

BPS Members Steitz and Szostak Win Nobel Prize



Thomas A. Steitz



Jack W. Szostak

The Biophysical Society congratulates members *Thomas A. Steitz*, and *Jack W. Szostak*, on winning the Nobel Prize in Chemistry and the Nobel Prize in Physiology and Medicine, respectively.

Steitz was selected to receive the 2009 Nobel Prize in Chemistry, along with *Venkatraman Ramakrishnan*, and *Ada E. Yonath*, “for studies of the structure and function of the ribosome.” Steitz is a long-time member of the Society and was a featured speaker at the 2001 and 2004 Annual Meetings. He is an HHMI investigator and Professor at Yale University.

Society President *Henry Lester* noted, “...medical advances, both past and future, depend on the knowledge gathered by this year’s winners of the Nobel in Chemistry. Furthermore, scientists and engineers are now generating new types of protein-like materials by using this detailed and powerful knowledge.”

Szostak, was selected for the 2009 Nobel Prize in Physiology and Medicine, along with *Elizabeth H. Blackburn* and *Carol W. Greider*, “for the discovery of how chromosomes are protected by telomeres and the enzyme telomerase.” Szostak joined the Society in 2004 and was a featured speaker at the 2007 Biophysical Society Annual Meeting. Szostak is an HHMI investigator and Professor at Harvard Medical School.

Commenting on the selection of Szostak, Lester noted that “...Szostak and Blackburn showed that telomeres from the ciliate *Tetrahymena* functioned and replicated appropriately when introduced into yeast, and also that all yeast chromosomes have a common telomere structure. We biophysicists appreciate that such experiments build on the common evolutionary origins of all organisms. Biomedical researchers now suspect that telomerase, the enzyme which builds telomeres, plays a role in aging and in some cancers.”

Record Number of Abstracts Submitted

More than 3,800 abstracts were submitted for the 2010 Annual Meeting by the October 4 abstract deadline. The 3,868 abstracts will be programmed into poster and platform sessions throughout the meeting dates. Late abstracts may be submitted until January 8.

Annual Meeting Deadlines

Early Registration

January 4, 2010

Late Abstracts

January 8, 2010

General Housing

January 22, 2010

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Biophysicist in Profile

Peter Hinterdorfer

“Peter is one of the real ‘gentlemen’ of science—all science, all collaboration and not one hint of arrogance,” says *Stuart Lindsay* about *Peter Hinterdorfer*, Associate Professor at the Johannes Kepler University, Institute for Biophysics, in Linz, Austria. Lindsay collaborates internationally with Hinterdorfer from his position as Edward and Nadine Carson Professor of Physics and Chemistry at the Center for Single Molecule Biophysics, Biodesign Institute in Tempe, Arizona.

Lindsay continues, “He was trained in an integrative mix of physics, chemistry and biophysical chemistry that served as an example to me. I have been struggling to catch up ever since meeting him and, thus, realizing the power of putting these disciplines together.”

Hinterdorfer’s mixing of disciplines came in part from changing preferences and directions as he advanced through his studies. In high school, he first wanted to study mathematics and later decided that physics might be a better profession. As he began college, he leaned toward theoretical physics.

At that time, Austria had a two-stage higher education system: a master’s degree after a minimum of ten semesters, and a Phd. After two or three years of undergraduate study in a program saturated with mathematics and sciences, students had to specialize in a particular discipline. Biophysics had just become a possible field of study at Linz when it came time for Hinterdorfer to choose his specialty. He had strong interest in both physics and biology, and he thought this new field would be a good fit for him.

He met his “first and probably most important” scientific mentor in the person of *Hansgeorg Schindler*, his thesis supervisor for both his master’s and PhD programs. Schindler, who founded the Institute for Biophysics, introduced him to fluorescence correlation spectroscopy. “We used a special home-built setup—not built by me - that had not only time correlation, but also had spatial correlation.”

Hinterdorfer did his postdoc in the lab of *Lukas Tamm* at the University of Virginia, where Tamm still serves as Harrison Professor in the Department of Molecular Physiology and Biological Physics. “Peter was my first postdoc after I moved my lab from Switzerland to Virginia,” says Tamm. “He had golden hands in the lab. He was the first to measure fusion mediated by influenza hemagglutinin by TIRF microscopy in supported bilayers. This was no easy task, as it required a combination of superb biochemistry with skills setting up a prism-based TIRF microscope and collecting data before the advent of super-sensitive and fast CCD cameras that we now are all used to.”

