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DISTINGUISHED SEMINAR

Decoding the transcription regulation in early mammalian development

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Date: Wednesday, 5 November 2025

Time: 16:00 - 17:30

Venue: Conference Room
B1F, Faculty of Medicine Bldg. B

Eligibility: Academic Researchers and Students

Registration

Drastic transcription and epigenetic reprogramming occur during mammalian early embryogenesis. Deciphering the molecular events underlying these processes is crucial for understanding how life really begins. Probing these questions was previously hindered by the scarce experimental materials that are available from early embryos. By developing a set of ultra-sensitive chromatin analysis technologies, we investigated epigenetic reprogramming during early mouse development for chromatin accessibility, histone modifications, and 3D chromatin architecture. These studies unveiled highly dynamic and non-canonical chromatin regulation during the maternal-to-zygotic transition. Recently, we also identified a number of key transcription factors (TFs) that govern mammalian zygotic genome activation (ZGA) and the first cell fate commitment. However, how the embryonic transcription program is established amid the non-canonical, immature epigenome still remain enigmatic. In this talk, I will present data on how TFs and epigenetic factors may cooperatively establish embryonic gene program, and how the embryonic epigenomes including the 3D chromatin organization are properly restored in early mammalian development. I will also discuss how these findings and the underlying principles are extended from mouse to human.

Hosted by Institute for the Advanced Study of Human Biology (WPI-ASHBi)

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