



IBS Center for Molecular Spectroscopy and Dynamics

---

## COLLOQUIUM

---

■ **SPEAKER**

Dr. Seung Joong Kim (KAIST Physics/ UCSF Bioengineering and Therapeutic Sciences)

■ **TITLE**

Integrative Structure and Functional Anatomy of a Nuclear Pore Complex

■ **ABSTRACT**

Despite the central role of Nuclear Pore Complexes (NPCs) as gatekeepers of RNA and protein transport between the cytoplasm and nucleoplasm, their large size and dynamic nature have impeded a full structural and functional elucidation. Here, we have determined a subnanometer precision structure for the entire 552-protein yeast NPC by satisfying diverse data including stoichiometry, a cryo-electron tomography map, chemical cross-links, and small angle X-ray scattering. The structure reveals the NPC's functional elements in unprecedented detail. The NPC is built of sturdy diagonal columns to which are attached connector cables, imbuing both strength and flexibility, while tying together all other elements of the NPC, including membrane-interacting regions and RNA processing platforms. Inwardly-directed anchors create a high density of transport factor-docking Phe-Gly repeats in the central channel, organized in distinct functional units. Taken together, this integrative structure allows us to rationalize the architecture, transport mechanism, and evolutionary origins of the NPC.

**Reference:** Kim SJ, Fernandez-Martinez J, Nudelman I, Shi Y, Zhang W, et al. Integrative structure and functional anatomy of a nuclear pore complex. *Nature* 555: 475-482 (2018) doi:10.1038/nature26003

■ **DATE AND VENUE**

July 06, 2018 (Friday, 11:00 - 12:00 pm)  
Seminar Room 116, KU R&D Center

■ **LANGUAGE**

English

■ **INVITED BY**

Prof. Sang-Hee Shim

\*If you want to have lunch with Dr. Seung Joong Kim or discuss with him, please contact Prof. Sang-Hee Shim (sangheeshim@korea.ac.kr)