Hinterdorfer, in turn, enjoyed “a lot of scientific freedom, progress, and a more international community” in Tamm’s lab. The 14-month postdoc experience confirmed his decision to pursue biophysics. He returned to Austria in 1993, taking with him a lifelong friendship with Tamm and other important connections that opened the way to international collaborations.

Back at JKU in Linz, he started as a university assistant and worked his way up to associate professor by 2001. Along the way, Hinterdorfer switched from fluorescence microscopy to atomic force microscopy. He became increasingly independent and started his own group. The group gradually increased and now includes about 25 people —approximately one-third postdocs, one-third PhD candidates, and one-third undergraduate students—working in a lab that now has about ten atomic force microscopes.

In the early days of his lab, he found single-molecule force spectroscopy work highly challenging, because it required a lot of chemistry. JKU colleague *Herman Gruber* became his chemistry expert and one of the major players in designing force microscopy tips to make them into sensors. They have continued to collaborate on many projects, though Gruber has his own group.

Hinterdorfer's most important scientific breakthrough, and the one for which he is best known, was the development of the TREC (Topography and RECOgnition) imaging technique. Utilizing the high-resolution imaging capacity of AFM, TREC enables detection of incidents of single-molecule binding. The resulting 'recognition' image localizes receptor molecules at a resolution accurate to one nanometer. Patented, the microscope is now marketed as PicoTREC™.

"This is just a start for medical sensing and detecting diseases on a molecular level," says Hinterdorfer. It should make possible personalizing medicine by investigating cells of individual patients to determine the most promising approach to treatment. Instead of system diagnosis, diagnosis would be based on cell structure and cell function."

Hinterdorfer's scientific expertise is just one of the reasons that *Ferry Kienberger*, Hinterdorfer's first PhD student, considers him "the most influential person in my career." Currently working for Austrian division of Agilent Technologies, Inc. in the Electronic Measurement Group, Kienberger says, "Peter excels in mastering his research group and simultane-

ously keeping the individuality high. He brings synergy through combining scientific merits, networking and social outlets, soft skills, and lab management. It's exactly how these individual elements are combined, weighted and brought to the daily research lab that makes Peter so successful."

Martina Rangl, a talented PhD student currently working with Hinterdorfer, says that Hinterdorfer is "as solid as a rock" as a group leader. "Nothing shakes him. It can be urgent, problematic, or acute. He stays calm, positive, approachable, and communicative." The team sees "the boss" as a friend.

Hinterdorfer recently edited the Springer *Handbook of Single-Molecule Biophysics*. He also organizes the annual Linz Winter Workshop with 250 attendees from all over the world, accompanied by the Linz Winter School, which includes hands-on sessions for 50 beginners and young people. Hinterdorfer advises young scientists, "Interest and enthusiasm for science should be your most important driving force, regardless of the importance of whatever patenting, industrializing, or commercializing you do. Love what you do!"

One of the ways to continue loving it, he says, is to switch it off from time to time and not think about science for a while. He escapes from science through cultural events, get-togethers with family and friends, sports (such as his weekly soccer game) or music; like many in Austria, he hails from a musical family.

Hinterdorfer looks to Biophysical Society annual meetings for getting an overview of future trends in the field. He also notes that "most of the articles which inspire me for future research come from the *Biophysical Journal*."



Hinterdorfer (fifth from right) and his best friends participating in a cycling tour in Styria (south-Austrian county bordering Slovenia).

54th Annual Meeting

February 20–24, 2010

Subgroup Programs

All subgroup symposia will be held on Saturday, February 20 in the San Francisco Convention Center. Subgroup business meeting times are listed for those subgroups that submitted them by the time of publication.

Bioenergetics

9:00 AM–5:30 PM

Lawrence Prochaska, Wright State University School of Medicine, Subgroup Chair

Morning Symposium: Photosynthesis and Solar Energy Conservation

Petra Fromme, Arizona State University, and *Gary Brudvig*, Yale University, Session Co-Chairs

Speakers to be announced.

