Abstract View

NETWORK OSCILLATIONS---OF MOLLUSKS, MICE, AND MEN

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A fundamental goal of neuroscience is to understand how the collective neural activity of the brain gives rise to behavior and cognition. Network oscillations are important because they may help explain these relationships between cellular activity and higher brain functions. They are prominent in many neural systems and are linked to specific task requirements and behavioral states. Drawing on data from different species, from invertebrates to humans, this symposium aims to explore the mechanisms and functions of these network rhythms. Modern developments in recording and imaging technology have been instrumental to progress in mechanistic and functional understanding and have highlighted the importance of interneurons in the generation and synchronization of oscillatory activity. In this symposium, first, Michael Kahana will examine cortical and hippocampal oscillations seen in intracranial recordings of human patients with epilepsy; he reports how oscillations change during heightened mental activity and can be reset by salient stimuli. Then, Hannah Monyer will give an overview of the insights gained from molecular studies in the mouse, and more specifically she will show that reducing excitatory drive to a distinct type of interneuron alters gamma oscillations and hippocampus-dependent behavior. Third, Alan Gelperin will discuss the role of oscillatory activity in odor information processing in both vertebrates and invertebrates and how oscillatory synchronization may enhance odor discrimination. And finally, Terrence Sejnowski will discuss the broad computational implications of the ability of oscillations to transiently link populations of neurons and how this may facilitate information flow and storage.
8:30 805.1 Network Oscillations: A Brief Introduction. O. PAULSEN, Univ. of Oxford
8:35 805.2 Cortical and Hippocampal Network Oscillations in Humans. M.J. KAHANA, Univ. of Pennsylvania
9:10 805.3 Molecular Dissection of Network Oscillations in the Mammalian Brain. . H. MONYER, Univ. of Heidelberg
9:45 805.4 Olfactory Computations and Network Oscillations. A. GELPERIN, Monell Chemical Senses Ctr.
10:20 805.5 Computational Implications of Network Oscillations. T.J. SEJNOWSKI, Salk Inst.

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