

Newsletter

Biophysical Society

OCTOBER

2016

DEADLINES

Meetings 2017

61st Annual Meeting

February 11–15

New Orleans, Louisiana

October 3

Abstract Submission

January 9

Early Registration

Single-Cell Biophysics:
Measurement, Modulation,
and Modeling

June 17–21

Taipei, Taiwan

March 1

Abstract Submission

March 24

Early Registration

Conformational Ensembles
from Experimental Data
and Computer Simulations

August 25–29

Berlin, Germany

April 3

Abstract Submission

Early Registration

Early Registration

Congressional Fellowship 2017-2018

December 15

Application

2017 Society Awardees Named

The Biophysical Society is proud to announce the recipients of seven 2017 Society awards, including the new Kazuhiko Kinosita Award in Single-Molecule Biophysics. These members will be honored at the 61st Annual Meeting in New Orleans, Louisiana, in February.



Julie Biteen, University of Michigan, will receive the Margaret Oakley Dayhoff Award for her creative work in real-time, nanometer-scale measurements of subcellular motion in bacteria.



James Bowie, University of California, Los Angeles, will receive the Anatrice Membrane Protein Award for his impact to the field of protein biochemistry and biophysics and his leadership in the field of membrane protein folding and stability.



Enrique De La Cruz, Yale University, will receive the Emily M. Gray Award for his promotion of diversity in science and education in biophysics and his tireless efforts as an inspiring ambassador for biophysics.



Donald Ingber, Harvard University, will receive the Founders Award for his pioneering work in leveraging sophisticated physics-based approaches to address fundamental questions in cytoskeletal mechanics that have enabled profound discoveries in cell biology.



Shin ichi Ishiwata, Waseda University, Japan, will receive the inaugural Kazuhiko Kinosita Award in Single-Molecule Biophysics for his many important contributions to the biophysical studies of motor proteins at the single-molecule level. This award honors the life and work of Professor Kazuhiko Kinosita, Jr., who helped to establish the field.



Sarah Keller, University of Washington, will receive the Avanti Award in Lipids for her seminal work that has contributed to the understanding of phase behavior of multicomponent lipid membranes.



Ahmet Yildiz, University of California, Berkeley, will receive the Michael and Kate Bárány Award for his pioneering work in high-precision single-molecule fluorescence and force microscopy to investigate the molecular mechanisms of cell motility.

CONTENTS

President's Message	2
Biophysicist in Profile	4
Public Affairs	6
Annual Meeting	8
Molly Cule	10
Student Center	10
Biophysical Journal	12

From the BPS Blog	15
Members in the News	15
Grants and Opportunities	15
Subgroups	16
Obituary	18
On the Move	18
Upcoming Events	20

BIOPHYSICAL SOCIETY

Officers

President
Suzanne Scarlata
President-Elect
Lukas Tamm
Past-President
Edward Egelman
Secretary
Frances Separovic
Treasurer
Paul Axelsen

Council

Olga Boudker
Jane Clarke
Bertrand Garcia-Moreno
Ruth Heidelberg
Kalina Hristova
Robert Nakamoto
Arthur Palmer
Gabriela Popescu
Joseph D. Puglisi
Michael Pusch
Erin Sheets
Joanna Swain

Biophysical Journal

Leslie Loew
Editor-in-Chief

Society Office

Ro Kampman
Executive Officer

Newsletter

Catie Curry
Beth Staehle
Ray Wolfe
Production
Laura Phelan
Profile
Ellen Weiss
Public Affairs
Beth Staehle
Publisher's Forum

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 © 2016 by the Biophysical Society. Printed in the United States of America. All rights reserved.

President's Message




Suzanne Scarlata

I recently changed institutions and just attended my first ever departmental retreat. Having never attended one of these before I didn't know what to expect. For some reason, I thought our Chair would fall backwards off a table and all the faculty would stretch their arms out to catch him – but that wasn't the case at all. Instead it was a series of full nuts-and-bolts discussions about departmental operations with a large amount of time dedicated to evaluating the content of our undergraduate and graduate curricula. While discussing our biochemistry courses, a junior faculty member asked me, "What is biophysics"? Of course, this is a question that I've answered many times, but this time I paused a bit longer because I realized that — as a student — I first identified myself as a biophysicist, and not a biochemist or a physicist.

My doctorate was in physical chemistry but my mentor was in the Biochemistry Department, which at that time was part of the Chemistry Department. There was a separate Biophysics Department, but they were looking at muscle physiology and ion channels, which I really knew nothing about. However, in my third year of graduate school, my mentor sent me to my first Biophysical Society meeting. I had been to other national meetings before, but I came to this meeting with my poster in hand and stepped into a scientific world that became my professional identity; I realized that I was a biophysicist. This was how I thought about the world and what I wanted from my research — to understand biological and biochemical systems on a physical level.

Over the years my research has drastically changed from looking at small coupled motions in proteins to looking at changes in the physical association of proteins in living cells during signal transduction, but I am still a biophysicist (although I often have trouble spelling it). Even though I'm a member of other organizations and attend different meetings, I'm still a biophysicist, and still find my identity at the Biophysical Society Annual Meeting. This is the time of year to send in abstract submissions for the Society's meeting, where I am sure that many new students and postdocs will also find their scientific identity as biophysicists. Perhaps there are students in your lab or classroom that might find their long-term scientific identity at the meeting like me!

While I didn't mean for this essay to be soul-searching, I am interested in how our members scientifically identify themselves, and what role the Society can play in making our members feel at home with biophysics. Feedback welcome, and see you in New Orleans!

Email your comments to: president@biophysics.org

—*Suzanne Scarlata*, Worcester Polytechnic Institute

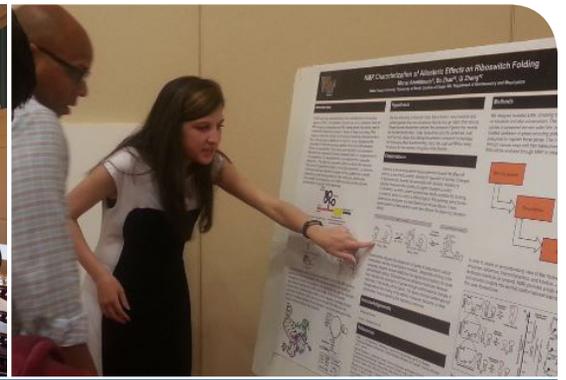
Apply to be the 2017-2018 BPS Congressional Fellow!

Are you interested in working on Capitol Hill and learning more about science policy?

The BPS is now accepting applications for the 2017-2018 Fellowship year. All members who have obtained their PhD and are eligible to work in the United States may apply.