Afternoon Symposium: Mitochondria in Disease

Jan B. Hoek, Thomas Jefferson University, and *Paolo Bernardi*, University of Padova, Italy, Session Co-Chairs

Introductory Remarks

Paolo Bernardi, University of Padova, Italy, and *Jan B. Hoek*, Thomas Jefferson University

Systematic Identification of Mitochondrial Disease Genes through Integrative Genomics

Sarah Calvo, Broad Institute of MIT and Harvard

New Mitochondrial Disease Mechanisms Unraveled by New Mitochondrial Disease Genes

Massimo Zeviani, Istituto Neurologico Carlo Besta, Milano, Italy

From Model Organism to Wolf-Hirschhorn Syndrome Patients: Characterization and Role of the Mitochondrial KHE

Karin Nowikovsky, University of Vienna, Austria

Pathophysiological Significance of Mitochondria Targeted Cytochromes P450 and Related Proteins

Narayan Avadhani, University of Pennsylvania

Mitochondrial Aldehyde Dehydrogenase and Epsilon PKC – The Battlefield Protection from Oxidative Stress

Daria Mochly-Rosen, Stanford University

Subgroup Business Meeting: 5:30 PM

Subgroup Dinner: 7:00 PM

Biological Fluorescence

1:00–5:00 PM

Suzanne Scarlata, Stony Brook University, Subgroup Chair

Focus on Nucleic Acids

Title to be announced

Steven Block, Stanford University

Mechanisms of Regulation of Gene Expression Probed by Fluorescence Fluctuation Techniques

Catherine Royer, CNRS, Montpellier, France

Visual Biochemistry: High-throughput Single-Molecule Imaging of Protein-DNA Interactions

Eric Greene, Columbia University

Student Talks

Cold Light, Delayed Luminescence, and the Invention of the Triplet State

Richard Ludescher, Rutgers University

Seminars:

Young Fluorescence Investigator Award

The Gregorio Weber Award

Business Meeting: 2:45 PM

Exocytosis & Endocytosis

1:00–6:00 PM

Ronald W. Holz, University of Michigan, Subgroup Chair

Lumenal Vesicle Formation in the Endocytic Pathway

Phyllis Hanson, Washington University

Motion and Capture of Granules in Synaptic Boutons

Edwin S. Levitan, University of Pittsburgh

Priming SNAREs for Ca²⁺-triggered Vesicle Exocytosis

Thomas F. J. Martin, University of Wisconsin-Madison

Membrane Curvature and Fission by Dynamin: Mechanics, Dynamics and Partners

Vadim Frolov, NICHD, NIH

Presentation and Award Lecture: Sir Bernard Katz Award for Excellence in Exocytosis and Endocytosis Research

Measuring Exocytosis at Single Cells and in Intact Tissue

R. Mark Wightman, University of North Carolina

Intrinsically Disordered Proteins

10:00 AM–7:00 PM

Robit Pappu, Washington University, Subgroup Chair

Brian Chait, Rockefeller University; *Cheryl Arrowsmith*, University of Toronto, Canada; *Andreas Matouschek*, Northwestern University; *Ralf Langen*, University of Southern California; *Yakov Levy*, Weizmann Institute, Rehovot, Israel; *M. Madan Babu*, University of Cambridge, United Kingdom; *Huan-Xiang Zhou*, Florida State University; *Ursula Jakob*, University of Michigan; *Gary Daughdrill*, University of South Florida

Membrane Biophysics

1:00–5:30 PM

Dan Minor, University of California, San Francisco, Subgroup Chair

Ion Channel Chemical Biology

Modulation of Kv1 Channels by Small Molecules

Ming Zhou, Columbia University

Selection Approaches to Probe Ion Channel Modulation and Function

Daniel Minor, University of California, San Francisco

Flavonoids Modulate Eag1 Channels

Anne Carlson, University of Washington

Droplet Interface Bilayers for Membrane Protein Investigation

Rubma Syeda, University of Oxford, United Kingdom

Chemical Regulation of Voltage-gated Potassium Channels: When Vast Chemical Diversity Meets Ion Channel Targets

Min Li, Johns Hopkins University

Developing RNA Aptamers against AMPA Receptor Channels

Li Niu, University of Albany, SUNY

LRET Investigations of the Glutamate Receptor: From Mechanism to RNA Based Drugs

Vasanthi Jayaraman, University of Texas Health Science Center at Houston

A Novel Blocker Identifies Residues Important for the In Vivo Activity of the Ca_v1 Channel

Peter Roy, University of Toronto, Canada

Exploiting Natural Products to Probe TRP Channel Function

David Julius, University of California, San Francisco

Business Meeting: 5:35 PM

Cole Award Dinner: 6:00 PM

Membrane Structure & Assembly

1:00–5:00 PM

William C. Wimley, Tulane University, Subgroup Chair

Membrane Biophysics: From Model Systems to Living Cells

Jose L. Nieva, University of the Basque Country, Bilbao, Spain; *Paulo F. Almeida*, University of North Carolina; *Linda Columbus*, University of Virginia; *James U. Bowie*, University of California, Los Angeles; *Jay T. Groves*, University of California, Berkeley; *Barbara Baird*, Cornell University

