Computational Neuroscience - CNS*2009 Workshop on Cortical Oscillations

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Description:

Oscillatory activity at various frequency ranges have been observed in various areas of the brain (hippocampus, entorhinal cortex, olfactory bulb among others), and are believed to be important for cognitive functions such as learning, memory, navigation and attention. These rhythms have bee studied at the single cell level, as the result of the interaction of a neuron's intrinsic properties, at the network, as the result of the interaction between the participating neurons and neuronal populations in a given brain region, and at higher levels of organization involving several of these regions. The advances in this field have benefited from the interaction between experimental and theoretical approaches.
The purpose of this workshop is to bring together both experimentalists and theorists with the goal of discussing their results and ideas on the underlying mechanisms that govern the generation of these rhythms at various levels of organization, and their functional implications for cognition.

Program:

July 22	Speaker	Affiliation	Title
9:30 - 10:15	Francesco Battaglia	SILS- Center for Neuroscience, Universiteit van Amsterdam, Amsterdam, The Netherlands.	Theta rhythm, sharp waves, slow waves: oscillations shape hippocampal neocortical interactions.
10:15 - 11:00	Balazs Ujfalussy & Peter Erdi	Kalamazoo College, USA, and Dept. Biophysics, KFKI Res. Inst. Part. Nucl. Phys. Hung. Acad. Sci. Budapest, Hungary	Competing models of the subcortical generation of the hippocampal theta rhythm
11:00 - 11:15	Break	----------	----------
11:15 - 12:00	Roger Traub	IBM T. J. Watson Research Center, Yorktown Heights, NY, USA	Gap junctions, fast oscillations, and the onset of seizures

12:00 - 12:45	Frances Skinner	Toronto Western Research Institute, Toronto, Canada	Modeling Oscillatory Activity in Hippocampal Interneurons
12:45 - 14:15	Lunch	----------	----------
14:15 - 15:00	Caroline Geisler	Center for Molecular and Behavioral Neuroscience, Rutgers University, Newark, USA	Populations of phase delayed theta oscillating place cells generate slower field oscillations
15:00 - 15:45	John A. White	Department of Bioengineering and Brain Institute, University of Utah, Salt Lake City, UT, USA	Building meso-scale models of synchronization from experimental data
15:45 - 16:00	Break	----------	----------
16:00 - 16:45	Irina Erchova	Institute for Adaptive and Neural Computation, The University of Edinburgh, UK	Age related differences in oscillatory properties of entorhinal cortex (EC) cells

July 23	Speaker	Affiliation	Title
9:30 - 10:15	Andreas Herz	Ludwig-Maximilians Universitat Munchen, Germany	Membrane potential resonance at rest predicts oscillation properties near threshold as well as suprathreshold spike-train patterns
10:15 - 11:00	Anton Sirota	Center for Molecular and Behavioral Neuroscience, Rutgers University, Newark, USA	The role of local and global oscillations in the communication between the hippocampus and neocortex
11:00 - 11:15	Break	----------	----------
11:15 - 12:00	Mark Cunningham	Institute of Neuroscience, The Medical School, University of Newcastle upon Tyne, UK	Cortical inhibitory interneurons and network gamma frequency oscillations: new vistas

12:00 - 12:45	David Hansel	CNRS-Universite Paris Descartes, Paris, France and France-Israel Laboratory of Neuroscience	Interacting gamma oscillators
12:45 - 14:15	Lunch	----------	----------
14:15 - 15:00	Maria V. Sanchez-Vives	ICREA - IDIBAPS (Institute of Biomedical Research), Barcelona, Spain	Slow and fast rhythms emerging in the cortical network
15:00 - 15:45	Albert Compte	Institut d'Investigacions Biomediques August PI i Sunyer (IDIBAPS), Barcelona, Spain	Modeling slow and fast oscillations in the local cortical network
15:45 - 16:00	Break	----------	----------
16:00 - 16:45	Mark Kramer	Center for BioDynamics, Boston University, Boston, MA, USA	Dynamic network topologies in epilepsy