



香港城市大學
City University of Hong Kong
三十周年紀念 30th Anniversary

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Department of Biomedical Sciences presents a seminar on Neuroscience

Functional Mechanisms that Mediate Subcortical Stimulus-Specific Adaptation

By

Prof. Manuel S. Malmierca

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Date: 21 July 2014 (Monday)
Time: 10:30 am – 11:30 am
Venue: Room B4702, Academic 1
City University of Hong Kong
Tat Chee Avenue, Kowloon Tong

Abstract:

The ability to filter frequent and redundant sounds from the rare and unexpected ones is a challenging task for the auditory system. Stimulus-specific adaptation (SSA), *i.e.*, a decreased neuronal response to repetitive stimuli (standard) that does not generalize to rare sounds (deviant), may be implicated in novelty processing observed at larger spatial and temporal scales. We address the properties of SSA by recording extracellular single-neuron responses at different levels of the auditory hierarchy of the anesthetized rat and the awake mice.

We use the oddball- and other more complex sequences to determine the presence of SSA and novelty detection. We also used the iontophoresis technique to eject GABAergic and cholinergic agonists and antagonists to manipulate the responses at the synaptic level.

SSA is found in the awake and anesthetized inferior colliculus, medial geniculate body and auditory cortex, but not in the cochlear nucleus. Thus, SSA is first encoded in the inferior colliculus, being stronger in the non-lemniscal pathway, at low intensities and at the neuronal high frequency range. Subcortical SSA is very sensitive to the balance of excitatory-inhibitory input. Auditory cortex projections exert a gain control effect on subcortical SSA, but SSA is propagated from the inferior colliculus to upper auditory stations.

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~ All are Welcome ~