Application deadline: December 15, 2016

Visit www.biophysics.org for additional information.



Biophysical Society

2017 Summer Research Program in Biophysics

May 9 – July 28, 2017 | University of North Carolina at Chapel Hill

Apply Today!

**Priority Application Deadline:
February 15, 2017**

Interested in interdisciplinary science? Want to work in the fast growing area of biomedical research? Looking to learn new techniques through hands-on lab experience this summer? If so, then check out the Biophysical Society's Summer Research Program in Biophysics, an 11-week scholarship program hosted by the University of North Carolina at Chapel Hill that introduces underrepresented* students to the field of biophysics. The program includes lectures, seminars, lab work, team-building activities and field trips. The Summer Research Program is designed to reflect a graduate-level research program and prepare students for the next step in their careers.

All tuition and fees during the program are covered. Participants also receive travel assistance, and a stipend totaling **\$4,480** for meals and living expenses throughout the summer.

Program includes:

- Lectures with UNC faculty members and seminars with leading scientists representing graduate programs from across the country
- Mentored research experience
- Team-building activities and field trips
- Professional Development
- GRE & MCAT Preparation
- Numerous networking opportunities

Prerequisites:

- Studying a quantitative science: chemistry, physics, biochemistry, engineering, and/or computer science (required)
- 2 semesters of biology (preferred)
- 2 semesters of calculus-level physics (preferred)
- 3.0 cumulative or higher GPA in science courses (preferred)
- US citizen or permanent resident (required)

Attending SACNAS or ABRCMS this fall?

Stop by and see us at Booth 812 at SACNAS or Booth 401 at ABRCMS to get more information or ask questions about the BPS Summer Research Program in Biophysics.

See what past students have to say about the Summer Course!

"...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."

"The BPS summer program was an incredible opportunity that allowed me to grow as a scientist, student, and person. I gained critical thinking skills, mastered new techniques, and developed relationships with peers and professors that have continued to benefit me since the program."

"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."

To apply and for more information visit the program webpage at www.biophysics.org.

For questions, email Daniel McNulty at dmcnulty@biophysics.org, or call 240-290-5611.

*Financially disadvantaged individuals, students with disabilities, and individuals who have been found to be underrepresented in biomedical or behavioral research are eligible to apply. Nationally, these individuals include, but are not limited to: African Americans, Hispanic Americans, Native Americans/Alaska Natives who maintain tribal affiliation or community attachment, Hawaiian Natives and natives of the US Pacific Islands. Individuals with disabilities are defined as those with a physical or mental impairment that substantially limits one or more major life activities.

The Biophysical Society Summer Course in Biophysics: Case Studies in the Physics of Life is funded by The National Institute of General Medical Sciences, National Institutes of Health. [2 T36GM075791]

Biophysicist in Profile

JEANNE SMALL



Jeanne Small

Jeanne Small moved often in her childhood. “I am a ‘military brat,’ first US Army, then US Air Force,” she says. “I was born in Germany, then lived all around the eastern United States.” While she was in elementary school, Small’s father earned his PhD in electrical engineering, giving her an inside look at what it was like to do research for a dissertation. Small also had a grandfather who was a chemist employed in water quality management. “The family connection was so important to me for feeling connected to science,” Small shares, “especially in an era when there weren’t too many females in science.” Small and her father did math problems together: “I always had a study partner to go to when I struggled with a concept,” she says. In addition to encouraging her to take all the math and science courses she could, he found creative ways to engage her interest and skill in STEM. “My father was substantially deaf, so he did things like bring home an oscilloscope to use to tune our piano, and required me to calculate frequencies in the process,” Small says.



Small with husband Enoch Small.

As a young child, Small wanted to grow up to be a baseball umpire or ice hockey referee. “I was interested in careers where women might fit in if they were talented enough,” she says. Despite this interest in careers that were unconventional for women, she found it hard to imagine a career as a scientist, due to lack of role models. As she grew up, she decided she wanted to become a medical doctor. “[I]

quickly changed my mind after my first college physics class,” she says. “I truly wanted to do biophysics.” The lack of female role models continued into her college career — and beyond. “I never had a college professor, chair, dean, or president who was female while I was a student or professor,” Small says. “There were women in college positions whom I saw from a distance, but

I never had one in front of me on a day-to-day basis. I never had professional women role models until I worked as a program officer at the National Science Foundation (NSF) in 2004.”

Small’s father’s last military assignment was in San Antonio, Texas, and that station led her to her first research position. “When I graduated high school, I was able to participate in a summer research program at M.D. Anderson Cancer Center as a ‘Junior Science Trainee,’” she says. “I was assigned to a project in a biochemistry laboratory that included circular dichroism studies of conformational changes of cell surface glycoproteins. I struggled to understand circular dichroism spectroscopy, to the point where all through college I asked questions and participated in research that engaged the connection between light and biological macromolecules. Hence the interest in biophysics!”

When she started her undergraduate studies in 1976, there were not many biophysics programs in the United States. She decided to study chemistry at Trinity University in San Antonio. “I figured I could work in the ‘bio’ and ‘physics’ of biophysics around a chemistry education,” she says. “The burden would be on me to make the connections, but I felt I could do it.”

After graduating in 1980 with her bachelor’s degree in chemistry, she attended Harvard University and earned her master’s degree in 1982 and her doctorate in 1985. “While a graduate student, a fellow student set up an experimental apparatus based on pulsed-laser photoacoustics, with the goal of using it as a calorimeter to understand the thermodynamics of reactions initiated with light. I added a direct kinetic measurement component to it while working with biological molecules that refused to behave the way I thought they would,” says Small. “The whole process involved really understanding a Jablonski diagram, and thinking through all the deactivation pathways a molecule

in the excited state could take. I still really like studying Jablonski diagrams, because I think they are simple and powerful.”

Since then, Small has held a variety of positions in different sectors. “I have been an assistant professor, senior research in a biochemistry and biophysics department; a tenure-track/tenured assistant professor/associate professor/professor in a department of chemistry and biochemistry; a ‘rotator’ program officer with NSF, a managing director of an NSF science and technology center, and now the chief information officer (CIO) of Quantum Northwest, Inc., a company my husband, *Enoch Small*, founded 23 years ago,” she says.

