

Newsletter

Biophysical Society

MARCH

2016

DEADLINES

Meetings

Liposomes, Exosomes,
and Virosomes

September 11-16
Ascona, Switzerland

March 7
Abstract Submission

March 11
Early Registration

Engineering Approaches
to Biomolecular Motors:

From in vitro to in vivo

June 14-17
Vancouver, Canada

March 13
Abstract Submission

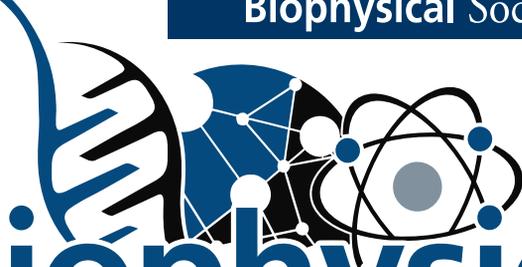
April 6
Early Registration

Mechanobiology of
Disease

September 27-30
Singapore

June 6
Abstract Submission

July 5
Early Registration



Biophysics Week

Biophysics Week is coming in with a bang **March 7–11, 2016**. The very first of its kind, Biophysics Week is a global effort to encourage connections within the biophysics community and raise awareness of the field and its impact among the general public, policy makers, students, and scientists in related fields.

Join in celebrating this special week. There will be daily activities, news, blogs, trivia, quizzes, educational resources, and more! Below is a calendar of special events organized by the Society during this unique week dedicated to you and the field of biophysics.

| | |
|---|---|
| Monday, March 7 1:00 PM EST | Google Hangout: Biophysics Bunch |
| Tuesday, March 8 2:00 PM EST | Career Webinar: Marketing Your Value |
| Wednesday, March 9 12:00 PM EST | Capitol Hill Briefing: Nobel Laureate <i>Michael Levitt</i> |
| Thursday, March 10 | “The State of Biophysics” Special Publication Series |
| Friday, March 11 11:00 AM EST | Cryo-EM Webinar Hosted by Cell Press, sponsored by <i>Biophysical Journal</i> |

Stay tuned throughout the week for daily online posts of trivia questions, articles highlighting women and minority biophysicists, quotes about biophysics from biophysicists around the world, Biophysics Bobbi/y photos, and events being hosted by scientists at institutions worldwide.

The Society looks forward to celebrating this week with you and others around the globe!

biophysics.org/biophysicsweek
[#BiophysicsWeek](https://twitter.com/BiophysicsWeek)

CONTENTS

| | |
|-------------------------|----|
| Biophysicist in Profile | 2 |
| Public Affairs | 4 |
| Get Involved | 5 |
| Biophysical Journal | 6 |
| Thematic Meetings | 8 |
| Student Center | 12 |

| | |
|--------------------------|----|
| Grants and Opportunities | 12 |
| Molly Cule | 13 |
| Subgroups | 14 |
| Obituary | 15 |
| Upcoming Events | 16 |

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Biophysicist in Profile

TAVIARE HAWKINS

Taviare Hawkins, assistant professor of physics at the University of Wisconsin – La Crosse, grew up on the Southside of Chicago. Her father was a mechanical engineer and her mother was an accountant. Hawkins and her siblings were all very math and science oriented as children. She read a book on comets at age six and knew then that she wanted to be an astronomer when she grew up. “NOVA and Carl Sagan’s *Cosmos* were always on TV at our house. We were heavily involved in science clubs and in taking STEM courses,” she shares. Hawkins also attended a math and science magnet high school, Von Steuben Metropolitan Science Center.

After high school, Hawkins attended the University of Iowa, where she received her bachelor of science degree in physics in 1992. Following her undergraduate years, Hawkins worked as a real estate asset manager at Greenthal Harlan Realty Services, as a subcontractor of the Resolutions Trust Corporation, to manage their assets in the Manhattan area. She liquidated their portfolio of New York City and surrounding New Jersey area condominiums and cooperatives during the housing crisis of the early 1990s. “After I had worked myself out of a job and was between vacations,” Hawkins says, “I got a call from my undergraduate mentor at Iowa, *Vincent Rodgers*, professor of physics, asking if I was ready to go back to school. He said he had found a project he thought I would be interested in—and no, it wasn’t in the basement with a bunch of smelly guys—doing some particle/nuclear physics experiments.”

