

Newsletter

Biophysical Society

JANUARY

2015

DEADLINES

59th Annual Meeting

February 7-11, 2015
Baltimore, Maryland

January 7

Early Registration
Luncheon Registration
Late Abstract Submission
Graduate and Postdoc Fair
Institution Registration
Industry and Agency
Opportunities Fair
Registration
Childcare Pre-Registration
Satellite Meeting
Registration
Blogger Applications

January 22

Hotel Room Block
Reservations

January 30

Undergraduate Mixer and
Poster Fest Registration

February 16

Priority Applications
for Summer Research
Program in Biophysics

2015 New & Notable Symposium Speakers Announced

Seven speakers were selected for the 2015 New & Notable Symposium from over 100 nominations submitted by Society members. The speakers, listed below, will present their work in Baltimore during the Symposium on Sunday, February 8, at 10:45 AM. The speakers of this year's New and Notable symposium will present exciting new discoveries in biophysics, including X-ray and EM structures and mechanistic studies that address some of the most challenging questions today.



Liskin Swint-Kruse, The University of Kansas Medical Center
Rheostats and Toggle Switches for Modifying Protein Function



Gaya Amarasinghe, Washington University in St. Louis
Mechanisms of Ebola Virus Immune Evasion



Janine Brunner, University of Zurich, Switzerland
The Principles of Lipid Scrambling: Structural Insights from a TMEM16 Family Member



Frank DiMaio, University of Washington
A Virus that Infects a Hyperthermophile Encapsidates A \rightarrow Form DNA



Aleksandr Noy, Lawrence Livermore National Laboratory
Transport Through Carbon Nanotube Porins in Lipid Membranes



Michelle Wang, Cornell University
Single Molecule Mechanics — Towards High Throughput



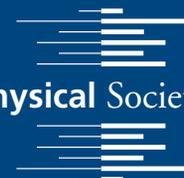
Katharina Duerr, Oregon Health and Science University
Mechanisms of AMPA Receptor Activation and Desensitization Investigated by X-Ray Crystallography, DEER and Cryo-electron Microscopy

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Biophysical Society



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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 © 2015 by the Biophysical Society. Printed in the United States of America. All rights reserved.

Biophysicist in Profile

ANTOINE VAN OIJEN



Antoine van Oijen spent many hours as a child reading books on astronomy. He even used his own homemade telescope for stargazing. “I was fascinated by astronomy,” van Oijen says. “I built my own telescope from a PVC pipe with a home-polished lens that gave pretty nice views.” Van Oijen’s scientific interests expanded when he took a high school physics class with an enthusiastic teacher. Van Oijen was inspired to pursue physics studies for his undergraduate degree at Leiden University in the Netherlands, from which he earned his Bachelor of Science degree. He was the first person in his extended family to go to university. “My father is a very intelligent and clever man, but being the oldest son in a farmer’s family, he was pulled out of school at the age of twelve to work on the farm,” he explains. “He worked hard to receive an education after he got married to my mom by studying in the evenings on top of a full-time job.”

During his undergraduate years, van Oijen had the opportunity to do bench work and enjoyed it immensely, so he decided to pursue a PhD in physics. “Most people who continued towards a PhD would move to another university, but I was having too much fun to move away,” van Oijen says. “All of my friends lived in Leiden and I was having a blast in the lab. The decision to stay in Leiden was made very quickly.”

Van Oijen focused on low-temperature single-molecule spectroscopy during the first years of his PhD, and later began working with another group that was interested in photosynthesis. “We set out to perform fluorescence spectroscopy on individual photosynthetic pigment-proteins at cryogenic

“ He has the benefit of working in a truly interdisciplinary environment with physicists, biologists, chemists, and computer engineers in his lab. “I feel privileged to continue learning from their expertise and backgrounds” he shares. ”

temperature to better understand their electronic structure and the mechanisms they employ to transfer excitation energy to the photosynthetic reaction center,” van Oijen notes. Although he did not study biology at all during his graduate or undergraduate years, working on this project triggered in him an interest in biophysics that led him to pursue a postdoctoral position in biophysics.

In 2001, van Oijen started his postdoc studying single-molecule biophysics in the lab of *Sunny Xie* at Harvard University. Van Oijen quickly realized that he did not know any biology, so he enrolled in an introductory molecular biology course. “At 28 years of age, I was sitting in the back of one of the lecture halls at the Science Center at Harvard surrounded by a few hundred 19-year-olds,” van Oijen says. “The lectures were an absolute eye opener for me. Supported by *Richard Losick’s* wonderful teaching style, I was blown away by the elegant and intricate molecular mechanisms that support life.” Xie admired

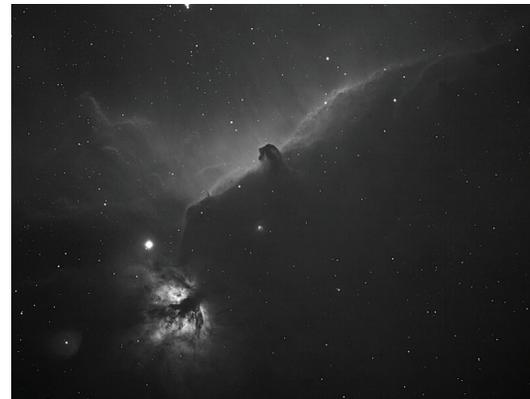
van Oijen's decision to delve into a new subject so fully. "When Antoine first came to Harvard as a postdoc, he knew very little biology. Yet he set out to have a career in biophysics, and went out of his way to learn biology," Xie says. "[He had a] lack of fear of venturing into new territories." Van Oijen was hooked on biophysics and began working to develop single-molecule techniques to visualize DNA replication, a field of inquiry that continues to dominate his career to this day.

Van Oijen went on to become an assistant professor at Harvard Medical School, where he stayed for six years before moving back to the Netherlands. He then took a position as a full professor at the University of Groningen, heading up the Single-Molecule Biophysics Group at the Zernicke Institute for Advanced Materials. His group focused on developing and using single-molecule biophysics techniques to study complex biological processes. "We're using a variety of in vitro and in vivo single-molecule approaches to study how DNA replication works in phage, bacterial, and eukaryotic systems," van Oijen states. "Next to this effort, we're interested in viral fusion (how does a membrane-enveloped virus fuse its membrane with that of the target cell) and membrane transport (how do membrane transporters get small molecules from one side of the membrane to the other). We try to balance our efforts between methods development and the answering of mechanistic questions."

As a group leader at University of Groningen, van Oijen embraced serving as a mentor and advisor to his lab members. "My favorite thing about being a professor, advisor, and mentor is discussing data with people in the lab, brainstorming about designing the next experiment, and coming up with mechanistic explanations. One of the most rewarding things is when a person from the lab walks into your office, overflowing with excitement, with a piece of cool data," says van Oijen. He has the benefit of working in a truly interdisciplinary environment with physicists, biologists, chemists, and computer engineers in his lab. "I feel privileged to continue learning from their expertise and backgrounds," he shares.

