CDB SEMINAR

Shosei Yoshida

Graduate School of Medicine, Kyoto University

Thursday, May 8, 2008
15:00~16:00 A7F Conference Room

Spermatogenic-Stem-Cell System and its Spatiotemporal Regulation in the Mouse Testis

Summary
In mammalian testes, continuous production of numerous sperm is ensured by a robust stem cell system. Despite intensive investigations for decades, the cellular identity and the *in vivo* behaviors of the stem cells are yet to be elucidated to an extent that permits general agreement. In the adult mouse testis, stem cell functions reside in a primitive-most set of spermatogonia, 'undifferentiated spermatogonia (A_{undiff})', whereas this tiny population also contains the youngest progenitors. We have been investigating the A_{undiff} by means of genetic labeling that allows live imaging and lineage tracing.

We have proposed that, in addition to the 'actual stem cells' that support the homeostatic state, an extended population also retains the self-renewing potential. These cells, the 'potential stem cells', seem to differentiate as transit amplifying cells in homeostasis, and may play roles in regeneration. In this seminar, characters of these functional compartments will be discussed in light of their gene expression and morphology.

Second, I would like to talk about the spatiotemporal coordination of A_{undiff} behaviors *in vivo*, under the structural framework built by somatic cells. Spatially, relative position to the vasculature is crucial for the formation of their microenvironmental niche. Temporally, A_{undiff} give rise to differentiating cells periodically once every 8.6 days, which is linked to the cyclic change of the supporting Sertoli cell functions. Mechanisms underlying this temporal regulation will be discussed.

Nakagawa et al.*, Developmental Cell* 12, 195-206 **(2007)**
Yoshida, et al., ***Science*** 317, 1772-1776 **(2007)**

Host:
Shigeo Hayashi
Morphogenetic Signaling, CDB
shayashi@cdb.riken.jp
Tel:078-306-3185 (ext:1523)