

# Newsletter

Biophysical Society

APRIL

2015

## DEADLINES

### Networking Events

April 15  
Proposals

### Awards & Contests

May 1  
Awards Nominations

June 15  
Changing Our World  
Submissions

### Thematic Meetings

Biophysics of Proteins at  
Surfaces: Assembly,  
Activation, Signaling

October 13-15  
Madrid, Spain

June 1  
Abstract Submission

Polymers and  
Self-Assembly: From  
Biology to Nanomaterials

October 25-30  
Rio de Janeiro, Brazil

June 22  
Abstract Submission

Biophysics in the  
Understanding, Diagnosis  
and Treatment of  
Infectious Diseases

November 16-20, 2015  
Stellenbosch, South Africa

July 20  
Abstract Submission

## Reproducibility of Research in Biophysics

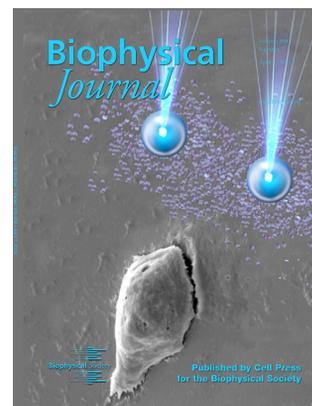
This editorial is reprinted from *Biophysical Journal* 108-7 (April 7, 2015)

New advances in science invariably rest on the foundation of previous work and, therefore, the reliability of published work is fundamental to the scientific enterprise. Consequently, research should be well designed, rigorously analyzed, and reproducible.

In response to a number of high profile cases in which published data could not be reproduced, as well as a mandate from the Office of Science and Technology Policy, the NIH leadership has moved to address the issue of research reproducibility (Collins and Tabak 2014). Toward this end, the NIH, together with the editors of *Science* and *Nature*, convened a meeting of scientific journal editors, including the editor of the *Biophysical Journal* (BJ), in June of 2014 to address the issue. As a follow-up to the meeting, in November of 2014 the NIH released *Principles and Guidelines for Reporting Preclinical Research* (<http://www.nih.gov/about/reporting-preclinical-research.htm>) and requested that publishers sign on to the document.

The Biophysical Society (BPS), publisher of BJ, agrees whole-heartedly with the intent of the guidelines—to encourage reproducible, robust, and transparent research. However, in their specifics, these guidelines are primarily directed at large correlative statistical preclinical and clinical studies and are not pertinent or applicable to the types of science published by BJ. Therefore BJ, along with several other basic science journals, did not sign on to the document.

Basic and applied sciences in general, and biophysics in particular, can require the use of diverse, highly specialized research instrumentation and techniques along with complex, customized computational analysis. The diversity of the research methods and the types of data that are produced requires a flexible approach to the important issues of reproducibility of scientific results, transparency, and data sharing. BJ, through its *Biophysical Journal Author Guidelines*, has already established requirements in support of transparency, rigor, and data sharing that also take into account the need for flexibility based on specific research areas.



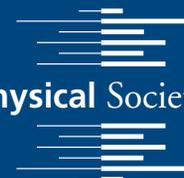
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Biophysical Society



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## Biophysicist in Profile

DUNGENG PENG



*Dungeng Peng* grew up in the rural village of Xuancheng, China. Both of his parents were farmers. When Peng was young, his father also worked as a teacher at the local elementary school near the village. Peng was able to use the library at the school during that time, and was exposed to educational books, such as the 100,000 Why (Shi Wan Ge Wei She Me) series, which fostered his curiosity. His family grew rice, peanuts, soy beans, and rapeseed, in addition to a variety of fruits in their yard. “We also raised geese and chickens. During the winter, we made our own tofu, and extracted sugar from sweet potato to make desserts,” Peng shares. In addition to making treats, Peng used the available fruit to experiment with science. “I was raised in a rural village without electricity. It was a lot of fun to produce some electricity by making some fruit battery with different types of pears grown in our yard, which all successfully lit up some small red LED,” Peng says.

Peng attended Anhui National University and earned his Bachelor’s degree in chemistry. He went on to graduate school at the University of Science and Technology of China, where he earned his Masters of Science degree and his PhD in Chemistry. While working on his PhD, Peng “disclosed the size-dependent effect of nanometer elemental selenium (Nano-Se) on Se accumulation and glutathione-S-transferase (GST) activity in vivo and applied its precursor to cancer research.”

