Institute of Molecular and Cell Biology
A*STAR

SEMINAR ANNOUNCEMENT

We would like to invite you to attend this seminar hosted by Dr. Sherry Aw:

Date: 27 June 2019, Thursday
Time: 11:00AM – 12:00PM
Venue: Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

Speaker: Dr. Yoshinori Aso, Group Leader, Janelia Research Campus, Howard Hughes Medical Institute, VA, USA
Title: Parallel dopaminergic pathways and memory circuits for memory-based action selection

Abstract
Animals discriminate stimuli and learn their predictive value based on temporal correlation with reinforcements (reward or punishment). Synaptic modulation by dopamine is essential for such associative learning and adaptive behaviors in all animal phyla. Induction of synaptic plasticity by dopaminergic neurons (DANs), in turn, affects how DANs respond to reinforcement and learned stimuli. In that way, learning adjusts how and what animals learn thereafter. Thus understanding molecular mechanisms that regulate how DANs modulate synaptic connection and intricate circuit mechanism that adaptively regulate activity of DANs, and their interplays are essential for comprehensive understanding of dopaminergic system.

Our lab is using the Drosophila mushroom body (MB), a key center for associative learning in insect brains, as a model system, where distinct subsets of 20 types of DANs write and update memories independently in each memory unit of the MB with cell-type-specific rules. I will discuss our recent findings about 1) nitric oxide function as cotransmitters of small subset of dopaminergic neurons to facilitate quick update of memory, 2) description of nanoscale synaptic structures in the MB by expansion and lattice light sheet microscopy, 3) EM connectome-based analysis of neuronal circuit that integrate memories from MB compartments to guide memory based action selection and future learning.

Biography
Yoshinori Aso has been a group leader at HHMI's Janelia Research Campus since March 2018. Yoshinori's current research focus is on understanding the molecular and circuit mechanisms used to store information in parallel memory units in a brain, and how those memories are integrated to guide an animal's actions.

Before starting his postdoctoral studies with Gerald M. Rubin at Janelia, his research career started with a project at Tokyo Institute of Technology to conditionally disrupt dopaminergic systems in mice. After completing his master's thesis on genes that promote survival hippocampal neurons at Heidelberg University, Yoshinori moved to the department of Martin

Heisenberg at Universität Würzburg, where he started a series of experiments on dopaminergic neurons in Drosophila MBs with Hiromu Tanimoto. Yoshinori completed his PhD thesis with Hiromu Tanimoto at the Max Planck Institute of Neurobiology in 2011.

ALL ARE WELCOME *(No registration required)*

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Thank you.