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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY
Division of Life Science

LIFS Seminar Series

Regulation of Neural Stem Cell Homeostasis

by

Prof. Hongyan WANG

Associate Professor
Department of Physiology
National University of Singapore

Abstract:

The switch between quiescence and proliferation is central for neurogenesis and its alteration is linked to neurodevelopmental disorders such as microcephaly. However, intrinsic mechanisms that reactivate Drosophila larval neural stem cells (NSCs) to exit from quiescence are not well established. Here we show that the spindle matrix complex containing Chromator (Chro) functions as a key intrinsic regulator of NSC reactivation downstream of extrinsic insulin/insulin-like growth factor signalling. Chro also prevents NSCs from re-entering quiescence at later stages. NSC-specific in vivo profiling has identified many downstream targets of Chro, including a temporal transcription factor Grainy head (Grh) and a neural stem cell quiescence-inducing factor Prospero (Pros). We show that spindle matrix proteins promote the expression of Grh and repress that of Pros in NSCs to govern their reactivation. Our data demonstrate that nuclear Chro critically regulates gene expression in NSCs at the transition from quiescence to proliferation. The spindle matrix proteins, including Chro, are known to regulate mitotic spindle assembly in the cytoplasm. Here the authors show that in Drosophila larval brain, Chro promotes neural stem cell (NSC) reactivation and prevents activated NSCs from entering quiescence, and that Chro carries out such a role by regulating the expression of key transcription factors in the nucleus.

Date : 5 July 2018 (Thursday)

Time : 2:00 p.m.

Venue : Lecture Theatre C
The Hong Kong University of Science & Technology
Clear Water Bay, Kowloon

(Host faculty: Prof. Yan Yan)

All are Welcome!!