

Research Theme: Neurobiology
Research Project Title: Neurobiology of Learning and Memory
Principal Investigator/Supervisor: CH'NG Toh Hean
Co-supervisor/ Collaborator(s) (if any): NA
Project Description
<p>Our lab is interested in understanding the molecular mechanism of how neurons encode long term memories. When neurons receive inputs at distal synaptic sites, a subset of proteins residing at these stimulated synapses have been shown to undergo retrograde synapse to nucleus translocation. Many of these proteins such as NFkb, CRT1, NFAT, Jacob and CREB2 are potent transcriptional activators in neurons whose impaired functions are implicated in signaling pathways associated with neurocognitive disorders and neurodegenerative diseases. However to date, only several such proteins have been identified to undergo synapse to nucleus translocation. One of the aims of this project is to employ a non-bias biochemical and proteomics approach to isolate, identify and characterize additional candidate proteins that undergo activity-dependent synapse to nucleus translocation during exposure to stimuli associated with long-lasting forms of neuronal plasticity. Once additional target proteins are identified, we will characterize the function of these proteins in the context of long term plasticity as well as learning and memory, focusing particularly on proteins that are implicated in neurocognitive or memory-related disorders. In addition, we are also interested in better understanding the molecular machinery that allows this rapid synapse to nuclear translocation in hopes that this research may yield additional drug targets that can either enhance or block translocation of certain proteins. We will mainly use the transgenic mouse as our model system and our lab will employ different methodologies ranging from basic cell molecular and biochemical approaches to transcriptomics and animal behavior to answer these questions.</p>
Supervisor contact:
<p>If you have questions regarding this project, please email the Principal Investigator: Email: thchng@ntu.edu.sg</p>
SBS contact and how to apply:
<p>Associate Chair-Biological Sciences (Graduate Studies) :AC-SBS-GS@ntu.edu.sg Please apply at the following: http://admissions.ntu.edu.sg/graduate/R-Programs/R-WhenYouApply/Pages/R-ApplyOnline.aspx</p>