

# RIKEN SEMINAR

< 1<sup>st</sup> Epigenetics Seminar Series 2019 >

**Speaker**  
10:00-11:00

Dr. Wei Xie

School of Life Sciences,  
Tsinghua University, Beijing, China

**Speaker**  
11:00-12:00

Dr. Rob Klose

Department of Biochemistry Oxford Univ.

**Title**

Chromatin reprogramming in mammalian gametogenesis and early development

Drastic chromatin reorganization occurs during mammalian gametogenesis and early embryogenesis. Deciphering the molecular events underlying these processes is crucial for understanding both fundamental biology and infertility. Previously, we have developed a series of ultra-sensitive chromatin analysis methods. Using these technologies, we reported chromatin reprogramming during early mammalian development for chromatin accessibility, histone modifications, and 3D architecture. These studies unveiled highly dynamic and non-canonical chromatin regulation during maternal-to-zygotic transition and zygotic genome activation. In this talk, I will present our recent research progress in understanding chromatin regulation during mammalian gametogenesis and early development. We report that SETD2, an H3K36me3 methyltransferase, is a crucial regulator of the mouse oocyte epigenome. Maternal depletion of SETD2 results in oocyte maturation defects and subsequent embryonic lethality after fertilization. Detailed investigations using low-input chromatin analysis methods reveal how the oocyte epigenome is established through extensive crosstalks of chromatin modifications, and how its defects profoundly affect embryonic development.

**Title**

Dissecting Polycomb mediated gene repression

Polycomb Repressive Complex 1 (PRC1) and PRC2 are essential for normal mammalian development through their role in chromatin-based regulation of gene expression. However, the molecular mechanisms by which Polycomb group (PcG) proteins achieve this remain poorly understood. In part, this is due to the large number and complexity of protein assemblies that comprise the Polycomb repressive system. Here, I will discuss our efforts to use genetic perturbation coupled with quantitative genomic approaches to discover the central determinants of Polycomb-mediated gene repression in mouse embryonic stem cells (ESCs).

Language : English

Date / Time : Thursday, May 30 / 10:00-12:00

Location : Main office Bldg. (Koryu-to) Hall, Yokohama

•Live telecast from Yokohama Main

<Wako: 408 Seminar Room, Chemical Biology Bldg.><Kobe: N703 Seminar Room A7F, Kobe DB Bldg.>

<Tsukuba: Moriwaki Hall><Osaka: 1F Lounge, Quantitative Biology Bldg. A>

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