THE CHINESE UNIVERSITY OF HONG KONG
FACULTY OF MEDICINE
SCHOOL OF BIOMEDICAL SCIENCES

SBS PI Seminar Series 2022-2023

Prof. IP Pak Kan Jacque
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will present a seminar entitled

"CDKL5 regulates phase separation of nELAVL condensates to drive assembly of neural circuit"

Abstract: Neuronal circuits in our brain are known to be plastic and are subject to experience-driven changes that cause neurons to modify their functional connectivity and responses. Crucially, dysregulated synaptic development and plasticity have been hypothesized to be the underlying cause of altered neuronal function in neurodevelopmental disorders, including intellectual disability and autism spectrum disorder. Yet it remains unclear how impaired synaptic events and aberrant neural circuit formation lead to behavioral deficits in neurodevelopmental disorders. By employing cutting-edge in vivo imaging methods, coupled with proteomic and single-nuclei transcriptomic approaches, our work will characterize how visual cortex is affected in neurodevelopmental disorders such as CDKL5 deficiency disorder (CDD). This work will address how disruption of CDKL5 protein impacts the functioning of cortical circuits and its relationship with CDD, an autism-related disorder that causes a range of developmental problems including learning disabilities and cortical visual impairment. We have also identified a set of novel substrates, named nElavl, downstream of CDKL5 required for proper visual circuit assembly. We found that CDKL5-mediated phosphorylation of nElavl regulates nElavl condensates formation via liquid-liquid phase separation, and thus regulates mRNA availability in the neurons. The outcome of our work will provide critical information for the role of synaptic deficits and aberrant neural circuit in the function of the brain in the context of neurodevelopmental disorders.

14 December 2023, Thursday, 4:00 – 5:00 pm

Room G02, Lo Kwee-Seong Integrated Biomedical Sciences Building,
Area 39, The Chinese University of Hong Kong