Following his PhD, Peng worked as a research scholar at University of California, Davis, in the lab of *Gerd N. La Mar*. It was at this time that he truly began using biophysical techniques. “Using proton NMR spectroscopy, I was able to use different ligands, mimicking the bound oxygen, to change the electron orbital state of the iron (III) in the center of the heme,” Peng explains. “Hence, the modified hyperfine shifts of the side chain on the heme ring enabled us to detect the change near the active site, such as the H-bond network,

“Focus, focus, and focus! There are always a lot of distractions outside, but only focusing on your own project will help you explore the world more widely and deeply.” – **Dungeng Peng**

magnetic susceptibility, magnetic axis, and other thermodynamic profiles, and led us to understand the mechanism. I had my first hands-on experience in [La Mar’s] lab on the NMR spectrometer and fell in love with the ‘spins’ forever.”

The biggest challenge he has faced in his career so far has been the adjustment from working on cancer research to molecular biophysics. “The objective of both scientific fields is to try to answer the questions precisely and systematically, [but] at different levels. Molecular biophysics is more focused on the atomic level,” Peng says. “With the instruction from Dr. La Mar, I read some classic books on biophysics, which I put into practice in our daily research. I’ve learned lessons from every mistake.” The books Peng studied at this point in his career include *NMR of Proteins and Nucleic Acids* by *Kurt Wüthrich*; *the Porphyrin Handbook: Bioinorganic and Bioorganic Chemistry* by *Roger Guilard, et al*; *Practical NMR Applications* by *Quincy Teng*; and *Protein NMR Spectroscopy, Principles, and Practice* by *John Cavanagh, et al*.

Peng worked as a postdoctoral fellow in the lab of *Chuck Sanders*, a professor of biochemistry at Vanderbilt University. “Dungeng’s main project in my lab as a postdoc was to express, purify, and characterize the voltage sensor domain of the human KCNQ1 potassium channel. This is an important protein in both normal and defect heartbeat. His NMR studies of this domain were groundbreaking,” Sanders says.

Currently, Peng is working in *Hassane Mchaourab*’s lab at Vanderbilt University as a research fellow. His research focuses on expanding the mechanistic understanding of a proton-coupled transporter from 3D structure to the fourth dimension dynamics, which reflects the conformational equilibrium, the correlation between 3D structure, and the transporter’s function. “Using an electron paramagnetic spectroscopy method called double electron-electron resonance (DEER), I analyzed the dynamics of a member of amino acid, polyamine and organocation (APC) transporters, the human homologs of which are involved in amino acid transportation, cancer development, and diseases such as cystinuria, lysinuric protein intolerance.”

Peng names experimental “tuning” as his favorite part of biophysics. “For example, just like tuning sample to match the frequency of the magnetic field, the biophysical research allows you to adjust your experimental design by the model you have and then allows you to use the information generated to redo the tuning of the model to the optimized condition,” he explains.

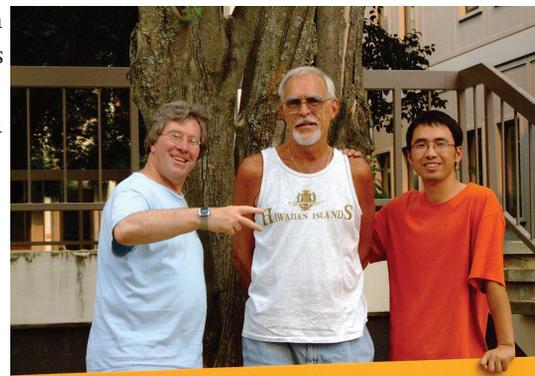
*Kristin Droege*, who had Peng as her rotation mentor during her time as a graduate student in Sanders’s lab, was impressed by Peng’s determination to work through problems. “Dungeng’s ability to think through scientific problems is his most memorable quality. He is constantly considering new techniques that could be applied to his lab work. Anytime a setback was encountered on my rotation project, Dungeng would be able to develop a method for fixing the issue,” Droege says. “He showed me the importance in careful experiment planning and how to consider any issues that can arise. He helped me develop my own planning strategies that I still use today.”

Peng also made an impression on the Sanders lab with regard to his personality. “Dungeng is driven both by abundant curiosity and a high degree of collegiality,” Sanders recalls. “He always made newcomers to the lab feel welcome and always maintained a positive attitude. My lab is in complete agreement that Dr. Peng can whistle a tune better than anyone else on the planet.”

