部門公開セミナー

共催：新学術領域研究「配偶子産生制御」

Identification of Slow Cycling Spermatogonial Stem Cells and their Regulation by PLZF

Robert Braun, Ph.D.
Professor and Vice President of Research, The Jackson Laboratory

平成 27 年 6 月 5 日(金) 13:30 -
山手 3 号館 2 階 共通セミナー室

A small population of GFRA1+ spermatogonial stem cells (SSCs) supports long-term maintenance of mammalian spermatogenesis. We show here that overexpression of GDNF, the ligand for GFRA1, increases functional SSC numbers in control mice but not in *Plzf*$^{lu/lu}$ (*luxoid*) mice, which exhibit age-dependent germ cell loss. Taking advantage of the difference in SSC potential in these backgrounds, we used RNAseq to identify a subpopulation of SSCs that express EOMES, a T-box transcription factor. EOMES+ SSCs are resistant to busulfan-induced germ cell death and have a lower proliferation index than EOMES– GFRA1+ spermatogonia. PLZF controls this 'slow-cycling' state, as EOMES+ cells have a higher proliferation index in *luxoid* mutants. We propose there are two populations of SSCs, an EOMES+ slow cycling, long-term SSC ($A_{s\text{-}LT}$) and a highly proliferative EOMES- short-term SSC ($A_{s\text{-}ST}$). Loss of *Plzf* deregulates the slow-cycling status of $A_{s\text{-}LT}$ cells, leading to stem cell exhaustion and eventual failure of spermatogenesis.

Seminar will be given in English.

連絡先：生殖細胞研究部門　吉田松生（5865）
shosei@nibb.ac.jp