Each work environment has had its positives and negatives, and each suited a different period of Small’s life. “I love to teach and am interested in how people learn, so being a professor was important to me. The flexibility I had was great for parenting two young children,” Small says of her time in academia. She reached a point where she had an expanded teaching load and could no longer give research the attention she wanted to. “[I] welcomed the chance to be ‘borrowed’ by the federal government as a rotator program officer at NSF,” she shares. “This was wonderful for my children, then in high school, to live in the ‘power center of the universe’ in the Washington, DC, area. I got to work in the amazingly idea-rich environment of a federal granting agency, and learned many new skills such as formal project management.” Following her stint as a rotator program officer, she decided to transition to research management at the University of Washington (UW), Seattle. “This was good for my family and for me, as I learned how to manage the structure of a \$4 million per year research center,” she says. “When the UW center was ending, I went back to NSF to learn how to manage multiple \$4 million per year projects, from their perspective. Again, I learned a lot, including the importance of communicating one’s science effectively so that our legislators can understand it.”

In her current role as CIO of Quantum Northwest, Small undertakes a variety of duties. “I think

of ‘information’ writ broadly — from IT infrastructure in the company, to marketing materials, to financials, to Google Analytics on our website, to social media connections,” she says. “At the moment, I am focusing on how to reformat our products’ Performance Certificates into true Calibration Certificates acceptable to the pharmaceutical industry; revising our product installations; itemizing changes needed to our website; and drafting a Statement of Work needed to partner with a university to test our products in one of their labs. I love getting a chance to play with our instruments and test them. I also like learning how to best use software from an industrial perspective. I’m certainly not bored — the challenges are infinite!”

“I find the Biophysical Society meetings life-changing, since I met my husband at one! San Francisco, 1986; we were married a year later. I made lifelong friends at my first Biophysical Society meeting, friends I keep up with over the decades. My annual reunion with fellow biophysicists leaves me feeling rejuvenated every time,” she shares. “Our company has never missed exhibiting at a Biophysical Society Annual Meeting. It’s where we meet our old friends, find new customers, and learn what is at the forefront of optical spectroscopy in biophysics.”

As someone who has held many different positions in different sectors, Small has valuable insight into career development for early career scientists. “Think broadly about your personal skills and the various opportunities available to you,” she advises. “By its very nature, biophysics forces you to make connections between concepts that are not necessarily obviously linked. You learn to see the world differently and offer creative solutions to problems. These are highly transferable skills!”



Small kayaking in British Columbia.

Profilee-at-a-Glance

Institution

Quantum Northwest, Inc.

Area of Research

Peltier-controlled cuvette holders and custom instrumentation

Public Affairs

US Presidential Candidates Go on the Record on Science

Presidential candidates *Hillary Clinton*, *Donald Trump*, and *Jill Stein* have provided their positions on 20 significant science and technology questions. The questions were sent to the candidates by ScienceDebate.org, a coalition of 56 US nonpartisan organizations, including the Biophysical Society. ScienceDebate.org has posted their responses on the organization's website. Candidate Gary Johnson had not responded as of press time.

The consortium crowd-sourced and refined hundreds of suggestions to come up with “the 20 most important, most immediate questions.”

“Most Americans recognize that science and technology play an increasingly important role in many aspects of our lives. It is also science and technology that will drive the US economy this century,” said BPS Public Affairs Committee Chair *Edward Egelman*. “It is imperative, therefore, that people who would like to lead our country provide us with their thoughts on issues involving science and technology.”

The Society encourages members to view the answers on the ScienceDebate.org website and share them with colleagues.

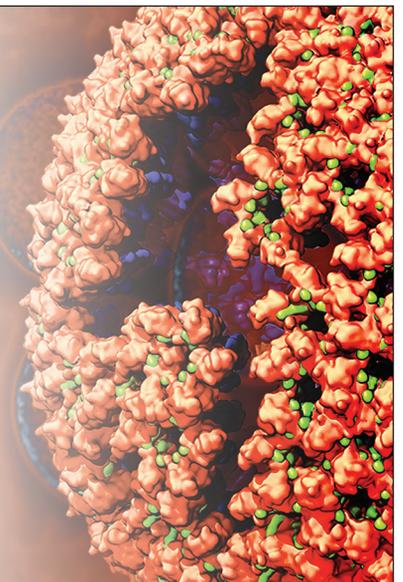
**The Federal Government's 2017 fiscal year began on October 1.
Check the BPS website for the latest on funding and how it affects you.**



BiophysicsWeek
March 6–10, 2017

Call for Affiliate Events

Register your event at
biophysics.org/BiophysicsWeek



Experiments with MIRA Program

The National Institute of General Medical Sciences (NIGMS) issued a revised funding opportunity announcement in August for its Maximizing Investigators' Research Award (MIRA) pilot program. The opportunity is only for early stage investigators who have not yet received a substantial independent National Institutes of Health (NIH) research award. The changes made to the announcement were done to further test the MIRA funding mechanism under controlled conditions.

The announcement comes a few weeks after the first MIRA Awards for new and early stage investigators were made. In that round, NIGMS received 320 applications and made 93 awards. The success rate was 29.1%, compared to 24.4% for new and early career investigators competing for an R01 during the same time period.

The MIRA program funds investigators through a single unified grant rather than on a project-by-project basis for up to five years. This reduces grant writing time for investigators, increases funding stability, and decreases review costs and time for NIGMS. NIGMS also hopes it will better allow the institute to manage its portfolio and fund more investigators.

NIGMS plans to issue additional funding opportunity announcements for MIRA later this year with broadened eligibility requirements.

Who's New at NIH

Joshua Gordon assumed the role of director of the National Institute of Mental Health (NIMH) in September. Previously, Gordon was an associate professor of psychiatry at Columbia University Medical Center.

Diana Bianchi will join the NIH as director of the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) at the end of October. Currently, Bianchi serves as the founding executive director of the Mother Infant Research Institute and vice chair for pediatric research at Tufts Medical Center.

Scientists and Climate Change

The 2006 documentary *An Inconvenient Truth* presented the story of global warming, told by Former US Vice-President *Al Gore*. It was part of his worldwide education effort to inform people about the climate change crisis, and was documented in his book *An Inconvenient Truth*. Gore continues his education campaign with his Climate Reality Project, a nonprofit organization that he founded in 2005. He and his staff train people to deliver Gore's slide show, and provide these Climate Reality Trainers with background and support to give his presentation to their communities. To date, almost 10,000 people worldwide have taken his training in Canada, South Africa, Brazil, Philippines, India, the United States, and other countries.

I (*Kathleen Hall*) have followed the Climate Reality Project, and when a training was announced in Houston, Texas, in August 2016, I applied. Since reading *Rachel Carson's Silent Spring*, environmental protection has been important to me, even though as a biophysicist my connection to the science and policy was tenuous. Attending the training gave me a story I could tell, complete with current data and global scenes of the effects of climate change.