Molecular Biophysics

9:00 AM–1:00 PM

David Green, Stony Brook University, Subgroup Chair
Speakers to be announced

Motility

12:00–9:00 PM

Susan Gilbert, Rensselaer Polytechnic Institute, and *Kenneth Taylor*, Florida State University, Subgroup Co-Chairs

In Vitro Assays to Study the Microtubule-organizing Function of Mitotic Motors
Thomas Surrey, EMBL-Heidelberg, Germany

Motor Coordination during Bidirectional Vesicle Transport

Erika L. F. Holzbaur, University of Pennsylvania School of Medicine

Title to be announced.

Nobutaka Hirokawa, University of Tokyo, Japan

Resistance is Futile: Loading Response of Actin Filament Networks

Daniel A. Fletcher, University of California, Berkeley

An Unconventional Myosin with a Role in Cell Polarization and Chemotaxis

Margaret A. Titus, University of Minnesota

Motoring through the Brain with Myosin-II

Steve S. Rosenfeld, Columbia University

Functional Influence of the Relay and Converter Domains Revealed by Drosophila Myosin

Douglas M. Swank, Rensselaer Polytechnic Institute

Evidence from X-Ray and EM Supporting a Myosin-to-Troponin Linkage as Trigger for Stretch Activation in Insect Flight Muscle

Michael K. Reedy, Duke University Medical Center

Evening Talk

Myosin: Starting Conventional and Then Going Astray

Kathleen M. Trybus,
University of Vermont

Permeation & Transport

12:00–2:00 PM

Svetlana Lutsenko, Oregon Health Science University, Subgroup Chair
Speakers to be announced

**For more information on
Subgroup Programs
visit www.biophysics.org**

Annual Meeting Education Sessions

Biophysics 101: Visualizing One (or a Few) Molecule(s) at a Time

Monday, February 22, 1:00–2:30 PM



Lori S. Goldner

Paul Selvin

This workshop will focus on educating the Society membership about the nuts and bolts of various biophysical techniques with which they may not be familiar. Students and scientists from all disciplines are encouraged to attend. The education committee plans to make similar workshops a regular feature of the BPS Annual Meeting.

Speakers include *Paul Selvin* University of Illinois at Urbana-Champaign, and *Lori S. Goldner*, University of Massachusetts Amherst.

The Basics, the Discoveries and the Controversies: Educational Workshop

Tuesday, February 23, 1:30–3:00 PM

To follow the theme of cross-training and obtaining knowledge over unfamiliar areas of biophysics and to keep scientists abreast of new developments and breakthroughs occurring in these unfamiliar areas, the Education Committee will host another education workshop. This year, the topics will be on *Biophysics of Ion Channels*, *Biophysics of Motility* and *Biophysics of Adhesion*, highlighting the “most important” things to know about these fields.



Francisco Bezanilla *Michael Sheetz* *Yale E. Goldman*

Speakers include *Francisco Bezanilla*, University of Chicago; *Michael Sheetz*, Columbia University and *Yale E. Goldman*, University of Pennsylvania.

Meet & Greet at the Opening Mixer

Saturday, February 20, 5:00–7:00 PM

First-timer or looking to get together with others for dinner? Members of the Early Careers Committee will be on hand to welcome first-time attendees, provide introductions to other newcomers, and help interested attendees arrange self-organized dinners at nearby restaurants. Students are strongly encouraged to attend this event; it is a good opportunity to make connections and learn more about what the Meeting has to offer.

Career Workshops & Résumé Critiques

Stop by the Career Center while at the Annual Meeting. *Monica Weil* will be there to lead career development workshops and provide one-on-one résumé critiques. Visit www.biophysics.org/2010meeting for workshop descriptions and details about scheduling an appointment for one-on-one résumé critiques.

