

WORKSHOP #6

Cryo-EM at LBMS: Protein Structures, Protein-protein and Protein-cell Interactions

Organizers: *Liguo Wang (BNL), Qun Liu (BNL), Guobin Hu (BNL), Jake Kaminsky (BNL), Dongyan Tan (Stony Brook University), Jun Liu (Yale University), Yong Xiong (Yale University)*

Cryo-EM has become a widely used structure determination technique and the highest achieved resolution is 1.2 Angstrom where individual atoms can be resolved. To provide free access to cryo-EM instruments for biological applications, Brookhaven National Laboratory established a new national cryo-EM center: the Laboratory for Biomolecular Structure (LBMS). Currently, LBMS support more than 100 academia users to carry out research in life science. To highlight the research results and share experience with broad scientific communities, we organize this one-day workshop. The goal is to bring together researchers to share their experience and strategies and demonstrate the automated data collection process using LBMS facility. A live discussion is expected.

| Start Time (ET) | Title | Speaker (Affiliation) |
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| 9:00 – 9:05 a.m. | Opening Remarks | Sean McSweeney (BNL) |
| 9:05 – 10:00 a.m. | Keynote Lecture: Cryo-EM Overview and Applications | Huilin Li (Van Andel Institute) |
| 10:00 – 10:15 a.m. | Beyond Cas nucleases: Mechanistic Dissection of CRISPR RNA-guided Proteases | Ailong Ke (Cornell University) |
| 10:15 – 10:30 a.m. | Regulation of Translation by Ribosomal RNA Modifications | Yu Zhao (Florida State University) |
| 10:30 – 10:45 a.m. | Revealing the Structure-function Relationship of the Water-splitting Enzyme | Christopher Gisriel (Yale University) |
| 10:45 – 11:00 a.m. | Break | |
| 11:00 – 11:15 a.m. | Cryo-EM Epitope Mapping of Vaccine-elicited Antibodies Against SARS-CoV-2 Spike | Goran Bajic (Icahn School of Medicine at Mount Sinai) |
| 11:15 – 11:30 a.m. | Revealing the Mechanochemical Cycle of Dynein by Cryo-EM | Kai Zhang (Yale University) |
| 11:30 – 11:45 a.m. | Structural studies of SLC4 bicarbonate transport enable drug discovery | Daniel Wacker (Icahn School of Medicine at Mount Sinai) |
| 11:45 – 12:00 p.m. | Towards single particle structure determination of an ethylene gas producing complex with preferred orientation | Dale Kreidler (BNL) |
| 12:00 – 12:15 p.m. | Structural Basis for Cutibacterium acnes protein translation inhibition by Sarecycline | Swapnil Devarkar (Yale University) |
| 12:15 – 12:30 p.m. | An AlkB-AlkG complex structure reveals details of alkane terminal C-H selectivity and functionalization | Qun Liu (BNL) |
| 12:30 – 12:45 p.m. | Visualizing membrane remodeling required for bacterial flagellar assembly | Jun Liu (Yale University) |
| 12:45 – 1:30 p.m. | Break | |
| 1:30 – 1:50 p.m. | Introduction: cryo-EM and low dose technique | Liguo Wang (BNL) |
| 1:50 – 2:00 p.m. | LBMS virtual tour | Jake Kaminsky (BNL) |

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| 2:00 – 4:15 p.m. | EPU single particle data collection tutorial and demonstration | Guobin Hu (BNL) |
| 4:15 – 4:30 p.m. | Discussion | LBMS team |
| 4:30 p.m. | Adjourn | |