ASHBi SEMINAR

Revealing regulatory mechanisms of transcriptional dynamics by imaging techniques

Lecturer: Dr. Hiroshi Ochiai

Professor / Kyushu University

Date Thursday, 12 October 2023

Time 14:00 – 15:00 [JST]

Venue Conference Room / Zoom

B1F, Faculty of Medicine Bldg. B

*Register via the right QR code

Abstract

Multicellular organisms, including humans, are composed of various cell types. Each cell type expresses genes specific to its phenotype. This cell-type-specific expression is primarily regulated by enhancers located distal to the genes. However, many questions remain unanswered about the dynamic proximity between enhancers and promoters and its relationship with transcriptional activity. We investigated enhancer-promoter (E-P) interactions and transcriptional dynamics in mouse embryonic stem cells using sequential DNA/RNA/immunofluorescence (IF)-FISH analyses, live-imaging, and computational simulations. Our findings demonstrate that the active state of particular genes is marked by advanced genomic configurations and localized aggregations of transcriptional regulatory proteins, which results in a prolonged duration of E-P interactions. This emphasizes the critical importance of E-P contact time in transcriptional dynamics and paves the way for a more nuanced understanding of gene-specific regulatory mechanisms.

Organizer : Graduate School of Medicine
Institute for the Advanced Study of Human Biology (WPI-ASHBi)

Contact:
Prof. Sungrim Seirin-Lee / [E-mail] lee.seirin.2c@kyoto-u.ac.jp
Prof. Taro Tsujimura / [E-mail] tsujimura.taro.4m@kyoto-u.ac.jp