The Singapore Bioimaging Consortium (SBIC)
presents a seminar

on

# "A Neural Circuit that controls Cortical state and Adult Plasticity in mouse"

**Speaker: Dr Fu Yu**
**University of California**
**School of Medicine**
**Host : Dr Han Weiping**
**Date : Tuesday, 5 May 2015**
**Time : 11.00am – 12.00pm**
**Venue : SBIC Seminar Room**
**11 Biopolis Way**
**Level 2, Helios Building, Singapore 138667**
**(Please enter Level 1 entrance)**

## Abstract

Sensory responses are strongly modulated by behavioral states. It was recently shown that locomotion increases the gain of visual responses. Locomotion was also found to dramatically enhance adult plasticity in the mouse visual cortex. We have studied the elements and operation of the neural circuit responsible for the enhancement of activity and shown that it enhances plasticity even in mice not free to run. The circuit consists of projections ascending from the midbrain locomotor region to the basal forebrain, activating cholinergic and perhaps other projections to excite inhibitory interneurons expressing vasoactive intestinal peptide (VIP) in the visual cortex. VIP cells activated by locomotion inhibit interneurons that express somatostatin (SST), thereby disinhibiting the excitatory principal neurons and allowing them to respond more strongly to effective visual stimuli. These findings reveal in alert animals how the ascending reticular activating system described in anesthetized animals 50 years ago operates to control cortical state.

## About the Speaker

Dr Fu grew up in Nanjing (China) and went to Nanjing University for undergraduate education. He obtained a Master degree from the Department of Pharmacology at University of Hong Kong in 2005. After two years in Hong Kong, he went to the State University of New York at Stony Brook for PhD. He joined Dr Josh Huang's Cold Spring Harbor Laboratory for thesis research, and studied the formation and maturation of GABAergic synapses. After his PhD training in molecular and cellular neuroscience he joined Dr Michael Stryker's laboratory at the University of California San Francisco in 2011 for postdoctoral training in systems neuroscience. At UCSF, Dr Fu elucidated the neural circuits responsible for behavioral state dependent sensory

modulation and further revealed new circuitry mechanisms of adult cortical plasticity. He was awarded the A*STAR Investigatorship in 2014 and will set up his own laboratory at the Singapore Bioimaging Consortium in 2015.

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