

ASHBi

DISTINGUISHED SEMINAR

How cohesin folds the genome by loop extrusion

Lecturer: **Dr. Jan-Michael Peters**

Scientific Director, Research Institute of Molecular Pathology (IMP), Vienna

Date: **Friday, 28 May 2021**

Time: **5:00pm - 6:00pm**

Venue: **Zoom Online**

Register via the right QR code



Eligibility: **Researchers and Students in Kyoto University**

Genomic DNA is folded over long distances into loops and topologically associating domains (TADs), which serve important structural and regulatory functions. We and others discovered that these genomic structures depend on cohesin complexes and are positioned in the genome by the DNA binding protein CTCF. It has been proposed that cohesin and related “structural maintenance of chromosomes” (SMC) complexes form chromatin loops and TADs by a loop extrusion process. According to this hypothesis cohesin reels DNA into loops, which grow in size until they encounter CTCF bound to DNA, or until cohesin is released from DNA by the protein WAPL. We recently provided evidence for this hypothesis by reconstituting and imaging cohesin mediated DNA loop extrusion at the single molecule level. In my seminar I will provide an overview about how cohesin forms chromatin loops and TADs by loop extrusion, explain how loop extrusion mediated by cohesin enables V(D)J recombination in mouse pro-B cells, and will present an outlook on our recent efforts to understand the mechanism of loop extrusion.

Organizer : Prof. Mitinori Saitou

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