As it is for many people, the biggest challenge in van Oijen's career thus far has been managing the two-body problem. "My wife is an academic as well, and as a family we have been struggling for a long time to find a situation and location in which both of us have professional positions that fit our ambition levels and keep us motivated," he explains. Recently, van Oijen's wife was offered her dream job at the University of Wollongong in Australia, where van Oijen also has a close collaborator. "A wonderful opportunity was created for me as well, resulting in the solution for our dual-career problem," he says. "Plus, it is in a very nice location, with a beach close by and a nice climate. I may finally learn to surf! In the end, it taught me a valuable lesson on the balancing of work and life." This month, van Oijen is moving to Australia to work at University of Wollongong in the School of Chemistry.

In addition to his passion for biophysics, van Oijen enjoys flying, having recently earned his pilot's license. "It's a wonderful mix of, on the one hand, the romanticism of being free and on the other, the very steep but satisfying learning curve one has to climb to master the complex set of skills needed to fly a plane and find your way through the skies," he explains. Another of his passions is astrophotography, a hobby van Oijen first undertook as a child. "I picked [it] up again a few years ago. I spend too many nights outside with my telescope and CCD camera to take pictures of the night sky." His colleague *Karl Duderstadt* is thankful that van Oijen chose a career in biophysics rather than pursuing these other passions full time. "His childhood dream was to be an astronaut. Fortunately for us," Duderstadt says, "he became a physics professor and has remained satisfied flying planes in the sky over the Netherlands."



van Oijen enjoys astrophotography as a hobby. The image above and below are two of his photos.



Profilee-at-a Glance

Institution

University of Wollongong

Area of Research

Understanding how proteins work using single-molecule tools

Public Affairs

Rush Holt to Lead AAAS

Congressman *Rush D. Holt* will take over as the Chief Executive Officer for the American Association for the Advancement of Science (AAAS) in February. Holt is retiring from the US House of Representatives this month after serving as a Representative from central New Jersey for 16 years. He will replace *Alan Leshner*, who has held the position since December 2001 and announced his retirement last year. Holt received his BA in physics from Carleton College in Minnesota, and received his PhD in physics from New York University. He started his career in politics as an AAAS Science & Technology Congressional fellow in 1982.



Photo credit: Mike Lucibella, APS News

In honor of his service, the Society co-sponsored a reception in Holt's honor in November. Holt is pictured above addressing the crowd, with his wife.

National Science Board Launches STEM Education Resource Website

The National Science Board (NSB) has created a STEM Education Resource Website to make information about science, technology, engineering, and mathematics (STEM) education and careers easily accessible to the public. The new service includes observations and findings on student

proficiency, college STEM degrees, and jobs in science-related occupation. Pre-K through college STEM information is available through the site. The website's information comes from the National Science Foundation's Science and Engineering Indicators report. The most recent report was published in 2014.

The NSB is made up of 25 members appointed by the President. Members represent a variety of science and engineering fields and include industry and university representatives. With the development of this online tool, the Board's hope is that discussions about STEM education and workforce will not be limited to generalized statements and can instead be based on facts about "what's really going on, how we're doing and where we're headed," according to Kevin Droegemeier, vice chairman of the NSB.

The STEM Education Resource Website can be accessed at <http://www.nsf.gov/nsb/sei/edTool/>.

House Appropriations Committee Announces Subcommittee Chairs and New Members

With a new Congress comes new leadership. US House of Representatives Appropriations Committee Chair *Hal Rogers* (R-KY) announced that Representative *Tom Cole* (R-OK) will serve as chair of the Labor-HHS Appropriations Subcommittee, *John Culberson* (R-TX) will serve as chair of the Commerce, Justice, and Science Appropriations Subcommittee, and Representative *Mike Simpson* (R-ID) will serve as Chair of the Energy and Water Development Appropriations Subcommittee in the 114th Congress. Rogers also announced that the following Members will join the Appropriations Committee: Representatives *David Jolly* (R-FL), *Scott Rigell* (R-VA), *Evan Jenkins* (R-WV), and *David Young* (R-IA). The Appropriations Committee has jurisdiction over passing the bills that fund the federal government each year,

with the Labor-HHS Subcommittee responsible for the NIH, CDC, and FDA budgets, the Commerce, Justice, and Science Subcommittee handling NSF, NIST, and NASA budgets, and the Energy and Water Development Subcommittee working on the Department of Energy budget.

The full committee membership can be viewed at <http://appropriations.house.gov/about/members/>. At the time of publication, the Democrats in the House had not yet made committee appointments.



SUBMIT YOUR STORY TODAY

Submission deadline: June 15, 2014

Do you know of a biophysics discovery that changed the world for the better? That led to a new technology, new diagnostic tool, medical application, or new industry?

The Biophysical Society Public Affairs Committee invites you to submit a one-minute video that describes one such biophysics innovation and its impact. The Committee is particularly interested in learning about innovations that are not widely known and those that have taken place in the recent past. Up to three prizes of \$1000 each will be awarded for the submissions that best describe how a biophysics-inspired innovation changed the world for the better, and the winning entry will have the opportunity to have their video professionally produced.

These stories are critical in building public and Congressional support for basic research by demonstrating how it impacts individuals and the economy.

Submit your story to contests@biophysics.org by June 15, 2015.

International

Italian Appeals Court Rules in Favor of Earthquake Scientists

In November, an Italian appeals court acquitted six scientists who had been convicted of manslaughter in 2012 following the advice they gave before a deadly earthquake struck the central Italian town of L'Aquila. The judge handing down the sentence at their original trial emphasized that the scientists were not convicted for failing to predict the earthquake, but for not carrying out their duties as public officials by insufficiently analyzing several risk factors. Lawyers for the convicted experts argued successfully during the appeal that there was no proven causal link between the scientists' statements and townspeople's decision to stay indoors on the night of the earthquake.



The local government office damaged from the earthquake in L'Aquila.

When the original verdict and sentences were handed down in 2012, many in the scientific community viewed the result as damaging to communication efforts between scientists, governments, and the public. "It's incredible that scientists trying to do their job under the direction of a government agency have been convicted for criminal manslaughter," earth scientist *Thomas Jordan* of the University of Southern California told *ScienceInsider* at the time. "We know that the system for communicating risk before the L'Aquila earthquake was flawed, but this verdict will cast a pall over any attempt to improve it. I'm afraid that many scientists are learning to keep their mouths shut. This won't help those of us who are trying to improve risk communication between scientists and the public."

Biophysical *Journal* Corner

Paper of the Year Award



Hervé Turlier

Congratulations to *Hervé Turlier* of the European Molecular Biology Laboratory, winner of the first *Biophysical Journal* Paper of the Year Award. His paper, *Furrow Constriction in Animal Cell Cytokinesis* was co-authored with *Basile Audoly*, *Jacques Prost*, and *Jean-François Joanny* and was published in Volume 106 (1) (January 7, 2014) of *Biophysical Journal*.

The *BJ* Paper of the Year award was established to recognize one outstanding paper by a corresponding author who is also a young investigator. Papers are nominated for the award by the Associate Editors of the *Journal*. Upon learning of the award, Turlier responded, "I am profoundly honored by this news."

