Biophysical Society
NEWSLETTER
March 2011

Editor-in-Chief Nominations

Deadline

April 1, 2011

Society Award Nominations

Deadline

May 1, 2011

Chromatin Meeting

July 5–8, 2011
Asilomar, California

Abstract Deadline

April 4, 2011

Chromatin Meeting in Asilomar, California

The Biophysical Society is sponsoring a thematic meeting this July on the shores of the Pacific. *Dynamic DNA Packaging Across Kingdoms: Chromatin and Beyond* is scheduled to take place July 5-8, 2011, in Asilomar, California, where luminaries from around the globe will present exciting lectures on topics of current interest.

Asilomar Conference Center

In recent years there have been significant advances in our understanding of the hierarchical structure, packaging, mechanical forces, and biochemistry of both the eukaryotic chromosome and the prokaryotic genophore. This meeting seeks to bring together biophysicists, physicists, biochemists, and molecular biologists in a pleasant informal setting to discuss current research, identify the most significant outstanding questions and find integrated, interdisciplinary approaches to solving them.

Attendance will be capped at an intimate 200 registrants to facilitate lively and informal discussion. After taking in the exhilarating cutting-edge science, relax in beautiful Asilomar, with its breathtaking beaches and serene surroundings.

(Continued on next page.)

CONTENTS

Biophysicist in Profile — 4
Grants & Opportunities — 6
Biophysical Journal — 7
Public Affairs — 8
Science Fairs — 10
Members in the News — 11
Upcoming Events — 12

Biophysical Society

BIOPHYSICAL SOCIETY

Officers
President
Peter Moore

President-Elect
Richard Aldrich

Past-President
Henry Lester

Secretary
Dorothy Beckett

Treasurer
Linda Kenney

Council
Nancy L. Allbritton
Olaf S. Andersen
Ivet Bahar
Michael D. Cahalan
Patricia Clark
Marco Colombini
Enrique De La Cruz
Laura Finzi
Angel E. Garcia
Susan P. Gilbert
Angela Gronenborn
Donald W. Hilgemann
Vasanthi Jayaraman
Antoinette Killian
Tanja Kortemme
David Millar
Steven Rosenfeld
Catherine Royer
Petra Schwille
Peter So
Michael Wiener

Biophysical Journal
Edward Egelman
Editor-in-Chief

Society Office
Ro Kampman
Executive Director

Newsletter
Alisha Yocum
Production

Erica Retrosi
Profiles & Editing

Ellen Weiss
Public Affairs

The *Biophysical Society Newsletter* (ISSN 0006-3495) is published twelve times per year, January-December, by the Biophysical Society, 11400 Rockville Pike, Suite 800, Rockville, Maryland 20852. Distributed to USA members and other countries at no cost. Canadian GST No. 898477062. Postmaster: Send address changes to Biophysical Society, 11400 Rockville Pike, Suite 800, Rockville, MD 20852. Copyright © 2011 by the Biophysical Society. Printed in the United States of America. All rights reserved.

(Chromatin continued from page 1.)

The confirmed speakers are: *Sankar Adhya*, NCI, NIH; *Dorothy Beckett*, University of Maryland; *Robijn Bruinsma*, University of California, Los Angeles; *Mair Churchill*, University of Colorado, Denver; *Patrick Higgins*, University of Alabama at Birmingham; *Megan King*, Yale University; *Karolin Luger*, Colorado State University; *Simon Mochrie*, Yale University; *John van Noort*, Leiden Institute, The Netherlands; *Robert Phillips*, Caltech; Michael Poiier, Ohio State, *Jean Thomas*, Cambridge University, UK; *Daniella Rhoades*, Lab of Molecular Biology Medical Research Council, Cambridge, UK; *Catherine Royer*, University of Montpellier, France; *Helmut Scheissel*, Leiden University, The Netherlands; *John Widom*, Northwestern University; *Jie Yan*, National University of Singapore; *Sunney Xie*, Harvard University; *G.V.Shivashankar*, National University of Singapore.

The meeting will also provide opportunities for attendees to present their research as additional speakers will be selected from the poster abstract submissions.

A limited number of travel awards to help defray costs to the meeting will be available for students and postdocs.

