

Keystone Symposia: Structural Genomics: Expanding the Horizons of Structural Biology (Joint with "Structural Biology" meeting)

January 8–13, 2010 • Beaver Run Resort • Breckenridge, Colorado • USA

Scientific Organizers: Ian A. Wilson, Kurt Wüthrich, Soichi Wakatsuki and Christine A. Orengo

PROGRAM FACULTY & TALKS

Steven C. Almo[◇], Albert Einstein College Of Medicine, USA
Sequence, Structure, Function, Immunity

David Baker, University of Washington, USA
Advances in Protein Structure Prediction, Modeling and Design

Robert T. Batey, University of Colorado, Boulder, USA
Advances in Preparation and Crystallization of RNA

Ad Bax[◇], National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, USA
Combining Solution NMR with SAXS

Helen M. Berman^{*}, Rutgers University, USA

Pamela J. Bjorkman^{*◇}, California Institute of Technology, USA

Stephen K. Burley^{*†}, SGX Pharmaceuticals, Inc., USA

Jamie H.D. Cate[◇], University of California, Berkeley, USA
The Ribosome: New Structures, New Insights

Wah Chiu[◇], Baylor College of Medicine, USA
Seeing Protein Backbone and Side-Chains in Molecular Machines by Cryo-EM

Aled M. Edwards, University of Toronto, Canada
Chemical Tools via Structure to Discover Function

Advances in Structural Proteomics of Human Proteins

Yaeta Endo, Ehime University, Japan
Advances in Cell Free Systems for Expression of Eukaryotic and Parasitic Proteins

Adam Godzik^{*}, Burnham Institute for Medical Research, USA

Wayne A. Hendrickson^{*}, Columbia University, USA
Advances in Membrane Proteins

Roger W. Hendrix^{*◇}, University of Pittsburgh, USA
The Virome and Evolutionary Relationships

Nobutaka Hirokawa, University of Tokyo, Japan
Kinesin Superfamily Molecular Motors, KIFs and Intracellular Transport: Structure, Dynamics and Functions

Barry Honig, Columbia University / HHMI, USA
Structural and Functional Relationships Between Proteins With Different Global Topologies: Implications for Function Annotation Strategies

Andrzej Joachimiak^{*†}, Argonne National Laboratory, USA

Nevan J. Krogan, University of California, San Francisco, USA
Functional Insights from Protein-Protein and Genetic Interaction Maps

Scott A. Lesley, Genomics Institute of the Novartis Research Foundation, USA
Advances in Bacterial and Eukaryotic Protein Production and Salvage Pathways

Michael Levitt, Stanford University, USA
The Protein Universe: A Current Snapshot
Why are there Protein Folds?

Andy May^{*}, Fluidigm Corporation, USA

Hartmut Michel^{*◇*}, Max Planck Institute for Biophysics, Germany
Structural Genomics and Proteomics of Membrane Proteins

William E. Moerner^{◇*}, Stanford University, USA
Single Molecule Approaches to Biomolecular Dynamics and Imaging of Cellular Superstructures

Gaetano T. Montelione^{*}, Rutgers University, USA

Daniel J. Mueller[◇], Technology University Dresden, Germany
Imaging and Sensing Living Cells to Molecular Resolution

Peter J. Myler, Seattle Biomedical Research Institute, USA
Structural Genomics of Infectious Disease

Christine A. Orengo^{*}, University College London, UK
Identifying Novel Genes Implicated in Function Networks of Biological and Medical Significance

Fold Divergence in Domain Structure Superfamilies

Andrej Sali[◇], University of California, San Francisco, USA
Integrative Determination of Macromolecular Structures

Alasdair C. Steven^{*◇}, National Institute of Arthritis, Musculoskeletal and Skin Diseases, USA
Structure-Function of the Human G-Protein Coupled Receptor Family

Robert M. Stroud^{*†}, University of California, San Francisco, USA
The Membrane Proteome

David I. Stuart[◇], Oxford University, UK
Pushing the Envelope on Viruses

Joel Sussman, Weizmann Institute of Science, Israel

Susan S. Taylor, University of California, San Diego, USA
The Kinome

Soichi Wakatsuki, KEK IMSS Photon Factory, Japan
Advances in Protein Microcrystallography

Michael Washburn, Stowers Institute for Medical Research, USA
Human Protein Interaction Networks

Ian A. Wilson^{*◇}, The Scripps Research Institute, USA
What have we Learned from Structural Genomics of Proteins of Unknown Function?
NMR in Structural Genomics: New Strategic and Technical Challenges

*Keynote speaker. *Session chair. †Invited, not yet confirmed. ◇Speaker in a joint session.
Programs subject to change. Current as of September 8, 2009

Structural biology continues to be one of the most prolific and informative ways to make biological and biomedical discoveries at the turn of the millennium, and provides fundamental molecular-level insights into the underlying biological and biochemical functions. Structural genomics has been at the forefront of these developments as a major contributor to the advances of high throughput technologies and methodologies that span the gene to structure process by both crystallography and NMR. In parallel, the rapid expansion of genome sequencing projects is substantially increasing the complexity and size of the known protein universe, and providing structural biologists with a wealth of new opportunities and challenges to explore. The goal of this Keystone Symposia meeting is to explore how we can best harness the current approaches from high throughput structural genomics to tackle present and future challenges in structural biology and how we can directly apply these methods to topical and important problems in structural, molecular, cellular and chemical biology. We will focus on approaches that are applicable not only for large consortia, but also for single investigator laboratories and smaller-scale projects. Using such methodologies and technologies, we can then keep pace with the genome sequencing efforts and continue to make significant contributions to the constantly increasing discoveries on the intricacies and vagaries of complex biological processes – such as mammalian proteomes, microbial pathogens and cellular and signaling networks/systems. In this way, structural biology will continue to lead the way in making innovative discoveries in biological, chemical and biomedical research.

PROGRAM PLENARY SESSION & WORKSHOPS:

- Pushing the Limits of Structural Biology I: New and Innovative Methods (Joint)
- Workshop 1: Advances in Methodologies and Tools for Structural Biology
- Advances in Protein and Nucleic Acid Production and Crystallization
- Advances in X-Ray, NMR and Computation
- Workshop 2: Structural Genomics Contributions to the Structure and Function of Macromolecules
- Challenging Proteins
- Pushing the Limits of Structural Biology II: Advances in Challenging Systems (Joint)
- Evolution of Structure and Function
- Debate 1: Protein Folds: Fact or Fiction??
- Proteomics and Protein Assemblies/Networks
- Exploiting Structure for Function
- Debate 2: Can We Really Determine Function from Structure?

DEADLINES:

Abstract & Scholarship: September 14, 2009
Late-Breaking Abstract: October 12, 2009
Early Registration: November 9, 2009

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