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COMPUTATIONAL CHEMISTRY BI-WEEKLY SEMINAR SERIES

TOPIC: Structural Investigations of Supra Macromolecular Complexes via Electron Cryo-Microscopy in a New Era

SPEAKER: Fei Sun, Institute of Biophysics, Chinese Academy of Sciences

TIME: 14:00-15:00, 19 November 2014

VENUE: Room 152, Geography Building, 3663 Zhongshan Road North, Shanghai (中山北路校区, 地理楼 152 室)

ABSTRACT OF THE TALK

Supra bio-macromolecular complexes behave like nano machineries and play important roles in biological system from nano-scale to meso-scale. High-resolution structural information of those complexes is necessary to understand how they work precisely in molecular details. However, researches have suffered for a while due to lack of efficient tools to determine the 3D structures of supra macromolecular complexes in near atomic resolution. Recently, electron cryo-microscopy (cryoEM) has been emerging as an important approach to overcome the bottleneck with thanks to the innovations of hardware development and new image processing methods. Many important complexes, the low-resolution structures of many of which have been studied in decades, are suddenly solved recently into near atomic level. In this talk, I will give an introduction of single particle analysis of cryoEM, review the recent advancements of this technology and then present our cases of using cryoEM as an essential approach to address biological questions in molecular details. In the end, I will briefly give an introduction of our biological imaging center (<http://cbi.ibp.ac.cn>).

BIOGRAPHY

Dr. Sun received his Ph.D. in Structural Biology from Tsing Hua University and is currently Professor of Structural Biology at Chinese Academy of Science. His overall research goals are combining the latest structural biological tools including cryo-electron microscopy, X-ray crystallography, super-resolution light nanoscopy and computation approaches, and developing novel technologies of biological imaging to understand the architecture of biological system from nano-scale to meso-scale. In the next five years, he and his research team (<http://feilab.ibp.ac.cn>) will focus on molecular mechanism of intracellular membrane dynamics, structure and function of supra-molecular complexes and bio-imaging methodology development.