Visit www.biophysics.org/2011chromatin to view the preliminary program. Submit your abstract by April 4; register and reserve housing by April 24. See you in Asilomar!

FREE online access for Biophysical Society members

Cell Press is proud to publish the Biophysical Journal, official journal of the Biophysical Society.
Your Biophysical Society membership entitles you to free online access to the leading journal in biophysics.

Visit the website and take advantage of your FREE subscription today!

cell.com/biophysj

Biophysical Society

PUBLISHED BY Cell PRESS

San Diego
CONVENTION & VISITORS BUREAU

Biophysical Society

Join us for the

56th Annual Meeting

in

San Diego, California

February 25–29, 2012

www.biophysics.org/2012meeting

Call for Biophysical Society Award Nominations

Submission Deadline May 1, 2011

The Biophysical Society honors its members and recognizes excellence in biophysics each year through its Awards Program. Nominations are now being accepted for eight awards, which will be presented at the Awards Ceremony in San Diego in February 2012. For more information about the Biophysical Society Awards visit www.biophysics.org.

Biophysicist in Profile

Kambiz Shekdar

All work and no play make Kambiz Shekdar, co-founder and Chief Scientific Officer of Chromocell Corporation, a drug discovery company whose focus ranges from pain relief and anxiety treatment to flavor discovery, anything but dull. "I am always working!" he says, but to Shekdar, his type of work is what he calls fun.

As a high school senior, Shekdar's once math-exclusive perspective began to broaden after taking a Princeton University calculus course taught by a professor whose English was conversational at best. A burgeoning interest in biology heightened that same year during a biology course at Princeton with a phenomenal instructor. The two courses juxtaposed, biology came out ahead—so far ahead that Shekdar decided to get cracking in a lab on the spot. "I walked around in Princeton's main biological research building and asked the first person I ran into if she knew of any labs where I might be able to work, especially on the topic of regeneration, which interested me at the time," he recalls. "Turned out she was a professor and right away she walked me to a colleague's lab where a postdoc who had studied regeneration took me in and created a project for me." The willingness with which his ambition was accommodated was followed by a genuine interest in Shekdar's progress and success in the lab as part of the team. "I was hooked," he says. "When someone is excited about what they do, anything is infectious. I was so fortunate to have had mentors who loved what they did and who took the time to mentor and train me."

> "When someone is excited about what they do, anything is infectious."
>
> —Kambiz Shekdar

From high school, Shekdar went on to complete his undergraduate degree at Rutgers University, and attended Rockefeller University for his graduate work. There, he met *Gunter Blobel*, the John D. Rockefeller, Jr. Professor and Nobel laureate, who became another influential mentor for Shekdar. It was with Blobel's encouragement that Shekdar discovered the allure of cell biology, the field that has become his main interest. "Gunter Blobel's thinking and ideas, which seeped in through countless exciting discussions, got me started in this area," Shekdar says. "We would discuss all sorts of things, especially what experiments to do and all the ups and downs that come from analyzing results."

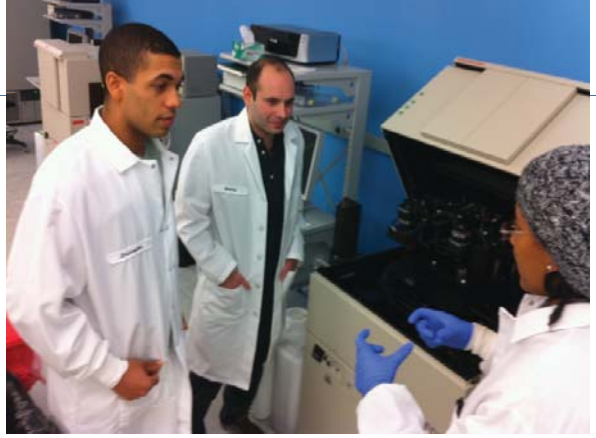
In 2003, those discussions culminated in the Chromocell Corporation's inception. Shekdar and Blobel created the company as a medium to lend their newly patented Chromovert® technology to real-world applications across areas such as therapeutics, pain relief, and flavor discovery, as well as to stem cells, cell therapy, and related research. The company originated "very organically and opportunistically," says Shekdar. "We came up with an idea that could automate genetic engineering and speed production of multigene stable cell lines." At first, the concept was merely that—a research idea. "I wasn't thinking about starting a company," he says. "Once we decided to start a company, we set out to optimize and apply our technology on one project, and built the company based on successful results, one project at a time." This method has proved fruitful. "It is starting to snowball now," he says, "and we are achieving research breakthroughs that were previously out of reach, for instance by gaining access to multi-subunit ion channels of different subunit compositions and stoichiometries and combinatorial panels of cell lines for hundreds