Turlier will receive his award and give a short talk at the Awards Symposium during the Biophysical Society Annual Meeting.

Submit to *BJ*

Top five reasons to submit your work to *Biophysical Journal*:

1. Quality peer review by working scientists
2. 30 days from submission to decision,
3. Option for open access publishing,
4. Affordable publication fees and discounts for members, and
5. You too could win the *BJ* Paper of the Year Award!

Judge at Your Local Science Fair and Give a BPS Award



For the seventh year in a row, the Society will sponsor Biophysics Awards at state and regional science fairs in the United States. The initiative raises awareness of the field of biophysics among high school students and teachers.

Last year, this Public Affairs initiative funded awards for 24 students in 11 US states. In 2015, BPS already has plans to sponsor awards at state and regional fairs in the Boston, Baltimore, Washington DC, San Diego, Philadelphia, and San Francisco areas.

All of these science fairs need scientists to serve as judges. If you are interested in judging, please visit <http://svy.mk/1Cg2oZc> and complete the volunteer form.

Live in a different area? The Society is pleased to be able to provide awards at state and regional fairs where members are interested in serving as a judge. Consider giving a Biophysics Award at your local fair. Visit www.biophysics.org and click 'About Us' and then 'Volunteer' for instructions on how to have BPS sponsor the award.

You must register the fair with the Society by January 31, so do not delay!

New Biological Frontiers Illuminated by Molecular Sensors and Actuators

JUNE 28–JULY 1, 2015

GIS CONVENTION CENTER AT NATIONAL TAIWAN UNIVERSITY, TAIPEI, TAIWAN

This meeting will explore a variety of cutting edge research tools that are critical to our understanding of cell signaling and cellular structures in a wide range of biological systems. Due to the multidisciplinary nature of such studies, we encourage participation of a diverse range of researchers with interests that span the biological, chemical, and physical sciences.

ORGANIZERS

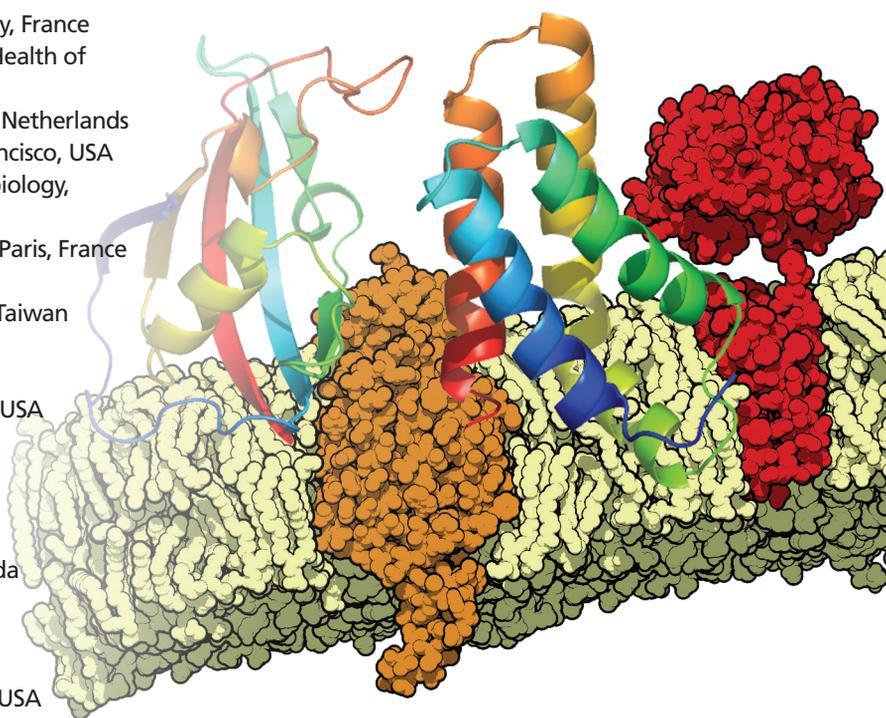
Robert Campbell, University of Alberta, Canada
Chia-Fu Chou, Institute of Physics, Academia Sinica, Taiwan
Takanari Inoue, Johns Hopkins University, USA
Jin-Der Wen, National Taiwan University, Taiwan

SPEAKERS

Ann-Shyn Chiang, National Tsing Hua University, Taiwan
Adam Cohen, Harvard University, USA
Bianxiao Cui, Stanford University, USA
Maxime Dahan, Pierre-and-Marie-Curie University, France
Yves de Koninck, University Institute of Mental Health of Québec, Canada
Cees Dekker, Delft University of Technology, The Netherlands
Sophie Dumont, University of California, San Francisco, USA
Oliver Griesbeck, Max Planck Institute of Neurobiology, Germany
Zoher Gueroui, École Normale Supérieure (ENS), Paris, France
Kenzo Hirose, University of Tokyo, Japan
Hsiao-Chun Huang, National Taiwan University, Taiwan
Janet Iwasa, University of Utah, USA
Etsuko Kiyokawa, Kanazawa University, Japan
Sanjay Kumar, University of California, Berkeley, USA
Yulong Li, Peking University, China
Jung-Chi Liao, Academia Sinica, Taiwan
Ian Liao, National Chiao Tung University, Taiwan
Tobias Meyer, Stanford University, USA
Stephen Michnick, University of Montreal, Canada
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Lee-Wei Yang, National Tsing Hua University, Taiwan
Wei-Yuan Yang, Academia Sinica, Taiwan
David Yue, Johns Hopkins University, USA
Jin Zhang, Johns Hopkins University, USA
Zhihong Zhang, Wuhan National Laboratory for Optoelectronic, China
Shoshana Wodak, The Hospital for Sick Children, Canada
Ada Yonath, Weizmann Institute of Science, Israel
Christine Ziegler, The Max Planck Institute for Biophysics, Germany

IMPORTANT DEADLINES

Abstract Submission March 1, 2015
Early Registration.....April 6, 2015



59th Annual Meeting

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Public Affairs Sessions

Science Funding: Is it Time for a New Paradigm?

Sunday, February 8, 2:30–4:00 PM

Public funding has played a key role in supporting the scientific enterprise in the United States and abroad. But with federal budgets flat and little political will to change any time soon, scientists are wondering not only how to keep their labs afloat, but also what the future holds for research in the US moving forward. During this informal discussion, BPS members from around the globe will talk about how science is funded in different countries, both from government and private sources.

Grant Writing Workshop: How (Not) to Write Your NIH Grant Proposal

Monday, February 9, 1:00 PM–3:00 PM

Through mock study sections and discussions, veteran NIH officials will demonstrate what review panels look for when they read and assess proposals. They will also answer questions about peer review, avoiding application pitfalls, and responding to review concerns. This session is sponsored by the Public Affairs Committee and is appropriate for both experienced principal investigators and those applying for their first grant.

US Science Education in a Global Context

Monday, February 9, 2:30 PM–4:00 PM

Why do students in other countries out-perform US students in science? As other countries are increasing their investment in scientific research and creating new opportunities for higher education and work, who will fill the seats in tomorrow's university science classrooms? Panelists in

this session will discuss what other countries are doing differently than the US in science education and the role of the next generation science standards in US education.