Hawkins did return to school, to Syracuse University, where she earned master’s degrees in computer science and physics. She continued at Syracuse University to pursue her PhD in physics. While working on her dissertation, Hawkins accepted a faculty position. “At the time Hurricane Katrina hit, I was in a tenure-track position at Xavier University of Louisiana in New Orleans while ABD [all but dissertation] at Syracuse. I was spending all of my time teaching, mentoring, and working on my dissertation,” she says. “After the storm led to faculty layoffs, I returned to Syracuse and worked on my dissertation full time. Since I was a good teacher, Mt. Holyoke College recruited me for a visiting faculty position, but I wanted postdoc experience.” She asked that her position be a hybrid teaching and research position with *Jennifer Ross*, then an assistant professor of physics at the University of Massachusetts – Amherst. “I started working with her immediately and, in the following summer,” she says, “I defended my dissertation and I refocused my research from pure computational to also include experimental biophysics.”



Hawkins with UW-La Crosse students, preparing a laser show for local junior high school students.

Hawkins is one of a small number of African American women with a PhD in physics. “I admire Dr. *Shirley Ann Jackson*. She is a theoretical condensed matter physicist, the current president of Rensselaer Polytechnic Institute, and is the second African American woman to earn a PhD in physics,” she says. “My number is around 50, depending on how you count us. There are so few of us in this field. I admire her audacity and tenacity because I know it wasn’t easy.”

After completing her PhD, Hawkins began working with Ross, characterizing the mechanics of microtubules in vitro by measuring the rigidity of the filaments in the presence of various microtubule-stabilizing regulators, (including the chemotherapeutic drug Taxol, nucleotides GMPCPP and GTP- γ -S, and the associated proteins tau and MAP4). “We examined the effect of protein labeling, age, and purification methods on microtubule mechanics,” she explains. “We introduced the statistical analysis technique, bootstrapping, to the problem and provided baseline measurements for Taxol-stabilized microtubules.”

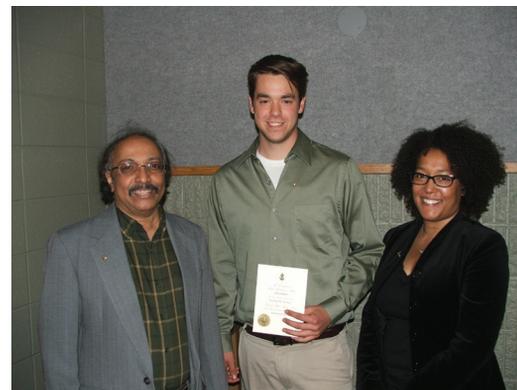
Ross admires Hawkins for her perseverance. “Tav taught me that I didn’t understand struggle or perseverance until I met her,” Ross says. “It’s not that I struggled [while working with her], but I learned how hard it is for a black woman—or man—in science from many discussions with her. There are fewer than 100 black women with PhDs in physics, and Tav is one of them. It is an elite club. I had advisor issues, but I don’t think I could have survived some of the struggles she went through to get her PhD. [...] She inspires me every day.”

Hawkins’ lab is working on several projects, including studying the mechanics of microtubules with lattice defects, and how lattice defects, natural or otherwise, affect the rigidity of microtubules; the effect, if any, post-translational modifications such as high salt and acetylation have on microtubule mechanics; whether trimethylamine N-oxide (TMAO) affects the rigidity of microtubules, and if so, is it a better stabilizer than Dimethyl sulfoxide (DMSO)?

Hawkins’s colleague at the University of Wisconsin, *Jennifer Klein*, assistant professor of biology, was hired in the same year as a new biophysicist. “Tav is brave. She attacks problems with a fearlessness that I find inspiring,” Klein says. “She is a constant advocate for women in science and has led many initiatives on our campus to support female scientists. Tav has a way of seeing right through negativity to what needs to be done to succeed.” Klein and Hawkins are hoping to develop a project-based undergraduate biophysics course “that establishes foundational knowledge in students from diverse academic backgrounds and then quickly moves students into independent research projects in each of our fields,” Klein explains.

