



FOR IMMEDIATE RELEASE
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Biophysical Society Announces New and Notable Symposium Speakers

Bethesda, MD— The Biophysical Society has announced the speakers for the New and Notable Symposium at the Society's 54th Annual Meeting in San Francisco, California. The new and notable symposium highlights the latest and most exciting discoveries in biophysics. Speakers are nominated by the Society's membership and selected by the program committee. Over 150 nominations were received this year. The session will take place Sunday, February 21, 2010 from 10:45 AM – 12:45 PM in Room 135 of the Moscone Convention Center.

2010 Program Chair Taekjip Ha noted that, "The six talks cover a wide-range of topics, from new methods to perturb and probe cellular signaling activities to some really cool new crystal structures, presented by a diverse group of people ranging from postdoctoral fellows to established investigators." He also, "hopes that the shorter format (20 min per presentation) makes the symposium sufficiently chaotic to keep people at the edge of their seats!"

New and Notable Symposium Speakers and Information:

CRYSTAL STRUCTURE OF SV40 LARGE T HEXAMER BOUND TO ORIGIN DNA IN THE CENTRAL CHANNEL: MECHANISM OF ORIGIN dsDNA MELTING AND UNWINDING **Xiaojiang Chen, University of Southern California**

SV40 DNA replication is the first eukaryotic replication system reconstituted in vitro and has served as a model for how eukaryotic cells copy genetic information. SV40 Large T antigen is required for origin melting and DNA unwinding but the lack of co-crystal structures with DNA has prevented a clear view on its mechanism. In the first structure of an AAA+ hexameric helicase and initiator protein bound to double stranded origin DNA, Dr. Chen discovered several remarkable and surprising features that reveal how hexameric helicase/initiator proteins function in origin DNA melting and unwinding, a critical step in DNA replication.

PRECISION FORCE SPECTROSCOPY: A NEW WINDOW ON THE DYNAMICS OF UNFOLDING AND REFOLDING MEMBRANE PROTEINS

Thomas Perkins, JILA, NIST and University of Colorado, Boulder

Dr. Perkins has developed an ultrastable atomic force microscope (AFM) in which the tip and the sample positions are independently measured by, and stabilized with

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respect to, a pair of laser foci in three dimensions. The use of lasers to establish a local reference frame makes the system insensitive to long-term mechanical drift. Perkins has extended the ultrastable AFM capabilities into liquid and has demonstrated the ability to mechanically unfold proteins at slow pulling velocities (2 nm/s) which increase precision. Moreover, they have the new ability to clamp the tip sample separation to a few Angstroms over 100s of second. The Perkins' group has used these techniques to study the unfolding and re-folding of bacteriorhodopsin (BR), a model transmembrane protein.

ADAPTIVE OPTICAL TWO-PHOTON MICROSCOPY FOR HIGH RESOLUTION IMAGING IN BIOLOGICAL TISSUES

Na Ji, Janelia Farm Research Campus, HHMI

Dr. Ji and her colleagues have developed an exciting new way to combat optical aberrations in biological samples. The approach is based on adaptive optics, a technique that has been long used in astronomy to obtain diffraction-limited resolution images of stars through the turbulent atmosphere. Their method has great potential for improving imaging resolution and depth in live organisms.

MULTIPLE MODES OF INTERCONVERTING DYNAMIC PATTERN FORMATION BY BACTERIAL CELL DIVISION PROTEINS

Vassilli Ivanov, NIDDK, NIH

Dr. Ivanov has discovered new in vitro modes of Min system self-organization with a characteristic scale close to the wavelength observed in vivo (in filamentous cells) and has demonstrated that the simple reaction-diffusion models previously proposed for the Min system fail to explain the results of the in vitro experiments. Ivanov suggests a new working hypothesis which can explain a number of mechanistic aspects revealed in his research group's study. He expects that the proposed mechanism might also explain the behavior of many other self-organized systems including ParA/B (ParA is DNA binding structural homologue of MinD).

FAST AND HIGH-RESOLUTION PERTURBATION OF SIGNALING NETWORKS USING LIGHT

Christopher A. Voigt, University of California, San Francisco

Dr. Voigt has constructed a light sensing protein that controls a protein-protein interaction in mammalian cells. Light is an ideal means to perturb and control regulatory networks because it offers unparalleled spatiotemporal control. This system can be used to precisely and reversibly translocate target proteins such as rho-family GTPases to the membrane with micrometer spatial resolution and second time resolution. This enables light to be used to control the actin cytoskeleton to precisely reshape and direct cell morphology. The light-gated protein-protein interaction will be useful for the design of diverse light-programmable reagents, potentially enabling a new generation of quantitative perturbation experiments in cell biology.

A DISCRETE ALCOHOL POCKET INVOLVED IN ACTIVATION OF A GIRK POTASSIUM CHANNEL

Paul A. Slesinger, Salk Institute

Alcohol's inebriating effects are well known but the molecular details of how alcohol modifies brain activity have remained a mystery. Previous studies suggested alcohol works by interacting directly with ion channel proteins, but there were no studies that directly visualized the site of association. Dr. Slesinger has used structural biology to locate a physical hydrophobic pocket for

alcohol in an ion channel. Through structure-guided mutagenesis, his research shows that this hydrophobic pocket is a site for alcohol-mediated activation of G-protein-coupled inwardly rectifying potassium (GIRK) channels.

The Biophysical Society, founded in 1956, is a professional, scientific society established to encourage development and dissemination of knowledge in biophysics. The society promotes growth in this expanding field through its annual meeting, monthly journal, and committee and outreach activities. Its 8700 members are located throughout the U.S. and the world, where they teach and conduct research in colleges, universities, laboratories, government agencies, and industry. For more information on the society or the 2010 annual meeting, visit www.biophysics.org. For press credentials, contact Ellen Weiss at eweiss@biophysics.org.