Institute of Molecular and Cell Biology
A*STAR

SEMINAR ANNOUNCEMENT

We would like to invite you to attend this seminar hosted by Prof Hong Wanjin:

Date: 23 September 2019, Monday
Time: 2.00PM – 3:00PM*
Venue: Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

***Kindly take note of correct timing**

Speaker: Dr Sheng Zuhang, Senior Investigator, Chief of Synaptic Function Section, NINDS, NIH, USA
Title: Mitochondrial transport and energy homeostasis in neuronal health and disease

Abstract
Mitochondria are cellular power plants that produce ATP essential for cell growth, function, and regeneration. Neurons face an exceptional challenge to maintain energy homeostasis in distal axons, synapses, and growth cones where energy is highly demand. We identified syntaphilin as a static anchor for axonal mitochondria. Deleting syntaphilin robustly increases axonal mitochondrial motility both in vitro and in vivo. I will first discuss new mechanistic insights into how motile mitochondria passing through synapses influence synaptic vesicle release by altering presynaptic ATP levels, thus contributing to the variability of presynaptic strength. Second, I will discuss how reduced mitochondrial motility and energy deficits in injured axons in mature CNS control regenerative capacity. Enhancing mitochondrial transport rescues energy deficits, thus facilitating regenerative capacity after injury. Chronic mitochondrial dysfunction is a central problem associated with neurodegenerative diseases. In the third part, I will present how axonal mitochondria respond to physiological stress and chronic pathological conditions of ALS and AD-linked neurons. Stressed mitochondria are removed from distal axons triggered by the release of syntaphilin via a new class of mitochondria-derived cargos. Our study provides new mechanistic insights into neuronal mitochondrial quality control and thus axonal energy maintenance before activation of mitophagy.

Biography
Dr. Sheng received his Ph.D. from University of Pennsylvania and postdoctoral training at University of Washington. Dr. Sheng joined NIH as an investigator in 1996 and is now a senior investigator and Chief of Synaptic Function Section. He is a distinguished investigator and has made seminal contributions to axonal transport of mitochondria, endo-lysosomes, and presynaptic cargos for maintaining energy and cellular homeostasis and synaptic function. His studies have elucidated important mechanisms of synaptic variability, regeneration failure, and mitochondrial maintenance, and conceptually advance our knowledge of mitochondrial pathology, energy deficits, and lysosomal dysfunction in nerve injury and neurodegeneration. Dr.

Sheng's work has achieved international recognition that is best exemplified by his role as chair on international symposiums, invited talks at top institutions and at GRC, SfN, ASCB, and EMBO societies, his service on editorial boards, monitoring and associate editor, and his recent election as fellow of AAAS (2016) and ASCB (2017).

ALL ARE WELCOME *(No registration required)*

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Thank you.