CDB SEMINAR

Date:	Wednesday, July 14 16:00 P.M.～17:30 P.M.
Place:	1F Auditorium of Building C, CDB

16:00 ～16:30

Speaker1: Shuk Han Cheng

< Department of Biology and Chemistry, City University of Hong Kong >

Title: **"*ziro1b* plays an evolutionarily conserved role controlling Hh expression during retinal development in zebrafish"**

The eyes of vertebrates and fruitfly (*Drosophila*) have tremendous anatomical and physiological differences, however it is now evident that they share surprisingly conserved regulatory pathways for their development. The *Drosophila Iroquois* (*Iro*) homeobox genes are essential for the growth and patterning of the eye/antenna imaginal disc. *Iro* homologs have been identified in many phyla, but their roles in vertebrate eye development are not known. We have previously identified one of the zebrafish *Iro* genes, *ziro1b*, which shares highest homology to human, mouse, frog and chick *Iro1*/*Irx1*. Sequence and mapping analysis revealed that there are at least two *Irx1*-like genes (*ziro1a* and *ziro1b*) in zebrafish. In the developing eye, *ziro1b*, but not *ziro1a*, is expressed in the neural retina during embryogenesis. Zebrafish embryos with morpholinos knockdown of *ziro1b* expression showed severe retinal defects and blindness. Interestingly, although most neurons can be found in the ventral retina, propagation of retinal neuron differentiation is arrested in *ziro1b* morphants. Hh signaling is known to control propagation of retinal neurogenesis in both *Drosophila* and zebrafish. Strikingly, we found that the *sonic hedgehog* wave failed to spread in *ziro1b*-inactivated retina suggesting that *ziro1b* regulates the propagation of neurogenic wave through controlling the expression of *sonic hedgehog*. The results of this study will be discussed.

16:30 ～17:30

Speaker2: Chi-chung Hui

< Program in Developmental Biology, The Hospital for Sick Children,
and Department of Molecular and Medical Genetics, University of Toronto >

Title: **"Gli activator and repressor functions in Hedgehog signaling"**

Hedgehog (Hh) signaling plays a pivotal role in many aspects of animal development, and deregulation in Hh signaling results in various congenital malformations and cancers in human. My laboratory has been studying the function of three zinc finger-containing transcription factors (Gli1, Gli2, and Gli3), which are nuclear transducers of Hh signaling in mammalian cells. By biochemical and genetic approaches, we have shown that Gli2 and Gli3 function as both transcriptional activator and repressor in regulating Hh target gene expression, whereas Gli1 only acts as an activator and plays a secondary role in Hh signal transduction. Our data indicate that Hh responses in different developmental systems involve context-dependent modulation of Gli activator and repressor activities. In this seminar, I will present our recent works illustrating the role of Gli activator and repressor functions in cell specification and proliferation.

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