Saturday, February 20, 2010

12:30–5:40 PM One-on-One Résumé Critiques

Sunday, February 21, 2010

8:40–10:00 AM One-on-One Résumé Critiques

10:30–11:30 AM Workshop: Creating a Competitive Résumé

12:00–1:00 PM Workshop: Interviewing for Results

2:00–3:20 PM One-on-One Résumé Critiques

3:30–4:30 PM Workshop: Wherever You Go, There You Are: Self-Reflection as a Career Tool

4:40–6:00 PM One-on-One Résumé Critiques

Monday, February 22, 2010

8:30–9:50 AM One-on-One Résumé Critiques

10:00–11:00 AM Workshop: Your Job Search: Preparing for Success

11:30 AM–12:30 PM Workshop: Creating a Competitive Résumé

1:40–5:50 PM One-on-One Résumé Critiques

Tuesday, February 23, 2010

8:30–9:50 AM One-on-One Résumé Critiques

10:00–11:00 AM Workshop: The First One Hundred Days: How to Keep Your Dream Job from Becoming a Nightmare

11:30 AM–12:30 PM Workshop: Interviewing for Results

1:30–5:40 PM Special Sessions: Three-on-One Group Résumé Critique Sessions (all sessions are limited to twenty minutes per session)

Annual Meeting Sponsors

The Biophysical Society would like to thank the sponsors listed below for their generous support of our Annual Meeting. The list includes sponsors as of October 15, 2009.

Burroughs Wellcome Fund
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Public Affairs

President Visits NIH

President Obama, HHS Secretary Kathleen Sebelius, and OSTP Director John Holdren toured the NIH on September 30, shortly before the President made remarks to more than 400 NIH scientists and invited guests. In his speech, the president highlighted his administration's "historic commitment to research and the pursuit of discovery" through \$5 billion in NIH grants awarded under the American Recovery and Reinvestment Act. He also lauded the potential of medical research to improve health and quality of life, as well as to create jobs and long-term economic growth.

A full transcript of the President's remarks is available at:

http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-on-the-American-Recovery-and-Reinvestment-Act-at-the-National-Institutes-of-Health/.

DOE 2010 Budget Approved

On October 1, the House and Senate finished their work on the FY 2010 Energy and Water Appropriations Bill. The bill provides \$4.9 billion, \$131 million above 2009, for the Department of Energy Office of Science. Of that, \$1.6 billion is for Basic Energy Sciences, and \$2.4 billion is for Applied Research.

On September 30, the President signed a Continuing Resolution (CR) to keep most of the federal government, including NIH, operating at FY 2009 funding levels through the end of October. Another CR was expected at the end of October.

Questions on NIH Stimulus Spending

Representatives Joe Barton (R-Texas), Ranking Member of the House Energy and Commerce Committee, and Greg Walden (R-Oregon), Ranking Member of the Committee's Oversight and Investigations Subcommittee, sent a letter to NIH Director Francis Collins on September 24, questioning some of the grants NIH has funded and the peer-review process for grants issued under the American Recovery and Reinvestment Act. The letter identifies several specific grants that "do not seem to be of the highest scientific rigor." Additionally, the letter requests a written response within four weeks that explains how each identified grant relates to NIH Institute and Center priorities; provides the overall impact score for each specified grant; lists the number of peer reviewers at initial and second-level reviews, the score each reviewer gave the grant, and the designated pay line; and provides the number of total grants that were reviewed at each initial meeting and the number of grants that received a second review. The letter and list of grants are available at:

http://republicans.energycommerce.house.gov/Media/file/News/092409_Barton_Walden_NIH_Grants.pdf.

NRC Biological Agents & Toxins Report

The most effective way to prevent the deliberate misuse of biological select agents and toxins (BSATs)—agents housed in laboratories across the U.S. considered to potentially pose a threat to human health—is to instill a culture of trust and responsibility in the laboratory, says a new report from the National Research Council (NRC). The report, *Responsible Research with Biological Select Agents and Toxins*, states that focusing on the laboratory environment will

be critical for identifying and reducing concerns about facilities or personnel.

This study, sponsored by the NIH, evaluates both the physical security of facilities working with these materials and personnel reliability measures for those with access to biological select agents and toxins. The report offers a set of guiding principles and recommended changes to current practices that will help enhance the management of the Select Agent Program, focus attention where it is most needed, and foster a culture of trust and responsibility that can balance the security needs and the ability of labs to conduct vital research.

BSAT research is presently defined by a list of more than 80 select agents and toxins, developed and jointly regulated by the Centers for Disease Control and Prevention (CDC) and the Animal and Plant Health Inspection Service (APHIS). According to the committee that wrote the report, the list should be ordered based on the potential of an agent to be used as a biothreat, and a graded series of security procedures should be applied so that the greatest resources and scrutiny go to securing agents that pose maximum risk.