Conversation with NIGMS Director

Tuesday, February 10, 1:30 PM–2:30 PM

Jon Lorsch assumed the role of Director of the National Institute of General Medical Sciences in 2013. One year in, he is leading a five-year strategic planning effort for the Institute and looking at how the Institute can make the most of its resources to support fundamental research. Come to this session to learn more about Lorsch's vision for NIGMS as well as what is new at the Institute.

Biomolecular Discovery Dome

Visit this 3-D portable dome, sponsored by the Public Affairs Committee, to see how difficult biophysical topics can be made accessible to high school students and the public. Come and view short videos that communicate the excitement of looking at macromolecular complexes and understanding the molecular basis for life. The Dome will be located inside the Exhibit Hall.

New Professional Development Sessions

Mid-Career Mixer

Sunday, February 8, 5:30 PM–7:00 PM
Baltimore Hilton

You have a job and some funding for your work, but you realize that the career challenges continue. This event is a great chance to compare notes and trade tips with colleagues on how to handle issues that arise in the time between getting your job

BRIDGING THE SCIENCES: COMPUTATION AND EXPERIMENT

and getting tenure, including management of lab staff, getting your work published, and renewing your funding. Refreshments will be provided, with cash bar.

Breaking into Industry: How to Find and Apply for an Internship

Sunday, February 8, 2015, 1:30 PM–3:00 PM

Are you interested in pursuing a career in industry? Stop by to hear from a panel of experts who work in bio-related industries. The panel will discuss how to find, select, and apply for industry internships, providing attendees with useful tools and resources.

Publication Sessions

Coffee with the Editors

Attending the Biophysical Society Annual Meeting? Take advantage of the opportunity to stop by the Biophysical Society booth, grab a cup of coffee, and visit with members of the *Biophysical Journal* Editorial Board. Bring your questions about BJ submissions, peer review procedures, or other publishing-related topics to one of the eight different sessions that will be offered. Specifics time are listed in the Program.

How to Get Your Scientific Paper Published Monday, February 9, 2:15 PM–3:45 PM

This panel discussion, sponsored by the Publications Committee, will focus on the practical issues involved in publishing a scientific paper. The panelists have extensive experience in writing, reviewing, and editing papers, and will provide information on the dos and don'ts of submitting research manuscripts. Discussions will likely focus on strategies to avoid common pitfalls, how to prevent and fix problems before submission, and how to respond to critiques and even rejection of a paper. Attendees are encouraged to ask questions during the session.

First Timers & New Members

First-Time Attendee Drop-By

Saturday, February 7, 5:00 PM–7:00 PM

Is this your first time attending a Biophysical Society Annual Meeting? Wondering what to do first? Feeling overwhelmed? Wondering how to get the most out of your time? Drop by the First-Time Attendee event on Saturday evening during the Opening Mixer to learn how to navigate the meeting. Society staff and Membership Committee Members will be on hand to answer your questions about the meeting and help you get the most from your time in Baltimore.

New Member Welcome Coffee

Monday, February 9, 10:15 AM–11:15 AM

All new Biophysical Society members are invited to participate in an informal gathering to meeting members of the Society's Council and committees, learn about the Society's activities, get acquainted with other new members, and enjoy refreshments. Current members are encouraged to attend and welcome the new members.

Child Care

The Biophysical Society will once again provide child care services while you attend the Annual Meeting! Subsidized child care will be available through KiddieCorp. Trained professionals will be on hand to watch children of all ages, and the fee includes fun activities and light snacks. Pre-registration is recommended. A family room will also be available in the Baltimore Convention Center, stocked with diapers, a small refrigerator, private areas for nursing, electrical outlets, and a

**Again this Year
Free Networking
Cards for Poster
and Platform
Presenters**

Speaking in a platform session or presenting a poster at the Annual Meeting this year? If so, you already have 25 pre-printed Networking Cards waiting for you. Networking Cards are like business cards, but designed just for scientists. They provide your contact information, title of abstract, presentation date/time and abstract content.

Networking cards will be available for pick up in the Registration Area.

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small area for rest and play. To register your child for the child care service, visit www.biophysics.org/2015meeting, and click the General Information tab.

Career Center

Looking for a new position? Have a position to fill? Visit the Career Center at the Annual Meeting. Candidates may post their CVs at no charge and apply for job openings. Employers wishing to advertise job opportunities may do so, and 2015 BPS members qualify for a reduced posting fee.

Annual Meeting Special: Employers and Job Seekers—Post Early to Save and Increase Visibility!

Post your job or resume on the Society Job Board between January 2 and January 26, indicate that you're participating in the Annual Meeting Career Center, and receive the following advantages:

For Employers

- Viewable job postings on the Society's online Job Board for 60 days;
- Copies of your job posting in the Job Binder for participants to view onsite;
- Inclusion on a listing of job postings given to all attendees at registration;
- The ability to set up interviews onsite at the meeting; and
- Save time at the meeting by uploading job postings prior to the meeting.

For Job Seekers

- Copies of your resume in the Resume Binder for employers to view onsite;

- Job seeker's name along with poster/platform presentation name and number (if applicable) included on the candidate listing page given to all employers; and

- Save time at the meeting by uploading your resume prior to the meeting.

Resume/CV Posting is FREE for All Attendees

Can't post your job or resume online by January 26? Don't worry! You may still post your resume at the Annual Meeting, but your job posting or resume will not be included in the the job or resume binders. For more information, please visit www.biophysics.org/2015meeting and click the Career Center tab.



Call for Bloggers

BPS is looking for bloggers to share meeting tips, can't miss events, the best local eateries, and more with the Society's blog readers. Submit your application at www.surveymonkey.com/s/bpsblog15 by January 7.



Plan and Navigate the Meeting

Use the desktop planner and mobile app to:

- Create your itinerary
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- Search by Technique
- Search Authors
- Browse Exhibitors
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HTML 5

Thematic Meetings

Modeling of Biomolecular Systems Interactions, Dynamics, and Allostery

In September 2014, the Biophysical Society co-sponsored a thematic meeting with Koc University and the University of Pittsburgh on the modeling of biomolecular systems interactions, dynamics, and allostery. The meeting was held at the downtown campus of Koc University, next to the American Hospital, in the Nişantaşı District of Istanbul.

The meeting brought together experimental and computational scientists to explore various aspects of biomolecular functions and interactions, including transcription regulation, protein synthesis and degradation, and various signaling and regulation processes, using different methods at multiple scales. Although the topic appears broad, a unifying theme was understanding mechanisms in a broad sense: mechanisms at the molecular level, mechanisms at the cellular level, mechanisms of biomolecular interactions, mechanisms of biological function, and mechanisms of evolution, along with mechanistic approaches to exploring these events.