*Cheryl Law*, who was a graduate student in Sanders’s lab during Peng’s time there, agrees with Sanders’s description, saying, “Dr. Peng was the kind of colleague who brought a smile to everyone’s face whether it was through his positive demeanor, willingness to help others in lab, or him beautifully whistling Christmas songs in the middle of July.”

When he is not in the lab, Peng enjoys hiking, playing basketball, and spending time with his daughter. “As well as a brilliant scientist,” Law says, “Dr. Peng has a strong sense of family, especially for his young daughter. He would cover his iPad with his young daughter’s onesie. It was like he always wanted to have a piece of her close by while he worked.”

Peng’s career thus far has taught him the value of his curiosity and of his focus. He advises scientists just starting out in their careers, “Focus, focus, and focus! There are always a lot of distractions outside, but only focusing on your own project will help you explore the world more widely and deeply.” Peng hopes to continue pursuing more advanced studies in membrane proteins, and to train students who are interested in the field. According to Droege, Peng has already begun leaving his mark. “Dungeng was a very helpful colleague and mentor,” she says. “He would always offer advice and assistance during an experiment. He would forward scientific articles he thought would help further my knowledge base. He was very focused on his project yet still able to set aside time to ensure I was learning the tools I needed.”



Peng with his mentors, Gerd La Mar and James Satterlee, summer 2009.

**Chemistry**



Peng and his daughter, Amy, hiking Radnor Lake in Nashville.

### Profilee-at-a-Glance

Institution  
Vanderbilt University  
Area of Research  
Molecular Biophysics

# Biophysical Journal

(Continued from page 1.)

## Know the Editors



Francesca Marassi

*Francesca Marassi*

Sanford/Burnham Medical  
Research Institute

Editor for the Membrane  
Section

### Q: What is your area of research?

Research in my laboratory focuses on understanding how membrane proteins accomplish their specialized functions in mediating communications across cell membranes. We are especially interested in understanding molecular mechanisms of bacterial infection and human programmed cell death. We use nuclear magnetic resonance (NMR) spectroscopy, in combination with biochemical, biophysical, and computational methods, to characterize the molecular structures and functions of membrane proteins.

NMR structural studies of proteins embody the essence of biophysical investigation as they seek to establish the fundamental relationships between the biological functions and physical properties (structure and dynamics) of these essential molecules. The approach is interdisciplinary as our research tools span the areas of biology, chemistry, and physics, and include advanced methods of recombinant protein technology, sample preparation, NMR experiments, NMR instrumentation, and structure calculations.

The functions, compositions, and structural organization of biological membranes reflect their development through a process of co-evolution of their two principal components: the lipid bilayer and the proteins integrated within it. Because the physical and chemical properties of the proteins and surrounding membranes are highly interdependent, we strive to obtain structure determination in phospholipid bilayers that are as close as possible to the native membrane environment. Solid-state NMR spectroscopy is particularly well suited for this purpose because its applications are not limited by the physical size of the protein-lipid assembly. Parallel studies with solution NMR spectroscopy enable a wide range of dynamics timescales to be probed together with structure.

To ensure the continued health of the field in the face of changes in how biophysicists generate and analyze data, the BPS and BJ have updated those guidelines and will work with the biophysical community so that these guidelines reflect the specific needs of the different research areas. As research and techniques evolve, so too will the guidelines.

The two basic principles that these *Guidelines for the Reproducibility of Biophysics Research* will strive to ensure are:

1. Research results should be reported with sufficient detail to enable replication of the study in other laboratories (using supporting information as necessary); and
2. Data or material produced in a published study should be readily disseminated and openly accessible whenever feasible (either as supporting material or through the author's website and laboratory).

BPS and BJ welcome this opportunity to help craft reproducibility guidelines that are both realistic and appropriate for the basic and applied research community, and will work with the various biophysics communities to establish appropriate data-sharing standards for each.

