CDB SEMINAR

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Friday, May 26, 2017
16:00-17:00 A7F Seminar Room

The activation of canonical Wnt signaling in the spermatogonial stem cell pool

Summary

Sperms are important cells that connect life to the next generation. Immature cells in the testes called spermatogonial stem cells (SSCs) generate progenitors of sperms. Somatic cells, such as Sertoli cells, provide a microenvironment to SSCs. Both cell types play a crucial role in the spermatogenesis. However, signaling pathways that control maintenance and differentiation of SSCs are not well understood. Here we propose that the proliferation of SSCs is controlled by canonical Wnt signaling through Wnt6 secretion from Sertoli cells.

Using genetic lineage tracing strategy and Axin2 as a direct reporter of canonical Wnt signaling activity, we elucidated that Axin2-positive cell population contains SSCs which contribute to steady-state spermatogenesis. Genetic elimination of β-catenin in the Axin2-positive cells revealed that Wnt signaling is necessary for proliferation but not maintenance of SSCs. By *in situ* hybridization screen for all Wnt ligands, we identified Wnt6 as a strong candidate of niche signal for SSCs that is secreted by Sertoli cells.

To reveal the interaction between SSCs and testicular somatic cells via Wnts, I have started the generation of somatic cells-specific *Wls* conditional knockout mice. Wls is thought as a specific regulator of pan-Wnt protein secretion. In this seminar, I will share my latest results to uncover the mode of action and the importance of Wnt signaling for the proper spermatogenesis.

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