The meeting started with a session on *Allosteric Transition in Proteins and How They Relate to Function*, the first talk delivered by *Amnon Horowitz*, on *Distinguishing between Allosteric Mechanisms Using Structural Mass Spectrometry, Demonstrated for the Chaperonin GroEL*, followed by a *Structural Biologist View and Questions* presented by *Ruth Nussinov*. These two consecutive lectures nicely illustrated the recurrent theme of the meeting: exploring complex biological processes by novel techniques, while gaining new insights into underlying principles of biophysical and biochemical sciences using quantitative methods. The four talks that followed in the same session, by *Rebecca Wade* on organism-adapted specificity, *Tom McLeish* on the role of low frequency motions in allostery, *Vanessa Ortiz*, on quantifying signal propagation in allosteric proteins, which

provided excellent examples of frontiers in the field, and *Banu Ozkan's* talk on the relationship between allostery and protein evolution, provided a nice prelude to the focus of the second session: *Evolution and Function*. That session started with a lecture by the EBI Director, *Janet Thornton*, on the evolution of enzyme mechanisms, followed by the presentation by *Anne-Claude Gavin* on lipid-protein networks. A highlight in this session was the stimulating talk on how *Evolution Teaches Predicting Protein Interactions from Sequence* by *Burkhard Rost*, which drew attention to the utility of machine learning tools, in addition to those, physics-based, in detecting complex evolutionary relationships.

Session III switched gears to T cell regulatory and signaling mechanisms. Three speakers showed attendees how physics-based methods are pushing the boundaries of cell biology research. *Leslie Loew* and *Anna Panchenko* presented exciting developments on modeling two regulation processes: actin assembly (Loew) and protein-protein binding and pathway cross-talk (Panchenko), followed by an exciting talk on the *Stochastic Simulations of Cellular Processes, from Single Cells to Colonies* by *Zaida Luthey-Schulten*.

The focus of Sessions IV was supramolecular machinery. An impressive talk by *Klaus Schulten* on the progress made in elucidating the properties of *The Photosynthetic Membrane of Purple Bacteria as a Clockwork of Atomic and Electronic Level Processes* showed the audience the power of current molecular modeling and simulation tools, not only for visualizing and animating structures, but understanding the complex machinery of supramolecular systems. Next, we moved to cutting-edge findings on the experimental characterization of the structure and dynamics of membrane proteins, and in particular those involved in signal transduction: SNARES by *Lukas Tamm*; AMPA receptors by *Ingo Greger*; and betaine transporter by *Christine Ziegler*. Other highlights included the lecture by *John Overington*, the ChEMBL team leader, on *Data Mining Large-Scale Bioactivity*

Datasets to Find Patterns in Ligand Recognition as an efficient approach for advancing quantitative systems pharmacology; the play between allostery and kinetics by *William Eaton*; the advances in protein-protein docking and design by *Zhiping Weng*; structural protein interaction networks and prediction of protein interactions by PRISM by *Attila Gursoy*; importance of flexible docking and a suite of computational methods including MedusaDock by *Nikolay Dokholyan*; the development of *Time-dependent Linear Response Theories* for mapping intramolecular communication paths by *Lee-Wei Yang*; insights into *pH-induced Changes in Prion Stability* by *Shoshana Wodak*; a new approach for exploring free energy landscapes with the help of *excited collective modes* by *David Perahia*.

The session on protein structure and dynamics, *From Molecular Fluctuations to Supramolecular Machinery*, was organized in honor of *Burak Erman, Celebrating 40 Years of Science*, with contributions from *Ken Dill, Robert Jernigan, Andrzej Kloczkowski, Malcolm Walkinshaw, Turkan Haliloglu, and Batu Erman*. The session ended with an impressive talk by Erman himself, on the *Fractal Structure of Interaction Pathways in Proteins and Prediction of Allosteric Pathways*.”

There were two poster sessions during the meeting, with nearly 100 poster presentations over the five-day meeting. The gala dinner at Divan Hotel gave attendees a taste of Turkish cuisine and a touch of Turkish hospitality.

There were two optional tours organized for attendees and accompanying guests provided additional opportunities to appreciate the city’s culture. Istanbul is located in between two continents, Europe and Asia, separated by Bosphorus Sea. The Bosphorus boat tour made it possible to enjoy the unique beauty of Istanbul from the sea at night. The history of Istanbul goes back to 7th century BC, and the tour of the Old City tour included visits to the Hagia Sophia, Topkapi, Blue Mosque, Grand Bazaar, and Spice Market.

This was an extremely productive and enjoyable meeting, with lively scientific discussions throughout, bringing together researchers at all stages of their careers, coming from different disciplines who would not regularly attend the same meeting. The interaction between young and senior researchers and the mutual learning spirit was remarkable. The enthusiasm was such that a special issue on the meeting’s topic in *Biophysical Journal* is planned on the one-year anniversary of the meeting.

—*Ivet Bahar* and *Ozlem Keskin*,
Meeting Co-Organizers

2015 Thematic Meetings

New Biological Frontiers Illuminated by Molecular Sensors and Actuators

June 28 - July 1, Taipei, Taiwan

Abstract Deadline: March 1

Biophysics of Proteins and Surfaces: Assembly, Activation, Signaling

October 13-15, Madrid, Spain

Abstract Deadline:

Abstract Deadline: June 1

Polymers and Self-Assembly: From Biology to Nanomaterials

October 25-30, Rio de Janeiro, Brazil

Abstract Deadline: June 22

Biophysics in the Understanding, Diagnosis and Treatment of Infectious Diseases

November 16-20, Stellenbosch, South Africa

Abstract Deadline: July 20

A Lovely Day for Disordered Motifs in Dublin

In mid-October 2014, over 100 researchers assembled in the shadow of Ireland's oldest university, Trinity College, at the Davenport Hotel, Dublin, to attend the Biophysical Society sponsored thematic meeting on *Disordered Motifs and Domains in Cell Control*.

The conference attracted members from two scientific communities, those studying the structure of intrinsically disordered protein regions and others studying the functional modules found within these regions. For several years, these two fields have been converging and intermingling. However, the Dublin meeting was the first to unite them to exchange ideas. A highly diverse program reflected the varied backgrounds of the attendees, which included: biophysicists studying the dynamics of disordered interaction modules and their roles in molecular recognition; cell biologists discovering and characterizing these interactions and their regulation; systems biologists discovering novel motif-driven interactions on a proteome scale and studying their higher level function; and computational biologists modeling motif-driven complex systems and developing in-silico analysis tools. Many participants commented that the meeting's diverse themes transformed their understanding of the field.

The program, which included over 40 lectures and more than 50 poster presentations, addressed many key questions on motif biology, including: What are the functional modules within disordered regions and how do they mediate interactions? How can we identify novel disordered motifs and domains and predict their functions? How do dynamics and conformational heterogeneity affect function? And how are the functions of disordered motifs and domains altered in disease?

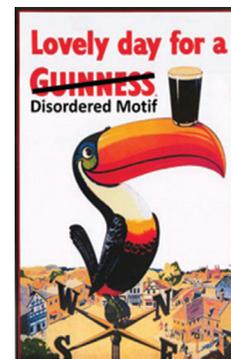
The talks and poster were high in quality and originality, underscoring the huge progress that

is being made by the community. However, while comprehensive, the program did reveal areas in which our knowledge remains limited. For example, while protein-protein interactions involving disordered regions have received much attention, their interactions with lipids, RNA, and DNA remain understudied. Furthermore, one of the major goals of the field was noticeable by its absence, as no high-throughput methods to study functional modules in disordered regions comparable to ChIP-seq or CLIP-seq was presented, though progress is being made. Nonetheless, there was a palpable excitement among the attendees about the direction of the field and the general sentiment was that the progress of the last five years has revolutionized our understanding of the structure and function of the disordered regions of proteomes.

