



Stanford Center at
Peking University

Science
Lecture

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NEURONAL INTRINSIC SIGNALING FOR NEUROPROTECTION AND AXON REGENERATION

Axonopathy is a typical early characteristic of neurodegenerative diseases in central nervous system (CNS), which leads to axon degeneration and retrograde neuronal cell death. It is critical to decipher the upstream signals that trigger the neurodegeneration cascade to minimize the severe consequences of progressive CNS dysfunction. It is also of utmost interest to promote CNS axon regeneration for neural repair. Optic neuropathies are a group of retinal ganglion cell (RGC) diseases with features of axonopathy: they are initiated by optic nerve (ON) injury and that produces secondary RGC death. Prof. Hu's study of three *in vivo* mouse models of optic neuropathies (traumatic optic nerve injury, glaucoma and EAE/optic neuritis) revealed that both acute traumatic injury and chronic insult of ON induce endoplasmic reticulum (ER) stress and activate the unfolded protein response (UPR) signal transduction pathways in RGCs. Modulation of two key downstream pathways of ER stress synergistically promote survival of both RGC somata and axons in all three optic neuropathy models, suggest that neuronal ER stress is a general upstream mechanism for both events in CNS axonopathies, and that axon injury-induced ER stress is the link between the sequential events of axon injury and neuronal soma death. Using the same model, we also revealed a complex neuron-intrinsic balancing mechanism involving AKT as the nodal point of PI3K, mTORC1/2 and GSK3 β that coordinates both positive and negative cues to regulate adult CNS axon regeneration.

Speaker

Professor HU Yang

Prof. Hu, Assistant Professor of Ophthalmology at Stanford University School of Medicine, is also member of Bio-X and of Stanford Neurosciences Institute. He received the Douglas Johnson Award for Glaucoma Research (2013) and the Knight Templar Eye Foundation Travel Fellowship Award (2016). Prof. Hu received his Ph.D in Neuroscience at Weill Medical College of Cornell University and MD from Beijing Medical University.

Coming to SCPKU

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Date

December 8, 2017 (Friday)

Time

11:30 - 13:15

lunch box option provided

Venue

**Stanford Center
at Peking University**

Langrun Yuan, Peking University

Language

English

Registration

<https://www.eventbank.cn/event/13400/>