

Pittsburgh Diffraction Conference 2018 Scientific Program

Sunday October 14th, 2018

5:00 - 8:30 pm Registration & Reception

Monday October 15th, 2018

8:00 - 8:50 am Continental Breakfast

8:50 - 9:00 am **Opening remarks**

9:00 - 10:15 am **Session 1: X-ray crystallography**

Moderator: Yinghua Chen, Case Western Reserve University

9:00 - 9:25 am Edward Snell, Ph.D., Hauptman-Woodward Medical Research Institute
High-throughput identification and structural remediation of promiscuous metals in macromolecular structures

9:25 - 9:50 am Focco van den Akker, Ph.D., Case Western Reserve University
Crystallographic and Molecular Dynamics Approaches to Gain Mechanistic Insights into the Doughnut-Shaped Lytic Transglycosylase from Campylobacter jejuni

9:50 - 10:15 am Leighton Coates, Ph.D., Oak Ridge National Laboratory
Anomalous X-ray Diffraction Studies of Ion Transport in K⁺ channels

10:15 -10:30 am Coffee break

10:30 – 11:15 am **Session 2: Vendor program**

Moderator: Chuck Luke, TTP Labtech Inc.

10:30 - 10:45 am Vendor introduction

10:45 - 11:00 am Joseph D. Ferrara, Ph.D., CSO, Rigaku Americas Corporation
Tools for Structural Biology from Rigaku

11:00 - 11:15 am Jian Xu, Ph.D., Formulatrix, Inc.
Formulatrix Technology: in the Frontier of Macromolecular Crystallization

11:15 - 12:00 pm **Sidhu Award** (Introduction by Tsan Sam Xiao, Case Western Reserve University)

Yen-Ting Lai, Ph.D., NIH/VRC

Engineering of protein assemblies and crystals based on the principle of symmetry

12:00 – 1:00 pm **Keynote address** (Introduction by Edward Yu, Case Western Reserve University)

Lois Pollack, Ph.D., Cornell University

Structural enzymology at X-ray free electron laser sources: Detecting angstrom-scale motions with millisecond resolution



1:00 pm - 2:30 pm **Lunch and poster session**

Poster judging by Edward Snell (Hauptman-Woodward Medical Research Institute), Sichun Yang (Case Western Reserve University), and Shoucheng Du (University of Pittsburgh)

2:30 - 3:45 pm **Session 3: X-ray and neutron diffraction, X-ray tomography**

Moderator: Ardeschir Vahedi-Faridi, Case Western Reserve University

2:30 - 2:55 pm Bi-Cheng Wang, Ph.D., University of Georgia

SER-CAT Scientific Highlight and Facility Upgrade During APS Shutdown

2:55 - 3:20 pm Venera Weinhardt, Ph.D., UCSF/LBNL

Probing phase separation by soft x-ray tomography

3:20 - 3:45 pm Shuo Qian, Ph.D., Oak Ridge National Laboratory

Small-Angle Neutron Scattering for Biomacromolecule Research

3:45 - 4:00 pm Coffee break

4:00 - 4:50 pm **Session 4: X-ray free electron laser**

Moderator: Vivien Yee, Case Western Reserve University

4:00 - 4:25 pm Aina Cohen, Ph.D., SLAC National Accelerator Laboratory

New Opportunities for Structural Biology Research at LCLS and SSRL.

4:25 - 4:50 pm Thomas J. Lane, Ph.D. SLAC National Accelerator Laboratory

Putting the femtosecond in SFX: ultrafast time-resolved crystallography

4:50 - 5:35 pm **PDS business meeting**

6:30 pm **Banquet at Mia Bella Restaurant** (Tel: 216-795-2355)

12200 Mayfield Road, Cleveland, OH 44106

Tuesday October 16th, 2018

8:00 - 8:45 am Continental Breakfast

8:45 - 10:15 am Session 5: "The Rising Stars"

Moderator: Vijay Kumar, Case Western Reserve University

8:45 - 9:00 am John Alvarado, Ph.D., University of Pittsburgh
Impact of Lipid Binding Domains on the Interaction Between HIV-1 Nef and the Src-family Kinase Hck Unique-SH3-SH2 Region

9:00 - 9:15 am Jie Yang, Case Western Reserve University
Mechanism of gasdermin D recognition by inflammatory caspases and their inhibition by a gasdermin D-derived peptide inhibitor

9:15 - 9:30 am Alex Noble, Ph.D., New York Structural Biology Center
Tomography for Everyone: Fiducial-less Tilt-series Alignment in Appion-Protomo, Enabling CryoET of All Specimen Types

9:30 - 9:45 am David Chmielewski, Stanford University
Cryo-EM structure and in-situ assembly of alphaviruses, an enveloped virus family

9:45 - 10:00 am Chufeng Li, Ph.D., Arizona State University
Time-resolved X-ray free-electron laser diffraction

10:00 - 10:15 am Jani Reddy Bolla, Ph.D., University of Oxford
Direct observation of the influence of cardiolipin and antibiotics on lipid II binding to MurJ

10:15 - 10:30 am Coffee break

10:30 - 12:00 pm Session 6: Cryo-ET, Cryo-EM, and X-ray crystallography

Moderator: Yvonne Gicheru, Case Western Reserve University

10:30 - 10:55 am Gerry McDermott, Ph.D., UCSF/LBNL
Using Diffraction to Image Mesoscale Biology

10:55 - 11:20 am Jason Mears, Ph.D., Case Western Reserve University
Structural Studies that Define Regulatory Interactions within the Mitochondrial Fission Machinery

11:20 - 11:45 am Sudha Chakrapani, Ph.D., Case Western Reserve University
Cryo-EM reveals near-atomic details of serotonin-activation of the full-length 5-HT_{3A} receptor

11:45 – 12:00 pm Wuxian Shi, Ph.D., Case Western Reserve University, BNL
The Micro-focusing Macromolecular Crystallography Beamlines at NSLS-II

12:00 – 1:00 pm **Keynote address** (Introduction by Edward Yu, Case Western Reserve University)

Wah Chiu, Ph.D., Stanford University

Cryo-EM, an imaging tool beyond crystallography



1:00 pm - 2:30 pm Lunch and poster session

Poster judging by Edward Snell (Hauptman-Woodward Medical Research Institute), Sichun Yang (Case Western Reserve University), and Shoucheng Du (University of Pittsburgh)

2:30 - 4:10 pm **Session 7: Cryo-EM and Cryo-ET**

Moderator: Elizabeth Sweeny, Lerner Research Institute, Cleveland Clinic

2:30 - 2:55 pm Huilin Li, Ph.D., Van Andel Institute
Cryo-EM reveals the evolutionary path of modern-day respiratory complexes

2:55 - 3:20 pm Phoebe Stewart, Ph.D., Case Western Reserve University
Cryo-EM studies of nanoparticles

3:20 - 3:45 pm Derek Taylor, Ph.D., Case Western Reserve University
Structural characterization of the anthrax pore intermediate sheds light on the mechanism of pH-induced, membrane-spanning pore maturation

3:45 - 4:10 pm Xinghong Dai, Ph.D., Case Western Reserve University
Sub-particle cryo-EM reveals asymmetric features of the icosahedral capsid in Kaposi's sarcoma-associated herpesvirus

4:10 – 4:30 pm **Trainee awards and closing remarks**