CDB SEMINAR

Speaker: Toru Miyazaki

<Center for Immunology, UT-Southwestern Medical Center at Dallas>

Title: "A novel Polycomb MBT-1 as a dictator of differentiation of haematopoietic progenitor cells: implications for its relevance to leukemogenesis."

Date: Thursday, April 8
Time: 16:00 -17:00
Place: 7th floor Conference Room of Building A,CDB

Summary:

Haematopoiesis, like developmental processes of other lineage cell types, involves the production of a diverse array of mature cells via a hierarchy of progenitor cells. The sporadic collapse of the maturational regulation of immature progenitors is one of the essential characteristics in leukemia. We identify a novel Polycomb group gene, *MBT-1*, that is transiently upregulated upon maturation induction stimuli in leukemia cells, and localized into the human chromosome 6q23, frequently deleted in acute leukemia and lymphoma cells. In *MBT-1*$^{-/-}$ mice, haematopoietic progenitor cells harbored a specific deficiency for the maturational advancement at multiple transitions between two progenitor stages, without proliferative damage. This resulted in accumulation of various immature progenitors and, in consequence, a marked decrease of mature blood cells, causing mutant mice to die of anemia during a late embryonic stage. *MBT-1*$^{-/-}$ haematopoietic progenitor cells revealed significantly decreased expression levels of a cyclin-dependent kinase inhibitor p57^{KIP2}, and their maturational defect was efficiently overcome by p57^{KIP2} complementation in the cells. Thus, MBT-1 represents a new mode of haematopoiesis regulation; dictating maturational advancement of progenitor cells by transiently interfering with cell cycle via enhancement of p57^{KIP2} expression, implicating a relevance of its dysfunction to leukemogenesis.

Host: Shin-Ichi Nishikawa <Stem Cell Biology, CDB>
E-mail: nishikawa@cdb.riken.jp Tel: 078-306-1893
RIKEN Center for developmental Biology http://www.cdb.riken.go.jp/