of receptors in parallel." Blobel is now the Chairman of Chromocell's Scientific Advisory Board, which oversees the Chromocell team and monitors the projects' progress.

"One of the biggest challenges is to continually find and attract the best possible talent," Shekdar says. "I am always looking for the most capable, motivated, hard-working and talented people to add to the team." For Shekdar, the Career Center at the Biophysical Society Annual Meetings has proved a wellspring of talent pool. "The Biophysical Society brings together some of the best science and talent," he says. "Each year, I place a job ad and meet with many people, many of whom are exceptional. Each year, we have found one top person who has subsequently joined the company."

Srinivasan Venkatachalan met Shekdar at the 52nd Annual Meeting in Long Beach, California, which he attended as a 2008 BPS Student Travel Awardee. He attended Shekdar's talk in the Drug Discovery for Ion Channels and Transporters VIII satellite meeting to check out career options in industry, and came away with much more: a job lead. Three years later, he's one of the Chromocell team's versatile Assistant Scientists, working alongside Shekdar on many of the drug discovery areas in which the company specializes. "Kambiz is like a kid in a candy store when it comes to sharing his excitement for science and discussing novel applications of the company's patented Chromovert® technology," says Venkatachalan. "He has a distinctive smile on his face and glint in his eyes every single time he zealously expounds his ideas."

Indeed, Shekdar is in the business of ideas; that's how Chromocell was born. "The opportunity for good science in industry is huge and the timing is right," he says. "There are a lot of technologies now that can be used to translate basic research into commercial applications. Simultaneously, there is a lot of great scientific insight that can only come from an industrial scale in science." Currently, the Chromocell team is working on "compound discovery programs both for flavors modulation and drug development," says Shekdar. "In the flavors space, we have been able to recapitulate essentially all taste and smell modalities in cell-based assays that mimic human taste and smell, and we are screening millions of natural compounds and extracts for taste modulators." Amidst discoveries of the first known enhancers of salt taste and pain-blocking compounds while working with sodium voltage gated channel NaV1.7, the Chromocell team has recently partnered with The Coca-Cola Company to develop and discover natural zero- and low-calorie sweetness enhancers for Coke's beverage products. "Our discovery engine better mimics human biology, eliminating the need to work with partial receptors lacking accessory subunits and mutant receptors, such as tagged or truncated proteins, relying instead on native sequences," says Shekdar.



Shekdar and colleagues Zachary Greaney and Shontelle Powell in the lab.

What *Ryan Loy*, Assistant Scientist at Chromocell since meeting Shekdar at the 54th BPS Annual Meeting in San Francisco in 2010, finds remarkable about Shekdar is "his endless excitement for new potential projects, collaborations, and other paths forward that regularly opens doors for development of Chromocell," he says.

"Many of the employees call him the 'idea-man,'" Venkatachalan adds, relating one of Shekdar's frequent comments to the team: "'We are not here to do what others have done previously. We only do things here that others do not attempt or have failed to accomplish.'" With such enthusiasm for the potential just waiting to be tapped on a daily basis, it's no wonder Shekdar can't wait to go to work in the morning.

Grants & Opportunities

Name: NIH/NSF New Biomedical Frontiers at the Interface of the Life and Physical Sciences (R01)

Objective: To encourage discovery research that may create entirely new areas of biomedical investigation through bridging the physical and life/behavioral sciences.

Who May Apply: Individuals with the skills, knowledge, and resources necessary to carry out the proposed research are invited to work with their institution/organization to develop an application for support.

Application Deadline: May 18, 2011

Website: http://grants.nih.gov/grants/guide/pa-files/PAR-10-142.html

Name: NIH/NSF Transforming Biomedicine at the Interface of the Life and Physical Sciences (R01)

Objective: To stimulate quantitative and physical scientists to work with biomedical scientists to transform technological innovation and basic knowledge in the quantitative sciences into new or improved devices or systems for health care.