To read the report, go to http://www.nap.edu/catalog.php?record_id=12774.

Call for New US Biology Initiative

A report released in September by the NRC calls on the US to launch a new multi-agency, multi-year, multi-disciplinary initiative to capitalize on the extraordinary advances recently made in biology and to accelerate new breakthroughs that could solve some of society's most pressing problems—particularly in the areas of food, environment, energy, and health.

The committee that authored the report used the term “new biology” to describe an ap-

proach to research in which physicists, chemists, computer scientists, engineers, mathematicians, and other scientists are integrated into the field of biology to create the type of research community that can tackle society's big problems. To be sure, biologists are already working successfully in many instances with other scientists and engineers. But for collaborations to take advantage of advances in imaging, high-throughput technologies, computational science and technology, and others, a major new initiative is needed, the committee concluded.

The national new biology initiative should have a timeline of at least 10 years and funding in addition to current research budgets, and it should be an interagency effort to reflect the interdisciplinary approach to research, the committee emphasized. The report also underscores the importance of making information technologies a priority in the initiative given that information is the “fundamental currency” of the new biology.

On the healthcare front, the report states that the goal should be to advance so-called personalized medicine by making it possible to monitor and treat a person's health in a manner that is tailored to that individual.

The report says that by targeting society's major challenges, the initiative would provide an opportunity to attract to scientific fields students who want to solve real-world problems. The initiative will need to devote resources to interdisciplinary education to support the training of new biologists, the report adds.

“We need to set big goals, and let the problems drive the science,” said committee co-chair Thomas Connelly Jr., executive vice president and a member of the office of the chief executive for E. I. du Pont de Nemours & Co.

Copies of *A New Biology for the 21st Century: Ensuring the United States Leads the Coming Biology Revolution* are available at <http://www.nap.edu>.



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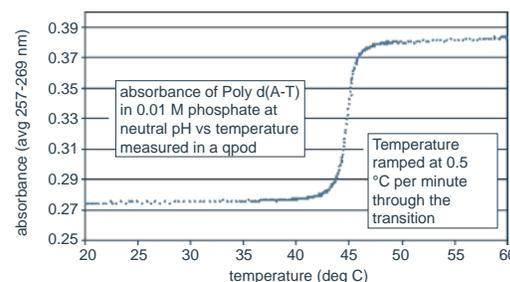
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Molecular Physiology
& Biophysics

FACULTY POSITION

The Department of Molecular Physiology & Biophysics at the University of Vermont is seeking to recruit a **Cell Biologist/Biophysicist** at the **Assistant Professor** level on the **tenure-track**, although Associate and Full Professor candidates will be considered.

The Department has significant strength in protein structure and function with emphasis on contractile and cytoskeletal proteins. The ideal candidate will complement existing expertise in molecular biology, single molecule biophysics, and structural biology. The candidate will be expected to develop an independent, extramurally funded research program in cell biology with emphasis on *mechanisms by which the cytoskeleton and molecular motors govern cellular function* (e.g. cell signaling, intracellular transport, and cell division) which may be altered in human cancer and cardiovascular diseases.

The candidate must be willing to team-teach mammalian physiology in a medical and graduate school setting. Start-up funds will be competitive, and access provided to graduate students and postdoctoral fellows through departmental training grants.

The University of Vermont is an equal opportunity/affirmative action employer. Applications from women and people from diverse racial, ethnic and cultural backgrounds are encouraged.

Review of applications will begin immediately, and continue until the position is filled. Include a résumé, research plan, teaching experience, and the names of three references whose letters must be received prior to review of your application.

Address all inquiries and materials to:

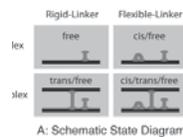
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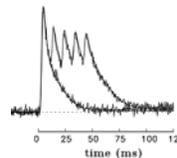
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Highlighted Papers

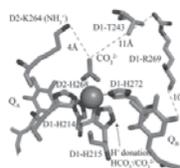
The *Biophysical Journal* website highlights published papers from each issue. The papers are selected by the Associate Editors and readers are given free access to them for 14 days. Below are articles that were highlighted in the October 6 issue. To view the full articles go to www.biophysj.org.