*Les Loew*, Editor-in-Chief, Biophysical Journal

*Dorothy Beckett*, Past President,  
Biophysical Society

*Edward H. Egelman*, President,  
Biophysical Society

*Suzanne Scarlata*, President-Elect,  
Biophysical Society

### References

*Collins, F.S.*, and *L.A. Tabak*. 2014. Policy: NIH plans to enhance reproducibility. *Nature*. 505:612–613. <http://dx.doi.org/10.1038/505612a>

# Polymers and Self-Assembly: From Biology to Nanomaterials

OCTOBER 25-30, 2015  
RIO DE JANEIRO, BRAZIL

Many proteins assemble into polymers, both naturally (as in actin and tubulin) and pathologically (as in amyloid). The study of the structure and function of these biological polymers has been an important area of research by biophysicists. A large and growing community of chemists, chemical engineers, physicists, and materials scientists have been investigating the self-assembly of peptides for many purposes, from creating new bionanomaterials to forming assemblies for drug delivery. The aim of this meeting is to bring together these multidisciplinary areas to share techniques and innovations, advancing our understanding of these complex systems.

## ORGANIZERS

*Vince Conticello*, Emory University, USA  
*Edward Egelman*, University of Virginia, USA  
*Louise Serpell*, University of Sussex, United Kingdom  
*Jerson Silva*, Federal University of Rio de Janeiro, Brazil  
*Ting Xu*, University of California, Berkeley, USA

## SPEAKERS

*Dave Adams*, University of Liverpool, United Kingdom  
*Angela Belcher*, MIT, USA  
*C.J. Brinker*, Sandia National Laboratories, USA  
*Marie-France Carlier*, CNRS, France  
*Vince Conticello*, Emory University, USA  
*Enrique De La Cruz*, Yale University, USA  
*Edward Egelman*, University of Virginia, USA  
*Claudio Fernandez*, National University of Rosario, Argentina  
*Debora Foguel*, Medical Biochemistry Institute, Brazil  
*Monica Freitas*, Federal University of Rio de Janeiro, Brazil  
*Richard Garratt*, University of San Paulo, Brazil  
*Sharon Glotzer*, University of Michigan, USA  
*Myongsoo Lee*, Jilin University, China  
*Cait MacPhee*, University of Cambridge, United Kingdom  
*Aline Miller*, University of Manchester, United Kingdom  
*Emil Reisler*, University of California, Los Angeles, USA  
*Thomas Scheibel*, University of Bayreuth, Germany  
*Louise Serpell*, University of Sussex, United Kingdom  
*Jerson Silva*, Federal University of Rio de Janeiro, Brazil  
*Akif Tezcan*, University of California, San Diego, USA  
*Derek Woolfson*, University of Bristol, United Kingdom  
*Ting Xu*, University of California, Berkeley, USA  
*Ronald Zuckermann*, University of California, Berkeley, USA

## IMPORTANT DEADLINES

Abstract Submission ..... June 22, 2015  
Early Registration..... July 27, 2015

Biophysical Society

## Public Affairs

### Biophysical Society Asks Congress for FY16 Sequester Relief

The Biophysical Society joined 2,100 national, state, and local organizations in sending a letter to Congress and the President urging lawmakers to work together to prevent sequestration from taking effect in FY 2016. The letter was organized by NDD United, an alliance of organizations working to stop budget cuts to core government functions, in which the Biophysical Society participates. The NDD stands for the nondefense discretionary programs that have taken the brunt of the cuts to federal funding since 2010, which includes funding for science research.

The letter warns, “These self-imposed cuts are dragging down our economic recovery, hampering business growth and development, weakening public health preparedness and response, reducing resources for our nation’s schools and colleges, compromising federal oversight and fraud recovery, hindering scientific discovery, eroding our infrastructure, and threatening our ability to address emergencies around the world. Simply put, these cuts are bad for the country and are not sustainable.”

Deficit reduction measures enacted since 2010 have come overwhelmingly from spending cuts, with the ratio of spending cuts to revenue increases far beyond those recommended by bipartisan groups of experts. And there is bipartisan agreement that sequestration is bad policy and ultimately hurts our nation. However, so far, Congress and the President have not been able to agree on other deficit reductions to replace the damaging cuts.

The letter can be read in its entirety at <http://bit.ly/1BWGWZp>.

### NSF Launches New Outreach Efforts

In its continuing effort to improve how it promotes science and engineering research to a broad audience, the National Science Foundation (NSF) launched three new multimedia communications vehicles: a video interview series with NSF-funded scientists and program officers; feature articles; and a video weekend wrap-up of NSF-funded science news.

Both the video series and the feature articles are intended to be conversational in tone and content to allow information to come through not only about the research, but also the interviewees' motivation and the advice they would provide to others. The video series is entitled, *Scientists and Engineers on Sofas...and Other Furnishings*, a nod to the successful web series, *Comedians in Cars Getting Coffee*. The feature articles are being billed as “After the Lecture,” since that is when individuals approach the lecturer to learn more about the lecturer's background and career path.