All attendees agreed that the high level of interaction was a major highlight of the meeting. Every break, poster session, and meal was accompanied by lively discourse as researchers, linked only by an interest in deciphering the many mysteries of intrinsically disordered regions, shared their unique insight into each other's research. Each night the participants poured into the historic streets of Dublin in search of refreshments and many of the most fruitful discussions took place sitting over a pint in hallowed establishments once frequented by literary greats such as *Wilde*, *Joyce*, and *Beckett*. Fittingly, the meeting concluded with a group trip to the Guinness factory for a final taste of Ireland and spectacular views over Dublin from the Sky bar.

The conference organizing committee was: *Anna Akhmanova*, Utrecht University, The Netherlands; *Norman Davey*, University College Dublin, Ireland; *Ashok Deniz*, The Scripps Research Institute, USA; *Richard Kriwacki*, St. Jude Children's Research Hospital, USA; and *Sonia Longhi*, CNRS and University of Aix-Marseille, France.

—*Norman Davey* and *Richard Kriwacki*,
Meeting Co-Organizers



Dublin was a lovely setting for discussions on *Disordered Motifs and Domains in Cell Control*.

Subgroups

Membrane Biophysics



Walter Stühmer



Todd Scheuer



Bill Catterall

Walter Stühmer, Todd Scheuer, and Bill Catterall are the joint winners of the 2015 Cole Award from the Membrane Biophysics Subgroup. They are being recognized for their pioneering contributions to structure-function studies of voltage-gated sodium channels. The award is named in the honor of *Kenneth S. Cole*, a well-known biophysicist and a founder of the Biophysical Society. They join 44 past recipients of this prestigious award.

Stühmer received his masters and doctorate in Physics from the Technical University in Munich, Germany. In 1983, following a postdoctoral stint in the Department of Physiology and Biophysics at University of Washington, Seattle, he became a group leader in the Max Planck Institute of Biophysical Chemistry, Göttingen, Germany. He is currently

the Director of Molecular Biology of Neuronal Signals at the Max Planck Institute of Experimental Medicine, Germany.

Stühmer pioneered structure-function studies of voltage-gated sodium channels and CNG channels. In the late 1980s he was at the forefront of the molecular biology revolution in ion channel structure and function, and he helped develop *Xenopus* oocytes as an expression system for ion channel genes and for biophysical characterization of the expressed channels—some of that work was done with *Bert Sakmann* and some with *Shosaku Numa*. Some his most notable findings include, amongst other things, identifying the charged S4 segment of voltage-gated channels, pinpointing the TTX and STX binding site in Na channels, measuring gating currents of expressed channels, and examining

determinants of sodium ion channel selectivity. He developed the “loose patch” technique and one the first person to use TIRF microscopy to study exocytosis. More recently, he has turned his attention to understanding regulation of Eag K channels and their role in tumor biogenesis and cell proliferation. Stühmer has strong record of service and has served in many international scientific committees and editorial boards of journals like *Current opinion in Neurobiology* and *European Biophysical Journal*.

Scheuer received his bachelors from Grinnell College, Iowa and received his PhD under the supervision of *Robert Kass* at University of Rochester, New York. He is currently a Research Professor in Catterall’s group at University of Washington, Seattle.

Catterall received his bachelors degree in chemistry from Brown University, Rhode Island and obtained his doctorate from Johns Hopkins University in Baltimore, Maryland. He received his postdoctoral training with *Marshall Nirenberg* at NIH. He is presently the Professor and Chair of the Department of Pharmacology at University of Washington, Seattle.

Scheuer joined Catterall’s group, at a pivotal point in the history of ion channel research, bringing his biophysical and electrophysiological expertise to a biochemistry focused research program. Over the past 25 years, this team has made seminal contributions to our understanding of sodium and calcium channels at the molecular and structural level. Catterall’s group, before Scheuer became part of it, had purified and functionally reconstituted voltage-gated sodium channels in lipid bilayers. Their early experiments together led to the identification of fast inactivation gate in the sodium channel, molecular determinants of local anesthetic receptor site and discovery of accessory proteins for modulating sodium and calcium channel function. Their work also identified sites of sodium and calcium ion channel regulation by second messenger pathways acting through G-proteins and protein phosphorylation. Their discovery of “gating pore” currents in the sodium channel revealed the potential of these conductances in human pathophysiology. Recently, for the first time, they described the

structure of the prokaryotic voltage-gated sodium ion channel and its mutants at atomic resolution. These studies reveal a structural basis of selectivity between the sodium and calcium ions in the ancestral voltage-gated ion channels. Scheuer and Catterall have jointly mentored many postdocs and graduate students who have gone on to establish independent research programs at universities and industrial settings throughout the world. Catterall has a distinguished service record and has served in many national committees and editorial boards which includes *Neuron*, *PNAS* and *Journal of General Physiology*. He is also a member of the National Academy of Sciences and a fellow the Royal Society, UK.

Please join me in congratulating Walter, Todd and Bill for receipt of the 2015 Cole Award from the Membrane Biophysics subgroup. Their achievements will be honored at the annual Cole Award ceremony and dinner to be held on Saturday, February 7, from 6-9 PM at the Grand Historic Venue in Baltimore, just a few blocks from the convention center.

—*Baron Chanda*, Subgroup Chair

IDP

Intrinsically Disordered Proteins in the 2014 Literature

During the last decade we have seen an exponential increase in the number of publications addressing the properties of Intrinsically Disordered Proteins (IDPs). 2014 was no exception and, in the course of the year, interesting new research and review papers have shed light on important biophysical aspects of IDPs.

For example, the *Chemical Reviews* dedicated a special issue to IDPs, which was edited by *Vladimir N. Uversky*. The reviews included in this publication are a great reference for both people new to the IDP field and experts. Some of the reviews discuss the different ways to classify IDPs, the state-of-the-art NMR methods used to character-

ize conformational ensembles, the physicochemical factors that induce order and disorder in IDPs and the role of IDPs in pathogenesis and disease.

In 2014, two interesting papers addressed the dynamical behavior of IDPs. *Jane Clarke* and co-workers published a piece in *PNAS* explaining how they used methods originally developed to study protein folding to study the kinetic behavior of a small IDP (PUMA, p53 unregulated modulator of apoptosis) that folds to an α -helix when bound to its biologic target. Their results show that no folding of the IDP is required before binding, that few interactions between the two proteins are required for binding and, consequently, that the majority of IDP folding occurs after the binding transition state via induced fit. *Gianni De Fabritiis* and co-workers explained how they used molecular dynamics simulations to study how phosphorylation modulates the disordered state of IDPs (by studying the kinase-inducible domain of the transcription factor CREB) in a *Nature Communications* article. The authors identified that phosphorylation creates a partially ordered state with a conformational kinetic that is 60-fold slower than that of the not phosphorylated protein, suggesting that post-translational modifications can act as IDP kinetic modulators.