Who May Apply: Individuals with the skills, knowledge, and resources necessary to carry out the proposed research are invited to work with their institution/organization to develop an application for support.

Application Deadline: May 18, 2011

Website: http://grants.nih.gov/grants/guide/pa-files/PAR-10-141.html

Name: NIH Developmental Pharmacology

Objective: To unravel the effects of development on mechanisms of drug action/ pharmacodynamics and biotransformation, prenatally and from birth through adolescence.

Who May Apply: Institutions/ organizations that propose to encourage multidisciplinary, investigator-initiated basic and translational research in developmental pharmacology with particular emphasis on the role of ontogeny on drug metabolizing enzymes, transporters, receptors and signaling pathways activity across developmental periods from fetal life to adolescence.

Application Deadline: June 5, 2011

Website: http://grants.nih.gov/grants/guide/pa-files/PAR-11-057.html

Biophysical Journal

Most Read Papers for 2010

Biophysical Journal (BJ) once again experienced a great year in website usage. Between July and December 2010, the BJ website receievd 1,551,706 visits. Below is a list of the top 10 most read papers on the BJ website (www.biophysj.org).

1. *Experimental evidence for membrane-mediated protein-protein interaction* (Volume 99; Issue 7; *Ignacio Casuso, Pierre Sens, Felix Rico, Simon Scheuring*)

2. *Single molecule diffusion of membrane-bound proteins: Window into lipid contacts and bilayer dynamics* (Volume 99; Issue 9; *Jefferson D. Knight, Michael G. Lerner, Joan G. Marcano-Velázquez, Richard W. Pastor, Joseph J. Falke*)

3. *Partitioning of lipids at domain boundaries in model membranes* (Volume 99; Issue 12; *Lars V. Schäfer, Siewert J. Marrink*)

4. *A Predictive Model of Cell Traction Forces Based on Cell Geometry* (Volume 99; Issue 9; *Christopher A. Lemmon, Lewis H. Romer*)

5. *Conformational selection in G-proteins: lessons from Ras and Rho* (Volume 99; Issue 11; *Barry J. Grant, J. Andrew McCammon, Alemayehu A. Gorfe*)

6. *Real-time nanoscopy by using blinking enhanced quantum dots* (Volume 99; Issue 7; *Tomonobu M. Watanabe, Shingo Fukui, Takashi Jin, Fumihiko Fujii, Toshio Yanagida*)

7. *Defining the limits of single-molecule FRET resolution in TIRF microscopy* (Volume 99; Issue 9; *Seamus J. Holden, Stephan Uphoff, Johannes Hohlbein, David Yadin, Ludovic Le Reste, Oliver J. Britton, Achillefs N. Kapanidis*)

8. *High Speed Bio-AFM reveals motion of membrane proteins driven by hydrophobic mismatch with nm precision in label free fashion* (Volume 99; Issue 7; *Peter Hinterdorfer*)

9. *Counting bungarotoxin binding sites of nicotinic acetylcholine receptors in mammalian cells with high signal-to-noise ratios* (Volume 99; Issue 10; *Paul D. Simonson, Hannah A. DeBerg, Pinghua Ge, John K. Alexander, Okunola Jeyifous, William N. Green, Paul R. Selvin*)

10. *Thermodynamics and kinetics of molecular motors* (Volume 98; Issue 11; *R. Dean Astumian*)

Public Affairs

NIH to Form New Institute, Dissolve NCRR

In December, NIH Director *Francis Collins* announced plans to create a new institute at NIH, the National Center for Advancing Translational Sciences (NCATS), with the mission of supporting and strengthening translational medicine and therapeutics development. The creation of the Institute was recommended by the Scientific Management Review Board (SMRB), which Collins charged in May 2010 with determining what an effective translational medicine research program would look like and assessing what programs NIH already has. The SMRB issued a report recommending NCATS in response to Collins' request, and Collins quickly accepted the recommendation in order to make the new institute part of the President's budget for FY 2012, which begins October 1, 2011.