Participants pledge to carry out 10 climate change actions in a year. These can be delivery of Gore's presentation, meeting with policy makers to advocate for support of legislation, or writing a letter to the editor of a newspaper to support local efforts to reduce greenhouse gasses. We encourage everyone to communicate their concerns at every opportunity. In the United States, elections are coming, and one candidate denies climate change is real; this opinion needs to be countered by the facts. Scientists should identify themselves as scientists (biophysicists) when they talk or write to others.

We encourage you to check out the Climate Reality website, and view Al Gore's TED talk. Also, we are available to deliver the Climate Reality presentation!

—*Kathleen Hall* and *John Perona*

61ST Annual Meeting

February 11–15, 2017 • New Orleans, Louisiana

Student Opportunities

Undergraduate Student Mixer and Poster Fest

Saturday, February 11, 4:00 PM–5:00 PM

If you're an undergraduate student, plan on attending this social and scientific mixer. Come meet other undergraduates and learn about their research projects. Undergraduates listed as co-authors on posters are welcome to practice their poster presentation skills in a less formal setting, even if they are not listed as the presenting author. For undergraduate students who will be presenting during the standard scientific sessions, the mixer provides an opportunity to hone presentation skills before the general poster sessions begin. Pre-registration is required to present, but not to attend. The registration deadline is January 30. Register on the Annual Meeting website.



Undergraduate Poster Award Competition

Undergraduate students participating in the Mixer and Poster Fest as a first or second author on a poster will now have a chance to enter a competition and gain recognition for their work. Three students will be selected for awards based on the quality of their research, scientific merit, their knowledge of the research problem, contribution to the project, and overall presentation of the poster.

Visit the website for more information and to access the registration form for the Mixer and Poster Fest and the application to participate in the Undergraduate Poster Award Competition.

Undergraduate Student "Breakfast"

Sunday, February 12, 11:30 AM–1:00 PM

Undergrads: plan to attend this unique networking event! This session will serve as a valuable networking and social opportunity to meet other students and Education Committee members, to discuss academic goals and questions, and to develop a biophysics career path. The breakfast will also include a panel discussion on academic and career paths in biophysics, with opportunities for questions and answers from the audience. Come prepared to find out about the course of study that aspiring biophysicists undertake, what it means to be a biophysicist, and how biophysicists make important discoveries.

Colleges in the Community Day

Sunday, February 12, 11:30 PM–5:00 PM

This full day of activities for local college students and their instructors kicks off with an Undergraduate Student Pizza "Breakfast" where participants will have an opportunity to network with their peers and members of the Biophysical Society's Education Committee in a fun and relaxed environment. Students will have a chance to attend the Graduate and Postdoc Institution Fair to meet with representatives of, and learn about, programs from all over the country. Finally, students will have access to an exclusive tour of the exhibit hall where they will view special demonstrations featuring cutting-edge instrumentation producing breakthroughs in structural biology and other areas. Local undergraduate students, and their PIs, residing within a 50-mile radius of the Ernest N. Morial Convention Center who are not presenting an abstract or listed on an abstract being pre-

DID YOU KNOW?

Student members can take advantage of reduced meeting registration and membership rates.

Have your students submit an abstract and join the Biophysical Society today!

Abstract Submission Deadline: October 3, 2016

sented at this meeting may register for this event and gain FREE access to all Annual Meeting sessions on Sunday, February 12, 2017. Register on the Annual Meeting website.

Graduate and Postdoc Institution Fair

Sunday, February 12, 1:00 PM–3:00 PM

Are you thinking about grad school or starting to look for a postdoc position? Attend the Graduate and Postdoc Institution Fair to meet with representatives from several institutions with biophysics programs who will be on hand to answer questions, distribute literature, and discuss opportunities for students and postdocs. Don't miss this unique and convenient opportunity to learn more and get the information you need!

Graduate Student Breakfast

Monday, February 13, 7:30 AM–8:30 AM

Graduate students, do not miss a great opportunity to network with your peers at this breakfast session. Members of the Early Careers Committee will share information and answer questions about resources available to you and how the committee serves graduate students in the biophysical community.

Student Housing

Deadline: December 7

Affordable student housing is available for undergraduate and graduate student meeting attendees who are current Society members. To secure student housing, visit the Annual Meeting website.

Undergraduate Student Lounge

Looking for a quiet space to study and work on assignments for your courses? Or, want to meet other undergraduate attendees? Be sure to swing by the Undergraduate Student Lounge, a room specifically reserved for undergraduate students to do classwork and meet each other. Open throughout the meeting, the lounge will have WiFi available.

WHAT STUDENTS ARE SAYING ABOUT THE MEETING

“ Learning, reinforcing, enriching, networking, AMAZING! ” – Gary Angles

“ This was fantastic exposure to various realms of science, and I learned a lot about the types of applications of each. ” – Shana Bergman

Call for Future of Biophysics Symposium Speakers

The Biophysical Society is seeking suggestions from you for speakers to be featured in the special Future of Biophysics Burroughs Wellcome Fund Symposium in New Orleans. This symposium highlights the work of young researchers doing cutting-edge research at the interface of the physical and life sciences.

If you have a colleague who may be suitable for a nomination, visit <https://www.surveymonkey.com/r/22SZBV7> and complete the required information fields by October 20, 2016.

#BPS17



Molly Cule

What skills are needed to do research and manage a lab?

Building and managing a lab typically involves recruiting and building a strong team of researchers, obtaining funding (and balancing budgets once you do!), guiding multiple research projects, marketing group success, and disseminating results through publications and presentations. You will be managing many administrative details, including regulatory compliance,

lab safety, as well as intellectual property and data management. Experimentalists will be purchasing and maintaining equipment and inventories. Of course, deep technical and analytical skills remain very important to advancing your research, but typically you won't be performing a majority of the hands-on work, so communication skills and an ability to understand and motivate your staff are also extremely important. Much of your time will be spent writing, whether it be grant applications, project reports, editorial reviews, or original manuscripts, so an ability to write quickly and clearly is essential. Rarely will you have long, uninterrupted periods to work alone, so an ability to work efficiently in short bursts is key.

Although graduate students should prioritize building technical skills and a strong research portfolio, there are often opportunities to develop management skills even during your early training. Hopefully you are meeting regularly with your faculty advisor to discuss your progress. Make sure that you address professional skill development in addition to technical training in your annual review. There are often opportunities to lead small projects within your group — overseeing compliance with lab safety rules or maintaining a critical piece of equipment, for example.



Molly Cule Advice

Volunteering to help organize a workshop on your campus will provide management and organizational skills, and will allow you to expand your professional network. Many universities offer professional development seminars and the Biophysical Society offers training both online and at the Annual Meeting through its Career Development Center.