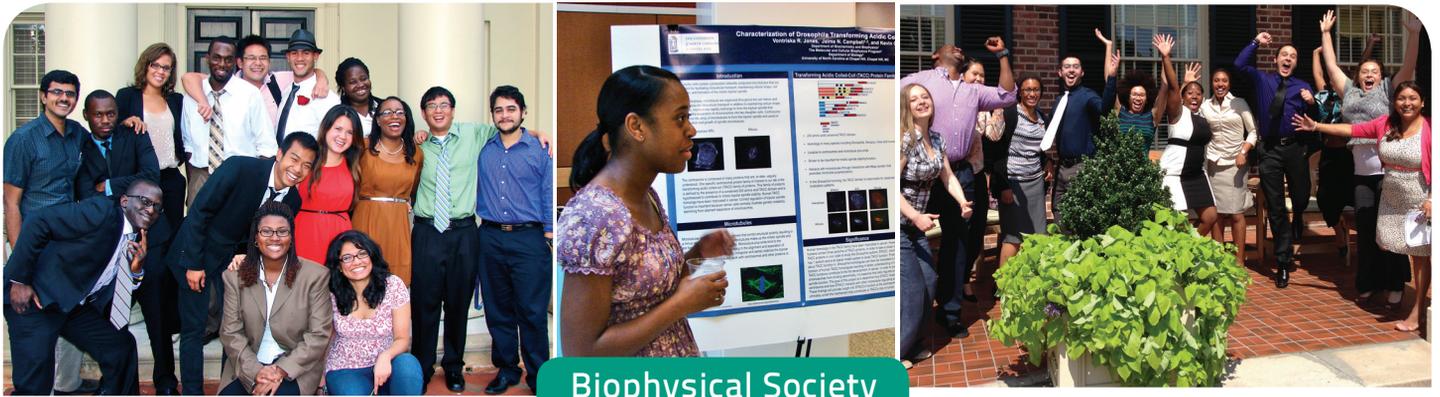
To access the articles mentioned above, visit the subgroups page of the Biophysical Society website.

We look forward to interesting new research during 2015!

—*Ignacia Echeverria*, Postdoctoral Representative, IDP subgroup

Join a Subgroup

Meet and interact with others working in your subdiscipline. Visit www.biophysics.org for a list of subgroups and information on how to join.



Biophysical Society

2015 Summer Research Program in Biophysics

University of North Carolina at Chapel Hill

Priority Application Deadline: February 16, 2015

Interested in interdisciplinary science? Want to work in the fast-growing area of biomedical research? Looking to get some hands-on lab experience this summer? Check out the Summer Research Program in Biophysics, an 11 week course for undergraduate minority students at the University of North Carolina, Chapel Hill. Course expenses, travel costs, meals, and housing are covered.

Course includes:

- Lectures with UNC faculty members and seminars with visiting professors from graduate programs across the country
- Mentored research experience
- Team-building activities and field trips

Recommended Prerequisites:

- Studying quantitative science: chemistry, physics, biochemistry, and/or computer science
- 2 semesters of biology
- 2 semesters of calculus-level physics
- 3.0 cumulative or higher GPA in science courses

See what past students have to say about the Summer Research Program!

"...this has been the most useful and wonderful summer of my college career. Not only have I learned academically, I have built multiple bridges that can only benefit me in the future."

"It has influenced me to take an additional science course at my university as well as has helped me create ideas for my senior project... the environment of the course created learning."

"I learned new lab techniques as well as worked on the project independently. I was able to complete my own experiments and when I had questions or hit a snag, my mentor was available to help."

For more information or to recommend a student, email Ellen Mackall: emackall@biophysics.org, or visit www.biophysics.org.

MollyCule

Professor Molly Cule is delighted to receive comments on her answers and (anonymized) questions at mollycule@biophysics.org. Also, visit her on the BPS Blog.

How can I resolve a conflict with my advisor?

A conflict between advisor and student or postdoc can bring an enormous amount of uncertainty to the laboratory, for both parties. Most conflict stems from a communication breakdown, which is probably the case in your situation. It may be a simple misunderstanding that seems more difficult to resolve than it is, or it may be a big enough problem that you need to consider other options. In either case, the first step toward resolution is improving communication between your advisor and you. Uncomfortable as it may be, you will need to begin a conversation with your mentor about your concerns.

Prior to approaching your mentor, you should think deeply about the sources of the conflict and consider potential constructive solutions. Remember that faculty members have myriad responsibilities, and while mentorship and training is an important part of their job, it is only a portion of what is on their plate. It will be helpful if you come prepared with possible solutions, or at least steps you are willing to take toward compromise. The best solution will be mutually beneficial for you and your advisor.

When considering sources of conflict and complementary solutions to the problem, you should revisit whether you are in this mess due to things that can be easily altered, versus more difficult problems. For example, you may have different, clashing personalities, which are nearly impossible to change. However, you can take steps to understand, recognize, and discuss specific personality differences so that you are on the same page with your mentor about how to move forward towards a harmonious working relationship. If the issue is something as simple as a perceived lack of respect due to communication styles, or not keeping a regular, consistent work schedule, there are specific adjustments you can make to eliminate the sources

of conflict. Clearly, you can recognize that your mentor is the head of the laboratory and that it enhances productivity and morale for everyone to buy into the lab culture and expectations. As a junior member of the lab, you may need to adjust your own working style to align with that culture.

After thinking carefully about the conflict and possible resolutions, you will need to begin the conversation with your advisor. It is important that you discuss what you are feeling and thinking, but also recognize that they have feelings and thoughts on the issue. State your position, but also ask to hear about their views and feelings on the situation. Be careful not to become defensive, nor approach your advisor in an aggressive way. Simply open the lines of communication.

Hopefully, beginning this conversation will lead to a simple resolution. If there are larger problems and a solution cannot be easily agreed upon, you may have to consider finding a new mentor. No one wants to be in a situation where they consistently feel undervalued or undermined. Whether you are a graduate student or postdoctoral fellow, the decision to transfer labs or find a new postdoc position will come with additional challenges. However, people move labs more frequently than you may think, for various reasons, so it can be done if needed.

Finally, if you have serious concerns about inappropriate behavior, scientific misconduct, or a violation of workplace safety requirements on the part of your mentor, you may need to ask for help from departmental administrators or human resources about how to proceed. If the conflict does stem from gender or minority issues, family responsibilities outside of the laboratory, or specific cultural differences, the root problem may be bigger than you simply having a conflict with your advisor. No matter what the issue is, a good resolution will take time and work on your part, as well as cooperation from your advisor.



Molly Cule
Advice

SACNAS/ABRCMS

Increasing Knowledge about Biophysics at Conferences for Minority Students in Science

This fall, representatives from the Biophysical Society joined students from all over the country at two of the largest annual conferences for underrepresented minority students in science, the SACNAS National Conference (Society for Advancement of Hispanics/Chicanos and Native Americans in Science), as well as ABRCMS (the Annual Biomedical Research Conference for Minority Students). Attendees had the opportunity to learn about the Society's Summer Research Program in Biophysics at the University of North Carolina, Chapel Hill, as well as other Society activities and meetings. Many students who stopped by the booth at both meetings were unsure what the field of biophysics encompassed, but other students were already confident in their interest in pursuing biophysics research.