Protein-Mediated Molecular Bridging: A Key Mechanism in Biopolymer Organization
Paul A. Wiggins, Remus Th. Dame, Maarten C. Noom and Gijs J.L. Wuite

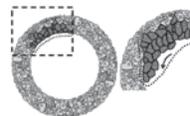


Low-Affinity Ca²⁺ Indicators Compared in Measurements of Skeletal Muscle Ca²⁺ Transients
Stephen Hollingworth, Kyle R. Gee and Stephen M. Baylor



The Semiquinone-Iron Complex of Photosystem II: Structural Insights from ESR and Theoretical Simulation; Evidence that the Native Ligand to the Non-Heme Iron is Carbonate

Nicholas Cox, Lu Jin, Adrian Jaszewski, Paul J. Smith, Elmars Krausz, A. William Rutherford and Ron Pace



Coherent Movement of Cell Layers During Wound Healing by Image Correlation Spectroscopy
Kandice Tanner, Donald R. Ferris, Luca Lanzano, Berhan Mandefro, William W. Mantulin, David M. Gardiner, Elizabeth L. Rugg and Enrico Gratton

Grants & Opportunities

Name: Kavli Prizes

Submission Deadline: December 15, 2009

Objective: The Kavli Prizes recognize scientists for their seminal advances in three research areas: astrophysics, nanoscience, and neuroscience. Consisting of a scroll, medal, and cash award of \$1 million, a prize in each of these scientific areas is awarded every two years beginning in 2008.

Who May Apply: Nominations requested of distinguished international scientists

Weblink: www.kavliprize.no

Members in the News

Kenneth M. Merz Jr., of the University of Florida and Society member since 1990, was given the American Chemical Society Award for Computers in Chemical and Pharmaceutical Research.

Interested in Nanoscale Biophysics?

A new subgroup is forming in this field. For a description of the subgroup and to help petition for its formation, visit:

www.biophysics.org/subgroups/nanoscale.htm

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Subgroups

Intrinsically Disordered Proteins

DisProt Database Funded by the NSF

Keith Dunker, along with Co-PIs *Vladimir Uversky* and *Yuni Xia* at Indiana University, were recently awarded \$1.4 million by the Emerging Frontiers program at the NSF. This grant will fund the expansion and improvement of the DisProt database (www.disprot.org). This database is a tremendous resource for all biophysicists interested in intrinsically disordered proteins. The full story of this award was recently published in *BioInform* at <http://www.genomeweb.com/informatics/iu-team-awarded-14m-nsf-grant-expand-database-disordered-proteins-access-tools>.

Papers of Interest

Huang Y. and Liu Z. Kinetic advantage of intrinsically disordered proteins in coupled folding-binding process: a critical assessment of the “fly-casting” mechanism. *J. Mol. Biol.* 2009 Sep. 9, [Epub ahead of print]. PMID: 19747922

Jensen M.R., Markwick P.R., Meier S., Griesinger C., Zweckstetter M., Grzesiek S., Bernadó P., and Blackledge M. Quantitative determination of the conformational properties of partially folded and intrinsically disordered proteins using NMR dipolar couplings. *Structure* Sep. 9; 17(9):1169-85. PMID: 19748338

Biological Fluorescence

This year's Biological Fluorescence subgroup meeting will focus on the integrity and dynamics of protein-nucleic acid interactions. For a list of speakers, see page 4. The program will also feature seminars from the winners of the Young Fluorescence Investigator competition and the Gregorio Weber Award. These awards are described on the Biological Fluorescence Subgroup website at www.biophysics.org.

All subgroup members should plan on attending the Subgroup Business meeting, which will take place during a break in the Saturday program, at 2:45 PM.

Membrane Biophysics

2010 Kenneth S. Cole Award Nominations

The Membrane Biophysics subgroup presents the Kenneth S. Cole Award to an investigator who has made a substantial contribution to the understanding of membrane biophysics. The award will be presented at the subgroup dinner following the Saturday afternoon symposium at the Annual Meeting. For additional information on the award and selection process, visit <http://www.biophysics.org/Subgroups/MembraneBiophysics/tabid/513/Default.aspx> Please email nominations to the subgroup Secretary/Treasurer (*Mike White* mwhite@drexelmed.edu)

Announcement of the 2010 Cole Awardee and details about the dinner will be posted on the Subgroup website, announced by email, and included in the newsletter when available.

Programs in Biophysics

Has your institution recently created a new biophysics program or department? Has it recently reorganized or expanded an existing program? Does it have a dynamic program it would like to highlight? From time to time, the BPS Newsletter will highlight new or existing biophysics programs. Interested in highlighting your program? Send your information to society@biophysics.org.

