Département de neurosciences
Faculté de médecine

Université de Montréal et du monde.

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Julijana Gjorgjieva, Ph. D.

Professor
Computational Neuroscience
Max Planck Institute for Brain Research

Learning and plasticity in the developing brain

Vendredi 3 février 2023
12 h à 13 h

En ligne
https://umontreal.zoom.us/j/88066173443?pwd=ajIvdzA0a09FSGlFc3NuRUdFNVhNdz09

Intérêts de recherche

Efficient transmission of information across neural circuits requires an intricate balance between the intrinsic properties of single neurons and the synaptic connections between them. How are neurons and networks tuned to achieve this balance and enable the emergence of reliable computation? We are interested in two aspects of circuit organization: how it comes about from the interaction of single neuron properties and synaptic plasticity (as during learning and circuit development); and the organization principles that achieve it over the longer timescale of evolution. Our work is based on computational and mathematical approaches to understand how activity, generated spontaneously in the circuit, or by the external environment, shapes network organization and dynamics. We study the interaction and the influence of a diversity of mechanisms, including synaptic plasticity, intrinsic cellular properties, sensory noise, and biophysical constraints, on the generation of adult function and computation. Our work is supported by close experimental collaborations based on different animal models, from rodent to fruit fly, allowing direct access to individual neural circuit components. Computational and theoretical approaches allow us to study in a principled way how multiple processes, acting at the level of individual neurons or their synaptic connections, coordinate their action to organize circuit properties. Thus, our models provide a testbed for exploring novel stimuli and directing future experiments that will allow for the right neuronal populations to be recorded and manipulated.

Entrée libre

Personnes-ressources pour rencontrer le conférencier : Roberto Araya,
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