Student Center



Jasmine Nirody

Jasmine Nirody
Center for Computational
Biology

University of California,
Berkeley

Q: What made you decide to study biophysics?

Ever since I was really young, I've been interested in how things move. In college, my research focused on animal locomotion (specifically, on snakes, which are far less scary and way cooler than everyone thinks!). My research interests have fluctuated widely since then, but generally tend to equilibrate around some form of biomechanics. Currently, I'm interested in how molecular motors convert chemical energy into mechanical work. It's completely fascinating how drastically mechanics differs across scales: Very small things, which primarily deal with viscous rather than inertial forces, have to use totally different locomotive strategies than the creatures we observe in our daily lives.

Conformational Ensembles from Experimental Datas

.....
Berlin, Germany | August 25–29, 2017

Structural biology increasingly relies on combining information from multiple sources of experimental data with ever-improving computational models. A fundamental component in structural biology is thus to combine information from experiments and simulations in an efficient and correct manner. This is in particular true in the era of integrative structural biology, where heterogeneous and noisy experimental data are often used in conjunction with computational methods to study large and complex biomolecular assemblies and their structural dynamics. Further, as these molecules and complexes are often highly dynamic, special care needs to be taken to interpret correctly the time- and ensemble-averaged experimental data.

This meeting aims to bring together scientists from across disciplines to advance integrative structural biology into the “dynamic age.” The program will consist of a mix of computation, theory, and a broad range of methods in experimental structural biology, focusing on methods and applications for studying the structural dynamics of biomolecules by integrating experiments and simulations.

ORGANIZING COMMITTEE

Kresten Lindorff-Larsen, University of Copenhagen, Denmark
Andrea Cavalli, Institute for Research in Biomedicine, Switzerland
Gerhard Hummer, Max Plank Institute for Biophysics, Germany
Helen Berman, Rutgers University, USA

SPEAKERS

Ad Bax, NIH, USA
Martin Blackledge, Institut de Biologie Structurale, CNRS, France
Alexandre Bonvin, Utrecht University, Netherlands
Cecilia Clementi, Rice University, USA
Pilar Cossio, Max Planck Institute of Biophysics, Germany
James Fraser, University of California, San Francisco, USA
Michael Habeck, Max Planck Institute for Biophysical Chemistry, Germany
Teresa Head-Gordon, University of California, Berkeley, USA
Jochen Hub, Georg-August-University Goettingen, Germany
Tanja Kortemme, University of California, San Francisco, USA
Birthe Kragelund, University of Copenhagen, Denmark
Claudio Luchinat, University of Florence, CERM, Italy
Justin MacCallum, University of Calgary, Canada
Therese Malliavin, Institut Pasteur, CNRS, France
Tanja Mittag, St. Jude Children’s Research Hospital, USA
Andrej Sali, University of California, San Francisco, USA
Charles Schwieters, NIH, USA
Collin Stultz, MIT, USA
Jill Trewhella, University of Sydney, Australia
Henry van den Bedem, Stanford University, USA
Michael Wall, Los Alamos National Laboratory, USA

Abstract Submission Deadline:
April 3, 2017

Early Registration Deadline:
May 1, 2017

Biophysical Society

Biophysical Journal

Know the Editors



Tom Misteli

Tom Misteli
National Cancer Institute, NIH
Editor, Nucleic Acids and
Genome Biophysics

Tell us something about your interest in science.

I was trained as a classical cell biologist and was early on fascinated by cellular structures and why cells, and their interior, looked the way they do and how the marvelous, and at times bizarre, shapes of cellular structures come about. The major tool in these studies was, and still is, microscopy. Much of what we know about cellular architecture and organization of cellular function comes from imaging approaches.

Describe one of your “aha” moments in science.

I remember vividly seeing for the first time the rapid dynamics of proteins in the human cell nucleus. I was at the time doing some of the first fluorescence recovery after photobleaching experiments of nuclear proteins. We found that many of the transcription factors and chromatin-binding proteins we were studying exhibited surprisingly high on/off rates from chromatin in living cells. A positive control was needed such as proteins that would be stably bound to their targets. We settled on several proteins of the nucleolus. These seemed a good choice because time-lapse experiments of the nucleolus had shown that the overall structure was very stable. To my astonishment, what I saw looking down the microscope when we FRAPped these proteins was rapid association and dissociation, on the timescale of seconds, of individual proteins with the seemingly stable structure. This was such an unexpected finding that I had the engineer double-check the microscope to make

sure it was working properly. After ensuring the validity of the observation, we concluded that the seemingly stable nuclear bodies are in fact highly dynamic steady-state structures; a notion that is now well accepted not just for nuclear bodies, but cellular organelles in general.

What is the most exciting development in imaging?

The expected, and perfectly valid, answer is superresolution imaging, which allows one to see cellular structures in unprecedented detail. However, I would argue high-throughput imaging is a conceptually larger advance, albeit still underappreciated. Most imaging methods, including superresolution, are descriptive in nature and use a candidate approach in which known cellular components are interrogated and the effect of candidate modifiers tested in targeted hypothesis-driven experiments. In contrast, high-throughput imaging is a disruptive technology in that it enables unbiased discovery of unknown and unsuspected pathways using imaging-based readouts and assays.

What are you working on that excites you?

The combination of high-throughput imaging with RNAi screens creates a powerful discovery tool. We use these approaches now extensively in the lab to discover cellular machinery that affects the morphological appearance of cellular structures and we are testing the mechanisms that determine 3D genome organization. An upside of high-throughput imaging is that extensive datasets containing information about large numbers of cells are generated. The significance of this is twofold. First, the data can be mined to pick-out cells that undergo rare events such as the formation of a chromosome break. Second, variability and heterogeneity between individual cells in a seemingly homogenous population can be characterized. In combination, identifying single events in a population and knowing their frequency will enable us to study stochastic events in real time and in the context of the population.

Message from the Editor-in-Chief

Dear Colleagues,

I've received many comments in response to my August *Biophysical Journal* Editorial entitled "Peer Review and bioRxiv" and the reaction has been overwhelmingly positive. It is clear that quality pre-publication peer review is supported and valued by our community, as I had fully expected. Of course, *Biophysical Journal* remains committed to this principle. However, in addition to the attacks I alluded to in the Editorial, peer review is being challenged by another less overt trend: It is often very difficult for our hard-working volunteer editors to find reviewers. Serving as a reviewer is, of course, rewarding scientifically. I also believe that it is part of our responsibility as members of the scientific community. *Biophysical Journal*, which is owned by our Society and has, as its primary mission, to serve our authors and readers, is especially deserving of your help in this vital scholarly service activity. So, I am asking that you try your best to be receptive when our editors contact you to review for BJ.