Founded in 2003, the Italian Institute of Technology (IIT) exists to promote extraordinary scientific advancement. According to the Italian Ministry of Education, Universities and Research and the Ministry of Economy and Finance, the IIT is Italy's most effective way to enhance the Italian economy, further scientific research, and display Italy's technologically competitive edge.

The IIT has devised a Scientific Plan 2009-2011 to enable intellectual alchemy between its separate departments and to allow for collaboration on myriad levels. The Nanophysics unit (NANOPHYS) is among the newest of the subgroups created through this plan. Operating within a configuration of optical spectroscopy and microscopy and scanning force microscopy and optical nanoscopy, NANOPHYS examines the characterization of nanostructured, biological and hybrid materials at the nanoscale level.

Heading this innovative unit as Senior Scientist is *Alberto Diaspro*, University Professor in the Applied Physics Area of the University of Genoa, Italy. Under his direction, NANOPHYS will support the Nanobiotechnology Department and will conceive strategies for the assembly of nano-systems able to realize new nanoparticles and nanostructured environments. The unit will address the design of structures to character-

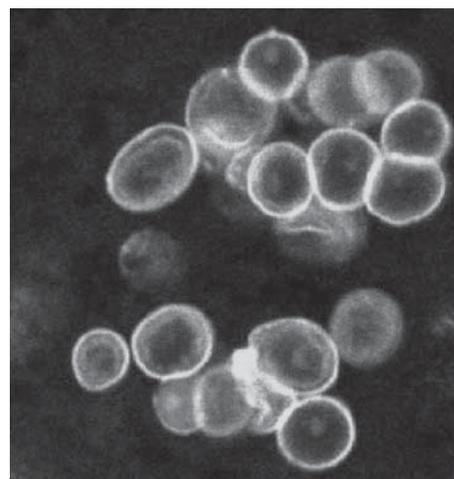
ize artificial and biological materials on a single-molecule level to realizing those designs even in cells, tissues, organs, and the human body.

Inside state-of-the-art labs equipped with top-of-the-line tools, NANOPHYS will explore the design and realization of hybrid nanostructured systems—polymers, namely those related to cells, proteins, and DNA, focusing on the structure and function relationship related to environmental influence, conditioning, and interfaces. Studies involving spatial organization of 1D-2D-3D matrices and controllable transport kinetics and the interfaces and behavior of cells/proteins/DNA-nanoparticles-polymers are on deck.

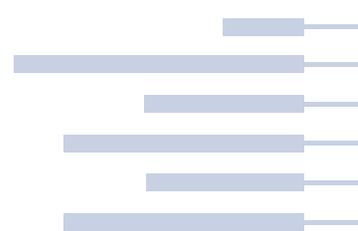
Using different tactics but aspiring to the same objective, NANOPHYS will use optical spectroscopy and microscopy in the spatio-temporal domain to approach advanced methods of characterizing nanostructured materials and their nano-micro-manipulation. This technique includes non-linear time-resolved optical spectroscopy and confocal and multiphoton optical spectroscopy, for starters. The unit will also implement techniques such as scanning probe and atomic force microscopy to further investigate these means.

But this unit's scientific and technological progress doesn't stop there. NANOPHYS is developing Italy's first new generation architecture for 4D multimodal far-field optical nanoscopy, to which an entire section of IIT is devoted.

For more information, visit <http://www.iit.it/en/nanobiotech-facility/nanophysics.html>.



Nanobiorobots: yeast cells encapsulated into fuzzy layers of polyelectrolytes.





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Biophysical Society Newsletter—November 2009

Upcoming Events

January 17–22, 2010

*Gordon Research Conference on Biomolecular Interactions
and Methods*

Galveston, Texas

<https://www.grc.org/programs.aspx?year=2010&program=biointerac>

January 11–12, 2010

Experimental Approaches to Protein: Protein Interactions

Sheffield, United Kingdom

<http://www.biochemistry.org/tabid/379/MeetingNo/SA094/view/Conference/default.aspx>

March 10–14, 2010

*5th International Conference on Structural Analysis of
Supramolecular Assemblies by Hybrid Methods*

Lake Tahoe, California

<http://www.hybridmethods2010.com/index.html>

April 15–18, 2010

*53rd Annual Meeting of the CSBMCB, Membrane Proteins
in Health and Disease*

Banff Conference Centre, Banff, Alberta, Canada

<http://www.csbmcb.ca>

Please visit <http://www.biophysics.org> for a complete list of upcoming events.