The 182nd iCeMS SEMINAR

Fri 28 Nov 2014
15:00-18:00

Venue:
2nd Floor Seminar Room (#A207)
iCeMS Main Building (#77), Kyoto University

<Part 1: 15:00-16:30>

Prof Antoine H F M Peters

Friedrich Miescher Institute for Biomedical Research
Basel, Switzerland

"Epigenetic Control of Mammalian Germ Line and Early Embryonic Development"

<Part 2: 16:30-18:00>

Assist Prof Jacob Hanna

The Department of Molecular Genetics
Weizmann Institute of Science, Rehovot, Israel

"Molecular Mechanisms for Inducing and Resolving Distinct Pluripotent States"

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Hosted by: iCeMS (Institute for Integrated Cell-Material Sciences), Kyoto University

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Abstracts for November 28 iCeMS Seminar

Dr Antoine H F M Peters <*Part 1: 15:00-16:30*>

In mammals, totipotent embryos are formed by fusion of differentiated gametes. In mice, acquisition of totipotency concurs with remodeling of chromatin states at parental genomes, major changes in the maternal transcriptome and proteome, and activation of the parental genomes. It is unknown to what extent reprogramming or rather the intergenerational inheritance of chromatin states at different genome regions is required for the establishment of totipotency in the early embryo and successful embryogenesis. I will present recent findings on the role of Polycomb group proteins in early embryos. Moreover, I will discuss ongoing work indicating that correct histone methylation homeostasis during spermatogenesis is critical for offspring development and survival over multiple generations.

Dr Jacob Hanna <*Part 2: 16:30-18:00*>

The identity of somatic and pluripotent cells can be epigenetically reprogrammed and forced to adapt a new functional cell state by different methods and distinct combinations of exogenous factors. The aspiration to utilize such ex vivo reprogrammed pluripotent and somatic cells for therapeutic purposes necessitates understanding of the mechanisms of reprogramming and elucidating the extent of equivalence of the in vitro derived cells to their in vivo counterparts. In my presentation, I will present my group's recent advances toward understanding these fundamental questions and further detail our ongoing efforts to generate developmentally unrestricted human naive pluripotent cells. I will conclude by highlighting new avenues for utilizing epigenetic reprogramming to naïve pluripotency for unraveling critical gene regulatory mechanisms acting during early mammalian development.

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