The Singapore Bioimaging Consortium (SBIC)
presents a seminar

on

"Tau Acetylation is associated with Cognitive Deficits of Tauopathies; Therapeutic Implications"

Speaker: Dr Min Sang-Won
Gladstone Institute of Neurological Diseases
University of California, San Francisco (UCSF)
Host : Dr Han Weiping
Date : Tuesday, 19 May 2015
Time : 2.00pm – 3.00pm
Venue : SBIC Seminar Room
11 Biopolis Way
Level 2, Helios Building, Singapore 138667
(Please enter Level 1 entrance)

Abstract

Tauopathies are a class of neurodegenerative diseases with abnormal tau aggregation in human brain. They found that tau acetylation, one of posttranslational modifications, is highly up-regulated with early pathogenesis of Alzheimer's disease (AD) and other tauopathies. Through their *in vitro* screening for identifying modulators of tau acetylation, they found P300 as acetyltransferase, while Sirt1 as deacetylase of tau. Mass spectrometry analyses from human AD cortex revealed selective lysines to be acetylated under disease conditions. Among these sites, acetylation on lysine (K)-174 is identified as an important modification, which regulates tau protein homeostasis *in vitro* and *in vivo*. Development of acetylated-K174 tau specific antibody allowed them to quantitatively validate the specific increase of the levels of ac-K174 tau in early break stages of AD cortex. Moreover, injection of AAV-TauK174Q, acetyl-mimicking mutant, into hippocampus, was sufficient to induce AD-related cognitive dysfunction. Compound X, FDA approved drug, was identified as a potent p300 inhibitor. Treating with compound X on P301S tau transgenic mice, reduced tau levels, ameliorated tau pathology and rescued cognitive dysfunction derived from mutant tau expressions. Importantly, the protective mechanisms by compound X appeared to be dependent on reducing tau acetylation on K174. Collectively, they showed a new direction of therapeutic implications for tauopathies by modulating tau acetylation.

About the Speaker

Dr Min Sang-Won is currently a Postdoctoral Research Fellow in the Gladstone Institute of Neurological Diseases at the University of California, San Francisco

(UCSF). As a native Korean, he received his B.S. degree in Molecular Biology and M.S. degree in Biochemistry from Seoul National University in Seoul, Korea. He then joined Dr Thomas Sudhof's laboratory as a graduate student in the Neuroscience Program at the University of Texas Southwestern Graduate School of Biomedical Sciences, where he studied the mechanism of open-closed conformational switch of Syntaxin-1 in controlling synaptic vesicle fusion using mouse model and identified a novel family of multiple C2-domain proteins, E-Syts, analyzing their biochemical properties. After completing his PhD study, he moved to Gladstone Institute at UCSF for his postdoctoral research in the lab of Dr Li Gan. His studies on tau acetylation and its relationship with the pathogenesis of Alzheimer's disease and tauopathies revealed the novel mechanism that could lead to a new therapeutic strategy to reduce tau-mediated neurodegeneration. Dr Min published a number of papers in high-impact journals, as a first author, such as *Science, PNAS* and *Neuron*. He received a Young Scientist Award in Alzheimer's Association and was invited as a speaker at International Conference on Alzheimer's Disease (AAICAD) in 2010.

--- Admission is free and all are welcome ---