CDB SEMINAR

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Friday, March 17

16:00~17:30 C1F CDB Auditorium

Mammalian spermatogenic stem cells *in vivo*: origin, niche and modes of self-renewal

Summary

We are investigating the murine spermatogenic stem cells that ensure the continuous and highly productive sperm formation. The stem cell activity resides in a small subset of mitotic germ cells, “undifferentiated spermatogonia”. This population consists far less than 1 % of the whole testicular cells and has long been difficult to approach because of the lack of specifically expressed genes. This is why the *in vivo* behaviors of mammalian spermatogenic stem cells have only been proposed based on fixed and stained specimen.

We have identified that neurogenin3 (ngn3), a basic helix-loop-helix transcription factor, is specifically expressed in the undifferentiated spermatogonia. Using this, we are performing several experiments to dissect the behaviors of this population *in vivo*. The ngn3-positive cells were labeled with GFP and their characteristic morphologies were visualized in living testes. Based on this, an experimental system has been developed that enables the time-lapse recording of the GFP-positive undifferentiated spermatogonia in a living adult testis. As a result, these cells’ unexpectedly dynamic behaviors (distributions, movements, death, as well as divisions) were observed. In this seminar, I would like to discuss about the structural basis of the spermatogonial stem cell niche, and about modes of the maintenance of the self-renewing population. As well, the origin of the stem cell population during the spermatogenesis establishment will be discussed.

Yoshida et al., *Development* (2006) in press

Yoshida et al., *Dev. Biol.* 269, 447-458 (2004)

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