The news wrap-up program, entitled *ICYMI*, or “*in case you missed it*,” is intended to provide engaging science news stories and photos in a format the general public would enjoy reading. *ICYMI* builds on NSF's Science360 news service program.

You can access these new features from the NSF press release: <http://1.usa.gov/1Eb9TiO>.

### NIH Asks PIs to Say Yes to Service

On February 20, the National Institutes of Health (NIH) issued a notice reaffirming the agency's expectation that principal investigators (PIs) supported by NIH serve on NIH peer review groups and advisory committees when asked. The notice also calls out grantee institutions, asking them to support the participation of their researchers in these types of activities. The notice mentions how important it is for these peer review and advisory groups to have diverse membership to ensure the

perspectives of many individuals in the extramural community have a voice in guiding NIH's research priorities.

In a blog posted the same day as the notice, *Richard Nakamura*, the director of the NIH Center for Scientific Review (CSR), explained the purpose of the NIH notice is to increase participation by PIs. In 2014, 24,000 reviewers participated in more than 2,500 peer review meetings hosted by the NIH. He noted how important this service is in making sure the best research is funded. While this number seems extremely high, there are many NIH-funded researchers who do not serve. CSR examined the service records of the 25,500 NIH-funded scientists who had received at least \$1 million in total costs from NIH over the past five years. Of this group, only 45% had served at least one day in a peer review capacity in the last year. More funding did correlate with higher rates of participation though: 42% of PIs with one R01 served at least one time per year, 59% of those with two R01s served at least one time per year, and 72% of those with three R01s or served at least one time per year. Nakamura did note that not all PIs are asked every year, so the numbers do not necessarily indicate an unwillingness to serve.

The post can be read in its entirety at <http://1.usa.gov/1AQsRKr>.

## NIGMS Seeks Input on Diversity Programs

The National Institute of General Medical Sciences (NIGMS), NIH, is reviewing its programs intended to foster a highly trained and diverse biomedical research workforce to determine if they are most effectively reaching their goal. As part of this effort, the Institute wants to hear from the community and has released a formal request for information. While individuals are free to provide input on any aspect of the Institute's diversity programs, NIGMS is especially interested in feedback on the following topics:

- The advantages (or disadvantages) to a single program per institution that begins after matriculation and provides college experiences through graduation, to develop students for biomedical research careers.
- Approaches to leverage institutional experiences that successfully prepare baccalaureates for subsequent biomedical PhD completion to increase the number of students influenced by undergraduate training programs at those schools.
- Strategies that could be used to build institutional capabilities and effective institutional networks that promote undergraduate training programs leading to successful PhD completion.

The request can be read in its entirety at <http://1.usa.gov/1GcktID>. The deadline for responses is April 15.



SUBMIT YOUR VIDEO TODAY

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?

**Submission deadline: June 15, 2015**

Find out more information about submitting your video at [www.biophysics.org/contests](http://www.biophysics.org/contests).

## BPS MAC Becomes the BPS CID

The Committee formerly known as the Minority Affairs Committee has officially changed its name to the Committee on Inclusion and Diversity (CID). The name change comes after a lengthy discussion by the Committee on its purpose and the realization that individuals the Committee is charged with serving through its programs may not feel included in its previous name.

The change also reflects similar changes made by the National Institutes of Health (NIH) to expand those who fall under their programs to train a diverse biomedical workforce. NIH funds the Biophysical Society's Summer Course in Biophysics, which is a major program of the Committee on Inclusion and Diversity.

## Nominate your Colleague

### 2016 Society Awards

Anatrace Membrane Protein Award

Avanti Award in Lipids

Distinguished Service Award

Emily M. Gray Award

Fellow of the Biophysical Society Award

Founders Award

Margaret Oakley Dayhoff Award

Michael and Kate Bárány Award

**Nomination Deadline: May 1**

For more information, visit [www.biophysics.org](http://www.biophysics.org)

