



Institute of
Molecular and
Cell Biology

SEMINAR ANNOUNCEMENT

DATE: 15 March 2012, Thursday
TIME / VENUE: 11:00AM @ Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis
SPEAKER: Dr. Hitoshi Sawa
TITLE OF SEMINAR: **Regulation of asymmetric cell division by Wnt signaling**



Dr. Hitoshi Sawa

**Professor, Multicellular Organization Laboratory,
National Institute of Genetics, Japan**

Wnt signaling has important roles for homeostasis of various stem cells that undergo self-renewing asymmetric divisions. In *C. elegans*, most cell divisions are asymmetric to produce distinct daughter cells. This asymmetry is regulated by a divergent Wnt signaling pathway called Wnt/b-catenin asymmetry pathway in which signaling components localize asymmetrically during divisions. For example, b-catenin localizes to the anterior side of the cell cortex and counter-intuitively to the posterior nucleus at telophase. We have recently found that this pathway regulates asymmetry of spindle structure that is required for asymmetry of b-catenin nuclear localization, providing first example in which the nuclear localization of proteins is regulated by controlling microtubules.

In addition to the mechanism of asymmetric division of a single cell, we are studying how this process is coordinated during development. Because b-catenin is localized to the posterior nuclei after most cell divisions, these dividing cells are polarized in the same orientation along the anterior-posterior axis. Such coordinated polarization of multiple cells are often regulated by the Wnt/PCP pathway in other organisms. However, how the orientations of polarities are coordinated by extrinsic signals (Wnts) is not understood in any organisms. We found that polarities of six epithelial stem cells are redundantly regulated by four Wnts and three Wnt receptors. I will discuss how these genes synchronize polarities of the stem cells.

Host: Prof. Stephen Cohen

*For upcoming seminars in IMCB, please visit our website at
<http://www.imcb.a-star.edu.sg/php/seminars.php>*