

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Cryo-EM from Cells to Molecules: Multi-Scale Visualization of Biological Systems (F1)

February 4-8, 2018 • Granlibakken Tahoe • Tahoe City, California, USA

Scientific Organizers: Georgios Skiniotis, Elizabeth Villa and Andrew B. Ward

Sponsored by Pfizer Inc.

Abstract & Scholarship Deadline: October 5, 2017 / Abstract Deadline: November 7, 2017 / Discounted Registration Deadline: December 7, 2017

### SUNDAY, FEBRUARY 4

#### Arrival and Registration

### MONDAY, FEBRUARY 5

#### Welcome and Keynote Address

**Patrick Cramer**, Max Planck Institute for Biophysical Chemistry, Germany  
*Insights into Gene Transcription: An Integrated Structural Biology Approach*

#### Visualizing Cells

**Elizabeth Villa**, University of California, San Diego, USA  
*Opening Windows into the Cell: Bringing Structure to Cell Biology using Cryo-Electron Tomography*

**Grant J. Jensen**, California Institute of Technology, USA  
*Structural Biology in vivo: Correlating Cryo-ET to Fluorescence Microscopy*

**Mark H. Ellisman**, University of California San Diego, USA  
*The Big Picture of Small Things*

#### Short Talk(s) Chosen from Abstracts

#### Visualizing Subcellular Compartments

**Daniela Nicastro**, University of Texas Southwestern Medical Center, USA  
*Cryo-Electron Tomography Sheds Light into Ciliary Structure and Function*

**Jun Liu**, University of Texas Medical School at Houston, USA  
*High-Throughput Cryo-Electron Tomography: Visualizing Molecular Machines in Cells*

**Kay Grünewald**, University of Oxford, UK  
*Trafficking Vesicles and Enveloped Viruses*

#### Short Talk Chosen from Abstracts

#### Poster Session 1

### TUESDAY, FEBRUARY 6

#### Translational Cryo-EM

**Andrew B. Ward**, The Scripps Research Institute, USA  
*Structure-Based Vaccine Design*

**Claudio Ciferri**†, Genentech, USA  
*Building cryo-EM at Genentech to Enable Research and Pipeline Projects*

**Seungil Han**, Pfizer Inc., USA  
*Applications of Cryo-EM in Small Molecule and Biologics Drug Design*

#### Short Talk(s) Chosen from Abstracts

#### Workshop 1: Specimen Preparation and Troubleshooting for Single-Particle Work

#### Short Talks Chosen from Abstracts

#### Frontiers in Cryo-EM

**Andrej Sali**, University of California, San Francisco, USA  
*Integrative Modeling of Biomolecular Assemblies and Pathways*

**Sharon Grayer Wolf**†, Weizmann Institute of Science, Israel  
*Cryo-Scanning Transmission Electron Tomography of Vitrified Cells*

**David Baker**, University of Washington, USA  
*Tailoring Scaffolds for Structure Determination of Small Proteins by Cryo-EM*

#### Short Talk Chosen from Abstracts

#### Poster Session 2

### WEDNESDAY, FEBRUARY 7

#### Cryo-EM of Small Single Particles

**Dmitry Lyumkis**, The Salk Institute for Biological Studies, USA  
*High-Resolution Cryo-EM Studies of Retroviral Intasomes*

**Maofu Liao**, Harvard Medical School, USA  
*Single Particle Cryo-EM Studies of Lipid-Protein Interactions*

**Gabriel Lander**†, The Scripps Research Institute, USA  
*How Low can you Go? Size and Resolution Limits Using Conventional cryo-EM*

#### Short Talk Chosen from Abstracts

#### Workshop 2: Modeling and Refining Structures of Macromolecules in Cryo-EM Maps

#### Short Talks Chosen from Abstracts

#### Cryo-EM of Large Macromolecular Assemblies

**Kiyoshi Nagai**, Medical Research Council, UK  
*Structure of the Spliceosome: Towards Understanding Catalytic Mechanism*

**Gira Bhabha**, Skirball Institute, NYU School of Medicine, USA  
*Architectures of Lipid Transport Systems in Bacteria*

**Adam Frost**, University of California, San Francisco, USA  
*Function Follows Form: Cryo-EM Insights into Cell Biology*

**Eva Nogales**, University of California, Berkeley, USA  
*Understanding Macromolecular Complex Assembly, Interactions and Dynamics through Cryo-EM*

#### Short Talk(s) Chosen from Abstracts

#### Poster Session 3

### THURSDAY, FEBRUARY 8

#### Cryo-EM of Membrane Proteins

**Georgios Skiniotis**, Stanford University, USA  
*Cryo-EM Visualization of G Protein-Coupled Receptors*

**Judy Hirst**, MRC Mitochondrial Biology Unit, UK  
*CryoEM Structures of Mitochondrial Complex I*

**Doreen Matthies**, National Institutes of Health, USA  
*Single-Particle Cryo-EM Studies of a Magnesium Ion Channel*

**Eric Gouaux**, Oregon Health & Science University, USA  
*Talk Title to be Announced*

#### Short Talk(s) Chosen from Abstracts

#### Recent Technological Advances in Cryo EM

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**Radostin Danev**, Max Planck Institute of Biochemistry, Germany

*Single Particle Imaging with the Volta Phase Plate*

**Bridget Carragher**, New York Structural Biology Center, USA

*New Approaches to Cryo-EM Specimen Preparation*

### Closing Keynote Address

**Joachim Frank**, Columbia University, USA

*Story in a Sample: Multiple Ribosome Structures in a Single Cryo-EM Experiment*

### Meeting Wrap-Up: Outcomes and Future Directions (Organizers)

### FRIDAY, FEBRUARY 9

#### Departure