## Obituary

### Andrew G. Szent-Gyorgyi

*Andrew G. Szent-Gyorgyi*, a founding member and former president of the Biophysical Society (1974-75), died January 27 in Woods Hole, Massachusetts, at the age of 90. Andrew, or Csuli, as he was known to his friends, was a noted muscle researcher who made many seminal contributions to the field including demonstrating that myosin could be proteolytically split to produce the soluble, enzymatically active fragment HMM and defining the role of myosin light chains in the calcium-dependent regulation of molluscan myosins. Andrew received his MD degree in Hungary and trained in the laboratory of his cousin, Noble-Laureate *Albert Szent-Gyorgyi*. He immigrated to the United States in 1948 with his first wife and scientific colleague, the late *Eva M. Szenkieralyi*. In 1962 he moved to Dartmouth College and then to Brandeis University (1966) where he stayed until his retirement, serving as Chair of the Biology Department from 1975-1979. He taught for many years in the world famous Physiology Course at the Marine Biology Laboratory and was its director from 1967-1972. His presence there had a major influence on a generation of young scientists, many of whom became leaders in fields. Andrew remained a "working" scientist throughout his career. He spent 20+ hours a week at the bench even while serving as chair and participated in all aspects of research including making his own solutions, purifying the proteins, carrying out the assays, and plotting his results. Most of the more than 150 papers he published contained at least some data that were generated with his own hands. He worked very closely with his students, postdocs, and long-term collaborator, *Carolyn Cohen*, and was known for his energetic and enthusiastic approach to science. Outside of the lab, Andrew's passions were art, music and, especially, tennis and skiing, both of which he did very well into his mid-80s. He will be missed by all who knew him. A memorial service will take place in the Meigs Room of the MBL Swope Center in Woods Hole on Sunday, July 26, 2015.

—*James Sellers*, NIH

## Members in the News



*C. Robert Matthews*, University of Massachusetts Medical School and Society member since 1980, has been given the Carl Brändén Award by the Protein Society.



*Thomas Pollard*, Yale University and Society member since 1980, received the 2015 National Academy of Science Award for Scientific Reviewing.



*Xiaowei Zhuang*, Harvard University/HHMI and Society member since 1998, received the 2015 National Academy of Science Award in Molecular Biology.



*Eva Nogales*, University of California, Berkeley/Howard Hughes Medical Institute and Society member since 2000, has been awarded the Dorothy Crowfoot Hodgkin Award from the Protein Society.

*Marina Rodnina* (not pictured), Max Planck Institute and Society Member since 2005, has received the Hans Neurath Award from the Protein Society.

## Grants and Opportunities

### Sir Henry Wellcome Postdoctoral Fellowships

**Objective:** To provide a unique opportunity for the most promising newly qualified postdoctoral researchers to make an early start in developing their independent research careers, working in the best research environments in the UK and overseas.

**Who May Apply:** Individuals must be in the final year of your PhD studies or have no more than two years of postdoctoral research experience prior to the deadline.

**Application Deadline:** May 15, 2015

**Website:** <http://www.wellcome.ac.uk/Funding/Biomedical-science/Funding-schemes/Fellowships/Basic-biomedical-fellowships/WTX033549.htm>

### Eppendorf & Science Prize for Neurobiology

**Objective:** The Prize is awarded annually to one young scientist for the most outstanding neurobiological research based on methods of molecular and cell biology conducted by him/her during the past three years.

**Who May Apply:** Neurobiologists who received their advanced degrees in the last 10 years and are not older than 35 years of age.

**Application Deadline:** June 15, 2015

**Website:** <http://www.sciencemag.org/site/feature/data/prizes/eppendorf/howto.xhtml>

## 2015 BPS Networking Events

### May

University of Kentucky  
Lexington, KY

Perdue University  
West Lafayette, IN

### June

Academy of Science  
Prague, Czech Republic

University of  
Massachusetts, Amherst  
Amherst, MA

### July

Paris Descartes University  
Paris, France

Have an idea for a networking event and want to host one in your area?

BPS is accepting networking event proposals until April 15 for 2015 and 2016.

For additional information, visit [www.biophysics.org/networking](http://www.biophysics.org/networking)

## Subgroups

### Exocytosis/Endocytosis



Celebrating at the Exocytosis and Endocytosis Subgroup dinner. Standing: 2015 Katz Award winner Ronald W. Holz (left) and symposium speakers Shigeki Watanabe and Jeremy Dittman. Seated: symposium speaker Elisabeth Glowatzki (left), subgroup founding chair Robert H. Chow, and BPS Councilor Ruth Heidelberg.