This year, SACNAS took place in Los Angeles in October. *Lisa Phillipie*, the on-site administrator at the University of North Carolina, Chapel Hill, for the Summer Research Program in Biophysics, helped staff the BPS booth to give students details about the summer program and the labs open to summer students. Minority Affairs Committee members *Luis Marky*, University of Nebraska, and *Silvia Cavagnero*, University of Wisconsin, Madison, visited biophysics-related posters throughout the meeting to select two students to receive a travel award to attend the BPS Annual Meeting in Baltimore this February. The SACNAS travel award winners are *Samuel "Yoni" Rubin*, Pitzer College, and *Edwin Alvarado*, University of Puerto Rico, Cayey.

In November, BPS representatives headed to an unseasonably cold San Antonio for ABRCMS. *Mike Jarstfer*, Co-Program Director of the Summer Research Program in Biophysics, came along to give students firsthand knowledge of this

research opportunity. In addition to exhibiting at this conference, BPS also participated in a disciplinary society networking event to let students interested in engineering, physics, and mathematics know what the Society has to offer. Local BPS members *Crystal Archer* and *Robert Brenner* of the University of Texas Health Science Center at San Antonio, along with Jarstfer and Summer Program alumna *Cheryl Law*, Vanderbilt University, judged undergraduate posters on biophysical topics. Winners of travel awards to the BPS Annual Meeting from ABRCMS included *Canessa Swanson*, Jackson State University, and *Marisa Aikins*, Oberlin College. Aikins is a 2014 alumna of the Summer Research Program in Biophysics and also won an ABRCMS poster award for her research titled Investigation of Mucin-Antibody Interactions in Trapping Salmonella typhimurium, which was performed at UNC during the BPS summer program.

In addition to travel awards, BPS sponsored a total of 12 poster awards between the two meetings. The BPS-sponsored poster award winners from SACNAS, all undergraduate students, were *Marcus Florez*, University of Kansas; *Ariel Calderon*, Hunter College; *Grant Williams*, Oklahoma State University; and *Rhys Taus*, Loyola Marymount University. BPS-sponsored poster award winners at ABRCMS were among those selected in the category of Engineering, Physics, and Mathematics.

Members in the News



Howard Berg

Howard Berg, Harvard University and Society member since 1979, and *George Oster*, University of California, Berkeley, and Society member since 1995, have been awarded The Raymond and Beverly Sackler International Prize in Biophysics, which is administered by Tel Aviv University.



George Oster

Grants and Opportunities

Sir Henry Dale Fellowships

Objective: To support outstanding postdoctoral scientists wishing to build their own UK-based independent research career addressing an important biomedical question.

Who Can Apply: UK/EEA Nationals, non-EEA nationals who either has a relevant degree from a UK university, or has worked in the UK for at least a continuous three-year period, or an exceptional biomedical scientist that does not fall within these categories, whose recruitment to the host organization would be advantageous to both the applicant and the organization.

Preliminary Application Deadline: April 17, 2015

Website: <http://www.wellcome.ac.uk/Funding/Biomedical-science/Funding-schemes/Fellowships/Basic-biomedical-fellowships/WTDV031823.htm>

Obituary

Roger M. Spanswick

Roger M. Spanswick, BPS member since 1979, was born June 24, 1939, in England, graduated from Birmingham University in physics, earned a Diploma in Biophysics at the University of Edinburgh under *Jack Dainty*, and a PhD on ion transport in the large internodal cells of *Nitella* under *E.J. Williams*. Roger continued studying ion transport in characean cells as a postdoc with *Enid MacRobbie* at Cambridge. Roger joined Cornell University in 1967 and remained there until his death, teaching upper level courses in Transport of Solutes in Plants, Transport of Water in Plants, and Metabolic Engineering.

Roger made pioneering contributions to the understanding of basic ion transport across plant membranes. In 1972, he presented evidence for an ATP-dependent electrogenic proton pump in the membrane of characean cells. He showed the plant H⁺-ATPase generated membrane voltage greater than that produced by the Na⁺/K⁺-ATPase of animal cells and that the protonmotive force generated was important for driving the transport of sugars, amino acids and other ions. Roger's team, working with purified H⁺-ATPase, discovered there were distinctly different H⁺-ATPases in the plasma and vacuolar membrane. His article, entitled *Electrogenic Ion Pumps* in the 1981 *Annual Review of Plant Physiology*, ended any idea that, in terms of electrophysiology, plants cells were like animal cells. Working at the whole plant level, Roger's lab also studied sugar transport from plant maternal tissues into developing embryos of seeds, and how ammonium and nitrate were transported into the roots.

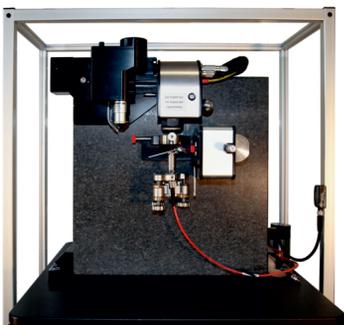
Roger married *Helen Walker* in 1963. They have two sons and three grandchildren. Diagnosed with multiple myeloma in 2008, he considered his treatment another experiment and never gave up hope. Remission gave five productive years, but he died from this disease on February 12, 2014.

—*Peter Davies, David Keifer, Larry Walker and Randy Wayne*, Cornell University with input from *Enid MacRobbie*, Cambridge University

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UPCOMING EVENTS

BIOPHYSICAL SOCIETY NEWSLETTER JANUARY 2015

March

March 11-13

NIMBioS Investigative Workshop: Neurobiology of Expertise
Knoxville, TN

http://www.nimbios.org/workshops/WS_expertise

March 22-25

Proteomic Forum 2015
Berlin, Germany

<http://www.proteomic-forum.de/>

April

April 8-10

NIMBioS Investigative Workshop: Information and Entropy

Knoxville, TN

http://nimbios.org/workshops/WS_entropy

April 12-17

Deciphering the Cancer Genome and Epigenome to Develop Novel Therapies

Lucca (Barga), Italy

<https://www.grc.org/programs.aspx?id=12552>

May

May 17-21

The Hippo Pathway: Signaling, Development and Disease (E4)
Taos, New Mexico

<https://www.keystonesymposia.org/index.cfm?e=web.Meeting.Program&meetingid=1328>

May 31-June 5

Genetics, Niche Development, Transdifferentiation and Reproductive Diseases

Hong Kong, China

<https://www.grc.org/programs.aspx?id=15862>

June

June 14-18

13th Symposium on Bacterial Genetics and Ecology (BAGECO13)
Milan, Italy

<http://www.bageco2015.org/>

June 22-25

Research Collaboration Workshop for Women in Mathematical Biology
Knoxville, TN

http://www.nimbios.org/education/WS_wmb.html