
Seminar

- **SPEAKER**

Prof. Ji-Joon Song (Korea Advanced Institute of Science & Technology)

- **TITLE**

CryoEM to Atomic Resolution: Structure of the AAA+ Histone Chaperone, Abo1

- **ABSTRACT**

Abo1 is a conserved histone chaperone in fission yeast that contains a bromodomain and two AAA+ ATPase domains. Its human ortholog, ATAD2 has been implicated in various types of human cancers and holds potential as a therapeutic drug target. Despite evidence that Abo1 and its orthologs regulate nucleosome density and transcriptional activity in cells (2), the exact function of Abo1 is yet unknown. Moreover, structural studies of the Abo1 family are limited, thus hindering mechanistic understanding of these proteins. In this study, we show the first view of the overall architecture of the Abo1 family at 3.6Å by cryoEM. We find that in the ATP state, Abo1 forms an asymmetric hexameric spiral that binds the histone H3 tail by a negatively charged pore and a hydrophobic tryptophan staircase. In contrast, Abo1 in the ADP or apo state assumes a symmetric, planar hexameric ring. These types of nucleotide-dependent structural changes are visualized in real-time by video AFM, and are shown to contribute to ATP-dependent histone deposition onto DNA in a single molecule fluorescence DNA curtain assay. Altogether, these findings reveal a novel mechanism for a histone chaperone, and serve as an initial step towards understanding the molecular process of nucleosome assembly.

- **DATE AND VENUE**

March 27, 2019 (Wednesday, 1:00 - 2:00 pm)
Seminar Room A (116), KU R&D Center

- **LANGUAGE**

English

- **INVITED BY**

Professor Seok-Cheol Hong