— Les Loew

Editor in Chief, *Biophysical Journal*

Biophysical Journal Call for Papers

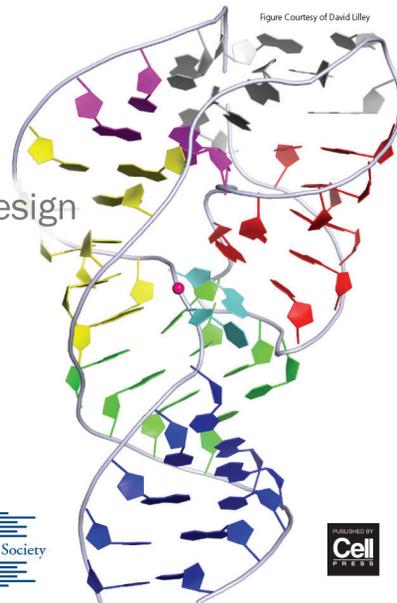
Challenges in RNA Structural Modeling and Design

Editors: Tamar Schlick and Special Guest Editor Anna Marie Pyle

Deadline for submission: January 1, 2017

To submit, visit biophysj.msubmit.net

Biophysical Society



Journal of
Cell
PHYSIOLOGY

By the Numbers

During the 2015 calendar year, 1,970 reviewers completed 3,299 reviews for *Biophysical Journal*.



NRMN
National Research Mentoring Network

Supported by the NIH



Mentoring to Diversify the Biomedical Workforce

PROFESSIONAL DEVELOPMENT

NRMN grant-writing programs are designed to help researchers currently planning or working on a grant proposal develop professional skills to:

- Master grant proposal basics
- Prepare grant submissions
- Accelerate success in obtaining grant funding



IMPROVING MENTORING RELATIONSHIPS

NRMN's evidence-based training programs are designed to help mentors and mentees engage in productive, culturally responsive mentoring relationships. Programs focus on:

- Mentor and mentee training across career stages
- Train-the-trainer workshops
- Career coaching

Your NRMN
Registration LINK:

NRMNet.net/Biophys2016

Connect with NRMN on Social Media

 [facebook.com/NRMNet](https://www.facebook.com/NRMNet)

 @NRMNet



VIRTUAL MENTORING

The NRMN Virtual Mentoring Program is a four-month experience with regular, guided interactions between mentors and mentees at a distance. The virtual mentoring experience will help mentors and mentees:

- Develop meaningful mentoring relationships beyond their own institutions
- Work closely and regularly with another person who is navigating a career path in science
- Navigate conversations critical to the success of diverse scholars

RESEARCH RESOURCES

- Find funding opportunities and fellowships
- Learn modern research methods from leading experts through online lectures
- Participate in live online discussion panels
- Discover opportunities for participation in upcoming scientific meetings and events.
- Tap into exciting research in collaboration with diverse scientists from across the U.S.
- Establish a network of professional support



For additional
information please contact:

National Research
Mentoring Network
info@nrmnet.net
(617) 552-3901

NRMN Principal Investigators

David Burgess, PhD
Boston College
Elizabeth Ofili, MD, MPH, FACC
Morehouse School of Medicine
Kola Okuyemi, MD, MPH
University of Minnesota
Christine Pfund, PhD
University of Wisconsin-Madison
Jamboor Vishwanatha, PhD
University of North Texas
Health Science Center

Participation is FREE!

Register with NRMN today to
benefit from the full list of programs!

From the BPS Blog

<http://biophysicalsociety.wordpress.com>

Epithelial Folding: How Planar Cell Polarity Regulates 3D Organogenesis

Dongbo Shi, Hiroshi Koyama, and Toshihiko Fujimori provided the cover image for the August 9, 2016, issue of *Biophysical Journal*. The authors explain the image, which depicts mammalian eggs traveling through the oviduct, and discuss their research on the blog.

Biophysical Society Summer Research Program: The Time of Your Life

2016 Summer Research Program student *Alex Li* writes about his experience this summer at the University of North Carolina, Chapel Hill. He shares what he gained from his immersion in the field of biophysics.

Members in the News



Jennifer Doudna, University of California, Berkeley, and Society member since 2015, was awarded the Tang Prize in Biopharmaceutical Science for her invention of CRISPR-Cas9

gene editing. The Tang Prize in Biopharmaceutical Science recognizes original biopharmaceutical or biomedical research that has led to significant advances towards preventing, diagnosing and/or treating major human diseases to improve human health.

Grants and Opportunities

The Role of the Cytoskeleton in Cellular Aging (R21/R33)

Objective: Remarkably little is known about the role of the cytoskeleton in the normal aging process, even though it is well established that there are numerous changes in cytoskeletal systems that have become the hallmarks of age-related disorders. To begin to address these shortcomings, the Division of Aging Biology of the National Institute on Aging concluded that there is a need to bring together experts from various cytoskeletal subspecialists and established aging researchers in order to stimulate interactions and collaborations.

Who May Apply: Any individual(s) with the skills, knowledge, and resources necessary to carry out the proposed research as the Program Director(s) Principal Investigator(s) is invited to work with his/her organization to develop an application for support.

Deadline: October 16, 2016

Website: <http://grants.nih.gov/grants/guide/pa-files/PAR-13-301.html>

Alan T. Waterman Award

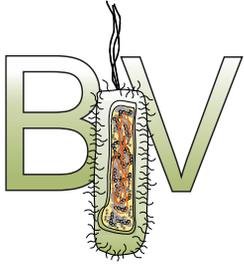
Objective: The National Science Foundation's highest honor recognizes an outstanding young researcher in any field of science or engineering supported by the Foundation.

Who May Apply: Candidates must be US citizens or permanent residents, 35 years of age or younger, or not more than seven years beyond receipt of their PhD. They should have demonstrated exceptional individual achievements in scientific or engineering research of sufficient quality to place them at the forefront of their peers.

Deadline: October 21, 2016

Website: https://www.nsf.gov/od/waterman/nsf_watermanaward_2017callfornominations_160708.pdf

Subgroups



BIV

Inaugural Young Investigator Award winner and the BIV symposium

We are thrilled to announce that *Simon Ebbinghaus* (pictured), Department of Physical Chemistry, Ruhr-Universität, Bochum, Germany, has won our Young Investigator Award. The award comprises an invited talk at our subgroup symposium on Saturday, February 11, a plaque, and a \$2000 check. We had 10 outstanding candidates. It was a tough choice for our selection committee, but we look forward to another round in 2017!



