INSTITUT PARIS DESCARTES NEUROSCIENCES COGNITION

FÉDÉRATION DE RECHERCHE EN NEUROSCIENCES

Neuroscience Seminar Series

Friday, February 24th, 2017 at 11:30

Salle des Conférences (R229)

Centre Universitaire des Saints-Pères

45 rue des Saints-Pères, 75006 Paris

Stefan Hallermann

Professor

Department for neurophysiology, University Leipzig, Germany

Frequency dispersion in the cerebellar cortex

First, I will recapitulate recently published findings regarding high-frequency signaling in the cerebellar cortex. Then, I will focus on the question how cerebellar granule cells (GCs) process the incoming signals: According to classical theories about cerebellar computation, each GC detects a specific pattern of active mossy fibers. Yet, mossy fibers convey broad-bandwidth neuronal signals ranging from several hertz up to kilohertz frequencies. How GCs detect this great diversity in the temporal patterns of the mossy fiber inputs remains unclear. We found that GCs closer to the white matter are gradually tuned to detect signals with higher frequency, and are less excitable than granule cells close to the Purkinje cell layer. The inner-zone GCs have parallel fibers that are tuned for high-speed signal propagation, project preferentially to the base of the Purkinje cell dendritic tree, and elicit faster postsynaptic potentials in the Purkinje cells. Implication for theories of cerebellar computation will be discussed.

Those interested in meeting with the speaker please contact

federico.trigo@parisdescartes.fr

UNIVERSITÉ PARIS DESCARTES

MEMBRE DE USPC Université Sorbonne Paris Cité