Nathalie Kubis (Hôpital Lariboisière)

## Sensory input

2. Modelling hair cells as sensory receptors and mechanical amplifiers for hearing (October 11)  
Pascal Martin (Institut Curie)
3. Modelling the transduction of light into an electrical signal by rod and cone photoreceptors in the retina (October 18)  
Jürgen Reingruber (ENS)
4. Neural coding in the retina and vision restoration (October 25)  
Olivier Marre (Institut de la Vision)

## Fundamental brain constituents

5. Electrodifusion model for synapses and dendritic spines (November 2)  
Thibault Lagache (Institut Pasteur)
6. Modelling Neuron-Glial interactions and synaptic plasticity (November 8)  
David Holcman (ENS)

## Neural Networks

7. Modelling and analysis of neural circuit dynamics: emergent rhythms and their interplay. (November 15)  
Boris Gutkin (ENS)
8. Modelling spatial memory and navigation (November 22)  
Denis Sheynikhovich (Sorbonne University)
9. Mesoscopic models: from neural circuits to large-scale activity, in normal and pathological states (November 29)  
Alain Destexhe (University Paris-Saclay)
10. Big data analysis applied to behavioral neuroscience (December 6)  
Gisella Vetere (ESPCI)

## EEG analysis and Brain-Computer Interfaces

11. Analyse des signaux électrophysiologiques: : des cycles lents aux oscillations rapides (December 13)  
Michel Le Van Quyen (Sorbonne University)
12. Signal processing and machine learning for Brain-Computer Interfaces (December 20)  
Theodore Papadopoulos (INRIA Nice)