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TEMASEK LIFESCIENCES LABORATORY

09 November 2016 (Wednesday), 11am
The Auditorium (Level 1)
Hosted by: Dr PEK Jun Wei

Breaking symmetry – Asymmetric epigenetic inheritance during Drosophila germline stem cell asymmetric division

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I am an associate professor at the Biology Department of Johns Hopkins University. I did my graduate work at the University of Texas at Austin, with Dr. Janice Fischer to study the signaling pathways in eye development of Drosophila. In Apr., 2002, I joined the laboratory of Dr. Margaret Fuller at Stanford University as a postdoc, where I studied transcriptional regulation of gene expression using Drosophila male gametogenesis as a model system. I started my own lab at the Department of Biology of Johns Hopkins University in 2008.

Many types of stem cells undergo asymmetric cell divisions to give rise to daughter cells with distinct cell fates: one that retains stem cell identity and another that differentiates. During asymmetric cell division, the genomic information is preserved through DNA replication followed by equal partition to the two daughter cells. A long-standing question has been how the epigenetic information of a stem cell is transferred to the daughter cells. Using the Drosophila male germline stem cell lineage, our recent studies showed that epigenetic information is inherited asymmetrically during asymmetric stem cell divisions. Our ongoing research is to elucidate how stem cells maintain their epigenetic memory through many divisions and whether the loss of stem cell epigenetic memory leads to diseases.

Recent Publications:

1. Xie, J., Wooten, M., Tran, V., Chen, B-C., Pozmanter, C., Simbolon, C., Betzig, E. and **Chen, X.** (2015) Histone H3 Threonine phosphorylation regulates asymmetric histone inheritance in the Drosophila male germline, Cell, 163(4): 920–933.
2. Eun, S., Shi, Z., Cui, K., Zhao, K. and **Chen, X**. (2014) A non-cell autonomous role of E(z) to prevent germ cells from turning on a somatic cell marker. Science, 343(6178):1513-1516.
3. Tran, V.*, Lim, C.*, Xie, J. and **Chen, X.** (2012) Asymmetric division of Drosophila male germline stem cell shows asymmetric histone distribution. Science, 338(6107): 679-682, (* equal contribution).