



第 495 回つくば分子生命科学セミナー

TSUKUBA MOLECULAR LIFE SCIENCE SEMINAR

演題 : Setting the Epigenetic Stage for Germline Differentiation.

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日時 : 2025 年 12 月 12 日 (金) 17:00-18:30

会場 : 臨床講義室 D

要旨 : Germ cells transmit genetic information to the next generation and thereby ensure the continuity of life. To fulfill this essential role, their differentiation must be precisely regulated by specialized epigenetic mechanisms. During spermatogenesis, undifferentiated spermatogonia act as stem cells that self-renew and differentiate into differentiating spermatogonia in response to retinoic acid signaling. Our previous work revealed that chromatin states required for the activation of differentiating and meiotic genes are already established at the undifferentiated spermatogonial stage; however, when and how these “primed” states arise remained unclear. Here, we focused on prospermatogonia, the precursors of undifferentiated spermatogonia, and analyzed their chromatin dynamics. We found that the chromatin remodeler SMARCA5 cooperates with the pioneer factor DMRT1 to promote chromatin opening at enhancer and promoter regions during the transition to spermatogonia, thereby enabling transcription factors such as retinoic acid receptors to bind and activate differentiation programs. These findings identify the prospermatogonial stage as a “preset period” that lays the chromatin foundation for germline differentiation.

(This seminar will be conducted in Japanese.)

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