The Exocytosis and Endocytosis Subgroup held its 13th annual symposium at the 2015 Biophysical Society meeting in Baltimore, and a highlight of the program was the Sir Bernard Katz Award Lecture, which was presented by *Ronald W. Holz* of the University of Michigan. The Sir Bernard Katz Award for Excellence in Research on Exocytosis and Endocytosis is named after one of the founding fathers of biophysics and neuroscience, and the Award went to Holz in recognition of his distinguished career in this field. After the symposium, subgroup members met at a reception and dinner to congratulate the Awardee, celebrate another successful subgroup symposium, and talk science, of course.

Student talks selected from submitted poster abstracts for the general meeting are another popular feature of our subgroup symposium, and in 2015, the three student speakers were *Melanie Schupp*, University of Copenhagen; *Julia Trahe*, University of Muenster; and *Tejeshwar Rao*, Wayne State University. Congratulations to all three for their excellent presentations.

The executive committee of Exocytosis and Endocytosis encourages all interested biophysicists to join our subgroup. Membership costs little (free for students!), and it helps to ensure the continued success of our yearly symposium. If you attended our subgroup symposium but are not yet a member, please consider joining. The membership application is available at <http://www.biophysics.org/subgroups>.

We hope to see you at the 2016 Exocytosis and Endocytosis Subgroup Symposium at the 60th Annual Meeting of the Biophysical Society in Los Angeles!

—*Gary Matthews*, Subgroup Past-Chair

### IDP

The 9<sup>th</sup> annual symposium of the intrinsically disordered proteins (IDPs) subgroup was held on Saturday, February 7, 2015, in Baltimore, Maryland, under the aegis of the 59<sup>th</sup> Annual Meeting of the Biophysical Society. This year's subgroup symposium represented a turning point for the IDP field. The meeting highlighted the rapid progress being made on the technological front and in efforts to uncover the functional consequences of conformational heterogeneity.

*Ashok Deniz*, The Scripps Research Institute, opened the meeting with a keynote address that showcased insights regarding mechanisms of coupled folding and binding and IDP dynamics that he has gleaned using state-of-the-art single molecule fluorescence methods. *Dariusz Hinderberger*, Martin Luther University in Halle-Wittenberg, used osteopontin as an example to highlight the insights afforded by combining EPR spectroscopy with polymer physics theories. *John Bushweller*, University of Virginia, walked the audience through hidden complexities that characterize the array of interactions that underlie the biophysical properties of the leukemogenic protein product of the fusion gene MLL-AF9. *Edward Lemke*, EMBL, Heidelberg, talked about insights generated from his single molecule studies of Nup153—an important component of the nuclear pore complex—its interactions with nuclear importins, and the broader implications for dynamics within complexes formed by IDPs.

This year's symposium also included talks featuring investigations that transitioned from the test tube to cellular phenotypes. Talks presented by *Timothy Lohman* and *Petra Levin*, both from Washington University, highlighted the role of disordered regions within distinct bacterial proteins that facilitate cooperative interactions and assemblies of to play fundamental roles in the life cycles of rod-shaped bacteria. *Clifford Brangwynne*, Princeton University, and *Tanja Mittag*, St. Jude Children's Research Hospital, provided engaging accounts of spontaneous phase transitions controlled by distinct low complexity sequences that give rise to non-membrane bound organelles within cells. The symposium also featured

presentations by two recipients of postdoctoral awards of the IDP subgroup that were sponsored by Molecular Kinetics. The symposium closed following a closing keynote address by *Ursula Jakob*, University of Michigan, who provided a fascinating account of conditionally disordered bacterial chaperones.

Overall, the symposium, which was very well attended throughout, highlighted the growing interest in IDPs and the rapid evolution in this field that is being sparked by innovations in biophysical methods and the incorporation of new ideas from the fields of transcription, microbial and molecular biology, and the physics of phase transitions. As the capstone annual event for IDPers from around the world, we are pleased to see the influx of new ideas and individuals into the IDP community and we expect continued rapid growth for this exciting field of protein biophysics.

