BDR SEMINAR (Kobe & online hybrid)

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Tuesday, November 17, 2026

16:00-17:00

1F Auditorium, DB Building C, Kobe / Broadcast online via Zoom

This seminar is open only for BDR Members

※This seminar is a part of the BDR TransitionCode Project Seminar Series for FY2026

DNA Replication and Cell Fate Transitions

Summary

In S phase, DNA replication involves the disassembly of chromatin structures genome wide. Because of its disruptive nature, DNA replication has been suggested to facilitate cell fate transitions, as chromatin disassembly provides an opportunity to re-shape the chromatin landscape. However, the role of DNA replication in cell fate transitions remains incompletely understood. We find that over 100 proteins associate to nascent chromatin during differentiation of human induced Pluripotent Stem Cells (iPSCs) into presomitic mesoderm. While many of these proteins are also present in iPSCs they are not recruited to nascent chromatin prior to differentiation. One of these proteins is the histone methyltransferase SETDB1 and this coincides with an enhancement of H3K9 methylation through a DNA replication-coupled process. We establish that SETDB1 facilities mesoderm differentiation, and the establishment of H3K9me3 at Long Terminal Repeats. Our work reveals how replication forks play a key role in directing developmentally regulated chromatin signatures.