Simon Ebbinghaus

We are also pleased to announce the theme of the symposium, "Interactions and Phase Separation." The interior of a cell is heavily crowded by macromolecules, but it is far from a well-mixed reactor. In addition to membrane-bound organelles, there is a multitude of non-membrane-bound compartments, so-called "membrane-less organelles," carrying out diverse functions. Our theme focuses on the structures, dynamics, interactions, and functions of quintessential biopolymers mediating liquid-liquid or liquid-solid phase separation. The symposium speakers will explore this theme and other topics pertinent to biopolymers in cells, via the interplay of proteins, nucleic acids, and lipids, and discuss their functions in health, stress, and disease. *Sarah Keller*, University of Washington, and *Ashutosh Chilkoti*, Duke University, will deliver keynote lectures. *Jeremy Smith*, Oak Ridge National Laboratory, *Amy Gladfelter*, University of North Carolina, Chapel Hill, *Allan Drummond*, University of Chicago, and *Nicolas Fawzi*, Brown University, round out this high-powered program. In addition, one graduate student and one postdoc will be chosen to present short talks, based on their poster abstract submitted to the meeting.

Our members are important. If you are already a member, or your membership has lapsed, please

renew for 2017 at: <http://www.biophysics.org/Membership/Subgroups/tabid/103/Default.aspx>.

One last request: Sign up for the subgroup dinner; a good time will be had by all!

—*Margaret Cheung* and *Tanja Mittag*, Symposium Organizers, and *Gary J. Pielak*, Subgroup Chair

Cryo-EM

A few years ago, the Cryo-EM community had a running joke about world domination. No one is joking any more, with new atomic structures appearing every week and new facilities sprouting up across the globe. This boom has been precipitated by new imaging detectors coupled with advances in electron microscopes and image analysis software. In response to these extraordinary developments, the Cryo-EM Subgroup was inaugurated in 2016 and we are pleased to announce the program for the second edition of our subgroup at the annual meeting in New Orleans. The Cryo-EM Subgroup will meet on Saturday, 7-10 PM and will include the following speakers:

- *Gira Bhabha*, NYU School of Medicine
- *Eric Gouaux*, Vollum Institute, Oregon Health and Science University
- *Pascal Krotee* (*David Eisenberg* Lab), University of California, Los Angeles
- *Rod MacKinnon*, Rockefeller University
- *Stefan Raunser*, Max Planck Institute of Molecular Physiology, Dortmund
- *Kliment Verba* (*David Agard* Lab), University of California, San Francisco

Our subgroup is just one of three sessions dedicated to Cryo-EM at the 2017 meeting, which target different levels of interest and experience. Following the subgroup on Saturday, additional sessions dedicated to Cryo-EM are Biophysics 101, on Monday afternoon (1:30-3:00 PM), and a workshop on Tuesday evening (7:30-9:30 PM). Whereas our subgroup will focus on recent struc-

tures and associated mechanistic understanding derived from Cryo-EM studies, Biophysics 101 will provide an introduction to the fundamentals underlying the method and the workshop will explore technologies driving the field and best practices in solving a structure.

We very much hope you will join us at these sessions and encourage you to consider joining the Cryo-EM Subgroup when you register for the meeting. The associated fee goes directly toward supporting our program.

See you in the Crescent City, my home town!

—*David Stokes*, Subgroup Chair

Permeation & Transport

In case you missed it, the 2016 subgroup symposium featured a stellar line-up of speakers: *Sudha Chakrapani*, Case Western University, described gating and modulation in pentameric ligand-gated channels; *Bert de Groot*, Max Planck Institute, Germany, spoke of investigating ion channel selectivity and gating using molecular dynamics; *Nieng Yan*, Tsinghua University, China, presented the crystallographic studies of alternating access mechanisms of glucose transporters; *Sergey Bezrukov*, NIH, talked about analytical results for channel-facilitated transport problems; and *Peter Hinterdorfer*, Linz University, Austria, described binding sites in mono-amine transporters. We congratulate *Cholpon Tilegenova* from *Luis Cuello's* laboratory at Texas Tech for winning the student poster competition. Our subgroup dinner, held jointly with the Membrane Biophysics Subgroup, featured an inspirational talk on GIRK channels by the Cole Awardee, *Rod MacKinnon*.

A head's-up to students — in 2017 we will select two students to present at the subgroup meeting. You must submit your abstracts to the student subgroup presentation competition separately from the regular meeting.

The subgroup is also undergoing changes. We

have joined the 21st century by holding votes electronically. Our first electronic vote resulted in the election of *Ming Zhou*, Baylor University, as Secretary/Treasurer. He joins *Olga Boudker*, Weill College of Medicine, Cornell University (Chair), *Susan Rempe*, Sandia National Labs (Co-Chair), and *Emad Tajkhorshid*, University of Illinois (Past Chair), on the leadership committee. We look forward to seeing all of you on February 11, 2017, in New Orleans!

—*Olga Boudker*, Subgroup Chair

IDP

Research in the area of intrinsically disordered proteins (IDPs) is, appropriately, very dynamic. Our understanding of the in vivo functions of IDPs is developing rapidly while our understanding of the fundamental biophysics of IDPs is advancing through the use of techniques such as single-molecule FRET, NMR, and simulations. To help keep up with the research, trainees within the IDP subgroup have organized a virtual journal club: The IDP State Letter. Each month the completely trainee-generated newsletter highlights either a particular aspect of developments in the burgeoning field of disordered protein structure and function or brings together a set of papers on a particular topic in IDP research such as α -synuclein or Nups. Papers are selected for the newsletter based on their novelty and perceived impact and are accompanied by a brief review.

To find out what the next generation of IDP researchers are reading you can go to http://eepurl.com/b_TqDP and see a recent newsletter and find a subscription link. You can also find a link to the newsletter under the IDP Subgroup section of the Biophysical Society webpage. The newsletter authors invite all investigators to nominate papers by sending an email to bps.idp@gmail.com.

—*Steven Metallo*, Subgroup Secretary-Treasurer

Obituary



Christodoulos A. Floudas

Christodoulos A. Floudas

Professor *Christodoulos A. Floudas*, director of the Texas A&M Energy Institute and the Erle Nye '59 Chair Professor for Engineering Excellence in the Artie McFerrin Department of Chemical Engineering at Texas A&M University, passed away at age 56, in August, while on vacation with his family in Greece.

He previously served Princeton University for 29 years and was the Stephen C. Macaleer '63 Professor in Engineering and Applied Science, Emeritus, and Professor of Chemical and Biological Engineering, Emeritus at Princeton.

Born in Ioannina, Greece, he earned a diploma of chemical engineering from Aristotle University of Thessaloniki in 1982, and a PhD in chemical engineering from Carnegie Mellon University in 1986, studying under *Professor I. E. Grossmann*.