—*Robit Pappu* and *Edward Lemke*, Program Co-Chairs

## MSAS

This year's well-attended Membrane Structure and Assembly Subgroup (MSAS) symposium in Baltimore examined topics in membrane dynamics and organization from the whole-cell level to the nanoscopic all-atom simulation level. The morning session focused on some of the most recent results in the area of lipid-flip flop and membrane rafts, and continued in the afternoon with talks primarily in the area of membrane curvature. The morning session started with a presentation by *John Conboy*, University of Utah, describing sum-frequency vibrational spectroscopy results of lipid-flip flop dynamics and energetics without the use of bulky probes. This was followed by a talk by *Todd Graham*, Vanderbilt University, who described his experimental work investigating the evolution and lipid binding site of P-IV ATPases that flip phospholipids. Next we heard about all-atom simulations by *Pieter Tieleman*, University of Calgary, Canada, to determine the thermodynamic foundation of lipid flip-flop through techniques such as umbrella sampling. The symposium presentations then moved into the area of membrane rafts starting with *Mary Kraft*, University of Illinois, Urbana-Champaign, who described her nano-SIMS measurements to examine nanometer scale organization of the plas-

ma membrane of fibroblast cells. The session ended with a presentation by *Ed Lyman*, University of Delaware, on "large-scale" all-atom simulations by a unique supercomputer to examine organization of coexisting fluid-like lipid phases.

The afternoon session was kicked off by another raft-related talk from *Christoph Naumann*, Indiana University-Purdue University Indianapolis, who discussed his group's use of polymer-supported lipid bilayers to investigate the sequestration and oligomerization of membrane proteins in Lo and Ld domains. The next series of talks moved into discussions of membrane curvature. *Jeanne Stachowiak*, University of Texas, Austin, described the role of protein crowding and steric pressure in membrane bending and the physiological consequences of crowding in clathrin-mediated endocytosis. Further building on the theme of membrane bending mechanisms, *Miglena Angelova*, Pierre and Marie Curie University, France, demonstrated how local chemical gradients can deform membranes even in the absence of proteins and discussed how this process could potentially contribute to mitochondrial cristae dynamics. The next talk by *Patricia Bassereau*, Curie Institute, France, focused on how membrane curvature impacts the spatial distribution of proteins as assessed using a GUV-based nanotube assay to monitor protein sorting. Mechanisms that contribute to membrane curvature sensing by proteins were further elaborated on by *Guillaume Drin*, Institute of Molecular and Cellular Pharmacology, National Center for Scientific Research, France, in his discussion of the structural basis of membrane curvature recognition by the ALPS motif. The symposium ended with a talk from the 2015 winner of the T. E. Thompson Award *Scott Feller*, Wabash College, on insights from molecular dynamics simulations into the special roles omega-3 fatty acids play in membranes. A short business meeting followed in which the slate of candidates for the 2017 MSAS subgroup chair was announced.



Scott E. Feller,  
2015 Thomas  
E. Thompson  
awardee.

We thank all those who attended the session and the speakers for sharing their exciting work. Many thanks also to our sponsor, Avanti Polar Lipids. Please plan to join us next year in Los Angeles!

—*Marjorie L. Longo* and *Anne K. Kenworthy*,  
former and current MSAS Chair



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## UPCOMING EVENTS

BIOPHYSICAL SOCIETY NEWSLETTER APRIL 2015

### June

#### June 8-12

Third International Conference  
on Radiation and Applications  
in Various Fields of Research  
(RAD 2015)

*Budva, Montenegro*

<http://www.rad-conference.org/welcome.php>

#### June 14-18

13<sup>th</sup> Symposium on Bacterial  
Genetics and Ecology (BAGE-  
CO13)

*Milan, Italy*

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

### July

#### July 7-9

NIMBioS Investigative Workshop:  
Many-cell System Modeling  
*Knoxville, Tennessee*

[http://www.nimbios.org/workshops/WS\\_manycell.html](http://www.nimbios.org/workshops/WS_manycell.html)

#### July 18-22

10<sup>th</sup> European Biophysics Congress  
(EBSA2015)

*Dresden, Germany*

<http://www.ebsa2015.org/>

### August

#### August 9-14

Frontiers in Catecholamine Function  
from Synapses to Disease

*Newry, Maine*

[http://www.nimbios.org/workshops/WS\\_manycell.html](http://www.nimbios.org/workshops/WS_manycell.html)

#### August 10-12

International Conference and Exhi-  
bition on Antibodies

*Birmingham, United Kingdom*

<http://antibodies.conferenceseries.com/>

### September

#### September 5-8

The EMBO Meeting 2015

*Birmingham, United Kingdom*

<http://www.the-embo-meeting.org>

#### September 16-18

NIMBioS Investigative Workshop:  
Evolution and Warfare

*Knoxville, Tennessee*

[http://www.nimbios.org/workshops/WS\\_warfare](http://www.nimbios.org/workshops/WS_warfare)