
Seminar

■ **SPEAKER**

Prof. Yoori Kim (DGIST)

■ **TITLE**

Shaping the genome by ATPase motor and Prion-like domains

■ **ABSTRACT**

Chromatin is a fundamental material comprised of nucleosomal DNA and proteins working on dynamic chromatin structure and DNA metabolic pathways such as gene transcription. Cohesin is a chromatin-bound, multisubunit complex that is known to be essential for chromatin loop formation in vivo and has been suggested to organize the genome through loop extrusion, but direct evidence was lacking. By using single-molecule imaging, we directly visualized that the recombinant human cohesin-NIPBL complex compacts both naked and nucleosome-bound DNA by extruding DNA loops. DNA compaction by cohesin requires ATP hydrolysis and is processive over tens of kilobases. On the other hand, we also show that proteins containing prion-like domains (PrLDs) contribute to chromatin organization and gene expression. Our data using *C. albicans* and single-molecule assays suggest that PrLD-containing transcription factors (TFs) co-recruit other TFs and form phase-separated condensates both in vivo and in vitro. The heterotypic interaction between PrLDs is thought to regulate *C. albicans* cell fate determination. These findings show how an ATP-driven molecular machine or self-assembling proteins are capable of organizing chromatin structure and contribute to gene transcription.

■ **DATE AND VENUE**

March 07, 2022 (Monday, 11:00 - 12:00)

Virtual Seminar

■ **LANGUAGE**

Korean

■ **INVITED BY**

Professor Seok-Cheol Hong