During a career that spanned four decades, he became a world-renowned authority in mathematical modeling and optimization of complex systems. His research interests were at the interface of chemical engineering, applied mathematics, and operations research, with principal areas of focus including multi-scale systems engineering for energy and the environment, chemical process

synthesis and design, process operations, discrete-continuous nonlinear optimization, local and global optimization, and computational chemistry and molecular biology.

He was the recipient of numerous awards and honors for teaching and research, including election to the National Academy of Engineering in 2011, selection as a member of The Academy of Medicine, Engineering, and Sciences of Texas in 2015, and induction as a Corresponding Member of the Academy of Athens in 2015. Among other recognitions, Floudas was the recipient of the National Science Foundation Presidential Young Investigator Award in 1988, the 2001 American Institute of Chemical Engineers (AIChE) Professional Progress Award for Outstanding Progress in Chemical Engineering, the 2006 AIChE Computing in Chemical Engineering Award, and he was named a Thomson Reuters Highly Cited Researcher in 2014 for the 11 years between 2002 and 2012 and again in 2015. Floudas was a member of the Biophysical Society since 2002.

He is survived by his wife of 30 years, *Fotini*, as well as their daughter, *Ismini*.

—Photo and text courtesy of Texas A&M University

On the Move



Seth H. Weinberg moved from a research faculty position at the Virginia Modeling, Analysis, and Simulation Center at Old Dominion University to an assistant professor position in the Department of Biomedical Engineering at Virginia Commonwealth University in Richmond, Virginia. Weinberg is a member of the Society's Public Affairs and Education Committees.

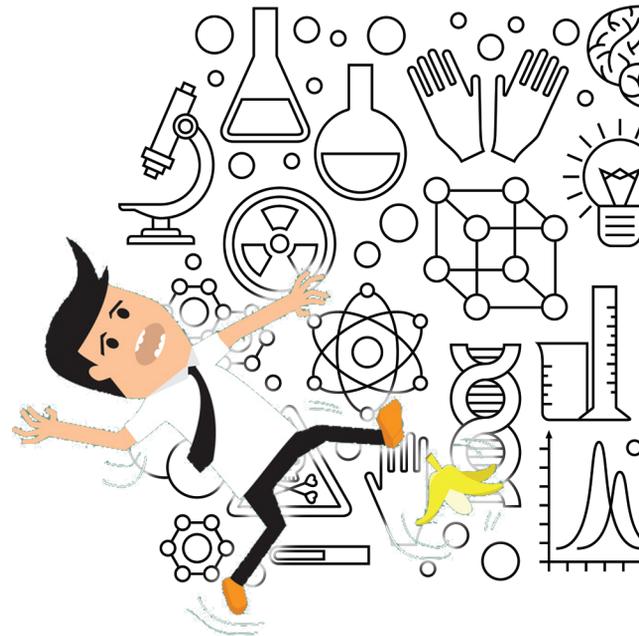
Have you changed positions recently or know of a BPS member who has? Send news of your move to c Curry@biophysics.org.

Avoiding and Recovering from Common Career Mistakes

October 18, 2016, 2:00 PM Eastern

Presenter: Alaina G. Levine

This webinar will focus on the current and expanding crisis in the job and career market for scientists. We will investigate how early-career scientists can best prepare for this challenge, and we will demonstrate how to orchestrate a personal career plan and develop a Plan B and Plan C for contingencies. We will discuss what early-career scientists should do now to enhance their CVs and research reputations, and how they can leverage their grad school experience or a postdoc appointment to set themselves up for success in the field.



Biophysical Society Members: FREE

Non-members: \$15

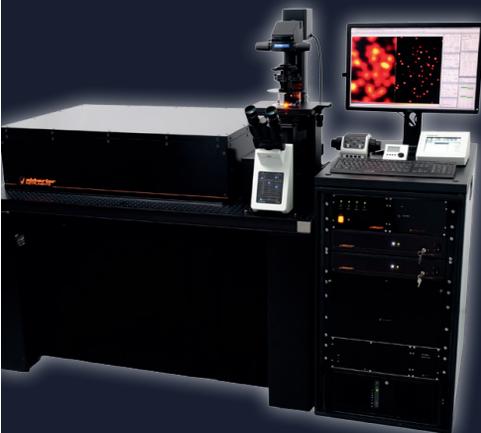
Register Today at biophysics.org/webinars



www.abberior-instruments-america.com

Superresolution Microscopes that Fit Your Needs

Expert Line STED/RESOLFT



- ✓ High-end, customizable
- ✓ Cutting-edge 2D- and 3D-STED
- ✓ Continuously upgradable
- ✓ Multiple STED options
- ✓ Powerful software

Compact Line STEDYCON

- ✓ Compact, rugged, economic
- ✓ Cutting-edge 2D-STED
- ✓ Installation within minutes
- ✓ Fits any microscope body
- ✓ Intuitive software



Confocal

STED



11400 Rockville Pike, Suite 800
Rockville, Maryland 20852

Presorted
First Class Mail
U.S. Postage
PAID
Claysburg, PA
Permit #6

UPCOMING EVENTS

BIOPHYSICAL SOCIETY NEWSLETTER OCTOBER 2016

November

November 24–25

The Road To The Future: Biomedical Research Paving The Way Towards Precision Medicine
Bolzano, Italy

www.eurac.edu/en/research/health/biomed/conferences/Pages/road_to_the_future/titelseite.aspx

November 28–30

Miami Cancer, Epigenetics Symposium 2016
Miami, FL

www.nature.com/natureevents/science/events/45009-Miami_Cancer_Epigenetics_Symposium_2016

December

December 6–7

4th Protein-Protein Interaction
Boston, MA
<https://www.gtcbio.com/conferences/protein-protein-interaction-overview>

December 9

Nobel Dialogue - Your Plate - Our Planet: The Future of Food
Stockholm, Sweden
www.nobelweekdialogue.org/event-info/

January

January 9–14

Molecular Neurodegeneration
Hinxton, United Kingdom
<https://coursesandconferences.wellcomegenomecampus.org/events/item.aspx?e=606>

January 29–February 2

Epigenetics and Human Disease: Progress from Mechanisms to Therapeutics
Seattle, WA
www.keystonesymposia.org/17A9

February

February 3–6, 2017

XIX. Annual Linz Winter Workshop: Advances in Single-Molecule Research for Biology & Nanoscience
Linz, Austria
www.jku.at/conferences/linzwinterworkshop2017

February 24–27

Phase Separation and RNA Processing as Drivers of Cancer and Neurodegenerative Disease
San Diego, CA
www.zingconferences.com/conferences/cancer-neurodegenerative-disease/