According to the SMRB, the new center would "provide a central locus for information on and access to resources, tools, and expertise; serve as a catalyst and convener for collaborative interactions and partnerships; expand the pre-competitive space; support training for translational research investigators; and enhance communication with and among all stakeholders. This Center would house some extant NIH programs, such as the Molecular Libraries Program, the Therapeutics for Rare and Neglected Diseases Program, the NIH Rapid Access to Interventional Development Program, the Clinical and Translational Science Awards, and the NIH-FDA Regulatory Science Initiative."

The NIH Reform Act of 2006 capped the number of Institutes and Centers allowed at NIH at 27. To comply, Collins has announced that the National Center for Research Resources (NCRR) will be disbanded to make room for NCATS. NCRR programs will continue and will be placed in other institutes and centers. In January, a preliminary reorganization was released.

The NIH is accepting feedback from the community on the reorganization. You can submit your comments at http://feedback.nih.gov/index.php/ncats/a-fresh-start-2/. The Biophysical Society Public Affairs Committee is preparing comments on behalf of the biophysics community.

NSB Reevaluating NSF's Merit Review Criteria

The National Science Board (NSB), the governing board for the National Science Foundation (NSF), is undertaking a thorough review of the NSF's two merit review criteria, Intellectual Merit and Broader Impacts. A task force of the NSB is considering all options, from keeping the criteria just as they are to completely rewriting them, or anything in between. The Task Force is now gathering input from a wide variety of stakeholder groups, and will be developing its report and recommendations during 2011. You can submit your thoughts and ideas at http://www.nsf.gov/funding/meritreviewform.cfm through March 15.

Currently, all proposals submitted to NSF are evaluated using the Intellectual Merit and Broader Impacts review criteria. The current review criteria have now been in effect for over a decade.

House Appropriations Committee Members Announced

The Republicans and Democrats have selected the chairs for the appropriation subcommittees for the 212th Congress. The Appropriations committee is responsible for the federal government's annual budget.

Representative *Dennis Rehberg* (R-MT) will be the Chair of the Labor-HHS-Education Appropriations Subcommittee, and Representative *Rosa DeLauro* (D-NY) will be the Ranking Member, which is the lead member of the minority party. The Labor-HHS-Education Subcommittee handles the NIH budget.

Frank Wolf (R-VA), will be the Chairman of the Commerce, Justice, Science Subcommittee. *Chaka Fattah* (D-PA) will be the ranking member. The budgets for which this subcommittee is responsible include the National Science Foundation, NASA, and the National Institute of Standards and Technology.

OSTP Issues Memo on Scientific Integrity

John Holdren, Director of the Office of Science and Technology Policy issued a memorandum on December 17, 2010 to heads of departments and agencies on scientific integrity. The new memorandum describes the minimum standards expected as departments and agencies craft scientific integrity rules appropriate for their particular missions and cultures, including a clear prohibition on political interference in scientific processes and expanded assurances of transparency. The memo also touches on the appointment of advisory boards, government scientists talking to the media, and professional development for government scientists. Department and agency heads must report on their progress toward completing those rules in June.

The memorandum is available at http://www.whitehouse.gov/sites/default/files/microsites/ostp/scientific-integrity-memo-12172010.pdf.

Bioethics Commission Releases Report on Synthetic Biology

The Presidential Commission for the Study of Bioethics released its first report entitled *New Directions: The Ethics of Synthetic Biology and Emerging Technologies*, in December 2010.

(Continued on next page.)

ReichertSPR
Surface Plasmon Resonance

Sophisticated Instruments for Cutting Edge Research and Discovery

- Label-free molecular interaction analysis in real-time
- Measure kinetics, affinity/equilibrium, thermodynamics, concentration
- Component-based
- Low operating costs
- Low maintenance-less than 25% the cost of major competitors!
- Manual or fully automated
- 95 Dalton Analyte Detection
- Traditional Carboxymethyl Dextran Surface Chemistry Available

Visit us at the Biophysical Society's 55th Annual Meeting
March 5-9, 2011 in Baltimore, MD.
Booth # 459

Reichert™
Life Sciences

For more information, talk to Phil Page at: +1 716-686-4522
Toll free USA: 1-888-849-8955
lifesciences@reichert.com
www.ReichertSPR.com

Innovative precision instruments for over a century

Volunteer at a Science Fair Near You

It's officially high school science fair season! Below is a list of just a few of the regional and state science fairs where the Biophysical Society is sponsoring awards. Science fairs are always looking for judges. Volunteer to judge at your local science fair—a few hours of your time will make a world of difference in a high school student's science education. Visit www.biophysics.org for details.

