

City University of Hong Kong
Department of Biomedical Sciences
presents a seminar



“SPATIAL STIMULUS-SPECIFIC ADAPTATION FACILITATES SPATIAL DISCRIMINATION THROUGH SHARPENING RESPONSE CONTRAST IN THE THALAMIC RETICULAR NUCLEUS OF RAT”

by

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Date : 22 July 2016 (Friday)

Time: 12.00noon to 1.30pm

Venue: Meeting room 2-130, 1/F, Block 2, To Yuen Building, CityU

Abstract

The capacity to identify the unanticipated abnormal clues in the nature setting is vital for survival. The SSA (Stimulus-specific adaptation) has been regarded as the neuronal correlates for change detection. There has been a comprehensive assessment of the SSA in the frequent domain along the auditory pathway, with minimum focus being embraced in the spatial SSA. The current study performs assessment of SSA in the spatial field for TRN neurons. We show that TRN neurons responded more strongly to the tones at rare location than to the same tone at the same location when the location was common. Subsequently, we engaged signal detection theory to directly gauge spatial discriminability and found that deviant locations' discriminability were considerably higher than those witnessed for standard locations. The variability in spatial discriminability among TRN population was directly related to response difference (RD) and did not depend on firing variance; meanwhile, further analyses attribute higher spatial sensitivity at deviant locations to larger RD. Astonishingly, there exists a significant correlation between the adaptation level and the deviant discriminability. Collectively, the outcomes of the study suggest that spatial SSA facilitates the rare location discrimination mainly via sharpening the response gap between two spots.

Dr. Yu started his PhD research in the Institute of Biophysics, Chinese Academy of Sciences in 2003. During the four years of auditory research, He found that most current auditory research made the subjects as passive listeners and very few experiments were carried out when subjects actively responded to the sound. In order to bring behavior analysis to the auditory neurophysiology, He moved to Dr. Dora Angelaki's lab in the US as a postdoc from December, 2009 to May, 2014, where cognitive function was accessed with behaving nonhuman primates. Dr. Yu was enrolled in Zhejiang University as PI in June, 2014, where he is going to merge the neurophysiologic techniques and behavior analysis in the auditory system with the topics focusing on decision making and sleep.

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All are welcome