March 4
Northern Virginia Regional Science Fair (VA)

March 5
Anarundel County Science Fair (MD)
Boston Science Fair (MA)

March 11
Worcester Regional Science Fair (MA)
Western MA Science Fair (MA)

March 12
Rensselaer Science Fair (MA)
MA Region I Fair
South Shore Science Fair (MA)

March 15
Virginia Piedmont Science Fair (VA)

March 18
Fairfax County Science Fair (VA)

March 18
Montgomery County Science Fair (MD)

March 22
Tri-Valley Science Fair (CA)

March 25
Prince George's Area Science Fair (MD)

March 26
Baltimore Science Fair (MD)

March 29
San Francisco Bay Area Science Fair (CA)

(Public Affairs continued from page 9.)

President *Obama* requested that the commission study synthetic biology following the May 2010 announcement that the J. Craig Venter Institute had created the first synthetic genome. The report contains 18 recommendations including a call for coordinated federal oversight of scientists working in both large institutions and smaller settings.

"We comprehensively reviewed the developing field of synthetic biology to understand both its potential rewards and risks," said *Amy Gutmann*, the Commission Chair and President of the University of Pennsylvania in a press release. "We considered an array of approaches to regulation—from allowing unfettered freedom with minimal oversight and another to prohibiting experiments until they can be ruled completely safe beyond a reasonable doubt. We chose a middle course to maximize public benefits while also safeguarding against risks."

The Commission also recommended improving the public's scientific literacy through education. The Biophysical Society noted the need for public education in its comments to the Commission in September.

The report can be found at www.bioethics.gov.

Find us on Facebook

For the latest Society updates and news visit our Facebook page.

www.facebook.com/biophysicalsociety

Members in the News

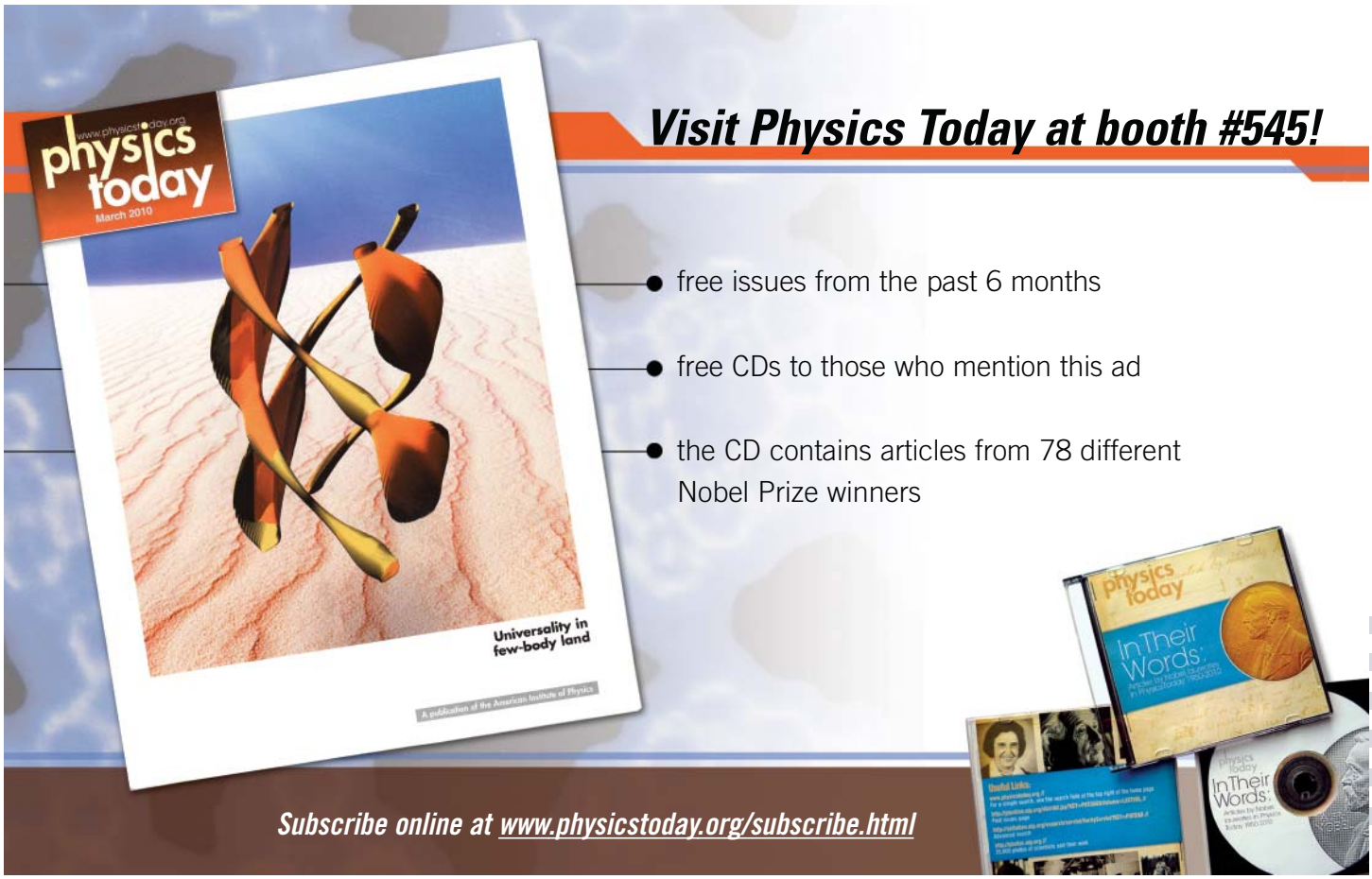
Alberto Diaspro of the Italian Institute of Technology and Society member since 1996 has been appointed as President of the International Society on Optics Within Life Sciences (OWLS).

Ken Dill of University of California, San Francisco and Society member since 1979 has now been named Director of the Laufer Center for Physical and QuantitativeBBiology at Stony Brook University.

Ralf Metzler of Technical University of Munich and Society member since 2004 was awarded a Finland Distinguished Professorship from the Academy of Finland.

Stephanie Tristram-Nagle of Carnegie Mellon University and Society member since 1979 was awarded the 2010 Charles E. Kaufman Award in Biology, Chemistry and Physics

Do you or someone you know have something newsworthy to share with the Society? Submit your information to Society @biophysics.org



Biophysical Society

11400 Rockville Pike, Suite 800
Rockville, Maryland 20852

Presorted
First Class Mail
U.S. Postage
PAID
Suburban, MD
Permit No. 5460

UPCOMING EVENTS

May/June

May 4, 2011

Delaware Membrane Symposium
Newark, Delaware
www.che.udel.edu/cobre/symposium.html

June 27-29, 2011

Advances in the Cellular and Molecular Biology of Angiogenesis
Birmingham, United Kingdom
www.biochemistry.org/conferences

July

July 5-8, 2011

Dynamic DNA Packaging Across Kingdoms: Chromatin & Beyond
Asilomar, California
www.biophysics.org/2011chromatin

July 10-15, 2011

Molecular Membrane Biology
Andover, New Hampshire
http://grc.org/programs.aspx?year=2011&program=molecmemb

July 17-22, 2011

Charge Transfer in Biosystems
Obergurgl, Austria
http://www.esf.org/activities/esf-conferences

August

August 6-13, 2011

Computational Biology: Genomes, Cells & Systems
Revkjaviik, Iceland
http://cwp.embo.org/pc11-07/

August 14-19, 2011

Soft Condensed Matter Physics: Soft Matter Far From Equilibrium
New London, New Hampshire
http://grc.org/programs.aspx?year=2011&program=softcon

September

September 2-8, 2011

Glutathione and Related Thiols in Living Cells
Saint Feliu de Guixols, Spain
www.esf.org/activites/esf-conferences

September 10-13, 2011

The EMBO Meeting: Advancing the Life Sciences
Vienna, Austria
http://www.the-embo-meeting.org/

Please visit www.biophysics.org for a complete list of upcoming events.