In her position at University of Wisconsin, Hawkins manages time between teaching and doing research. “I enjoy teaching and research,” she says. “This job affords me the opportunity to do both, but sometimes it is difficult to change modes quickly.” The challenges are worth it, however, because she finds teaching students to be the most rewarding part of her job. “I just love seeing their responses when they finally realize they understand or see connections in a project or topic they’ve been working on for a while,” Hawkins says. “I hope to continue to educate and train competent students for the biophysics field.”

She emphasizes how important it is, especially for young biophysicists, to stay engaged with their scientific community. “My biggest advice for young scientists would be for them to appreciate the importance of attending meetings for networking and for staying current in their research field,” Hawkins shares. “I attend the Biophysical Society Annual Meeting, and at the meeting I get the opportunity to see and discuss science with old collaborators and to meet new ones.”



Hawkins with physics professor T.K. Pillai and student Cole Paulsen at Sigma Pi Sigma induction ceremony.

Profilee-at-a-Glance

Institution

University of Wisconsin
La Crosse

Area of Research

Filament mechanics and dynamics, computation and microscopy

Public Affairs

National Academies Launches Study on Undergraduate Science Education

The National Academies of Sciences, Engineering, and Medicine has formed a committee to study how science and technology are taught in college, specifically looking at the first two years of undergraduate education. *Mark Rosenberg*, president of Florida International University (FIU), has been selected to lead the effort.

“It’s a special privilege to be asked to lead some of the nation’s top experts who will identify national indicators for science, technology, engineering, and math education at the university level,” Rosenberg said in a statement. “This opportunity recognizes the leading national role being played by FIU faculty in STEM education for urban communities, and is an unprecedented opportunity to impact national STEM education in decades to come.”

The National Academy’s Board of Science Education will conduct the study, in partnership with the Board on Higher Education and the Workforce and the Board on Testing and Assessment. The study is expected to take two and a half years to complete.

New Director Joins Office of Research Integrity

Kathryn M. Partin, who was previously the assistant vice president for research and director of the Research Integrity and Compliance Review Office at Colorado State University, assumed the role of director of the Office of Research Integrity (ORI) at the US Department of Health and Human Services in December 2015.

ORI oversees and directs Public Health Service (PHS) research integrity activities on behalf of the secretary of Health and Human Services with the exception of the regulatory research activities conducted by the Food and Drug Administration. The National Institutes of Health is part of PHS.

USA Science and Engineering Festival



The Biophysical Society is proud to once again participate in the USA Science and Engineering Festival April 15-17, 2016, in Washington, DC, as an official partner and an exhibitor. Referred to as “the Super Bowl of STEM,” the festival attracted over 325,000 visitors the last time it was held in 2014. Those attending have the opportunity to hear from famous science ambassadors like “Bill Nye the Science Guy,” meet working scientists, and learn about science, engineering, and math through hands-on activities. The Society will be taking visitors inside the brain through a film shown in the Biomolecular Dome, as well as conducting a related hands-on activity.

Please spread the word about this incredible event to those who are able to attend. For more information, visit www.usasciencefestival.org

VOLUNTEERS NEEDED: USA Science and Engineering Festival

With thousands of people dropping by the Biophysical Society booth, we are seeking volunteers to help us with the event. Public polls show that many people can’t even name a living scientist, which is why it is great to have you, our members, there to talk to people about what you do and answer general questions about biophysics. If you are local to Washington, DC, or will be in the area mid-April, please contact *Ellen Weis* at eweiss@biophysics.org to volunteer. Thank you in advance!

Get Involved

Networking Event Proposals

Do you have an idea for a networking event and want to hold one in your area? BPS will be accepting networking event proposals until April 15. If selected, you will receive up to \$500 through the Membership Committee's mini-grant program to host your event. For more information about networking events and proposal requirements, visit the membership section of the Society website at www.biophysics.org.

Give a Biophysics Award at Your Local Science Fair

Interested in helping the next generation learn about biophysics? Volunteer to judge at your local science fair and choose a student to win an award for the best biophysics-related project. BPS will provide funding for a student award for every regional or state fair where a BPS member wishes to judge and choose a winner. Award amounts are typically \$100.

Visit <https://www.surveymonkey.com/r/2016sciencefairs> and fill out this form at least three weeks prior to the event to have BPS sponsor an award at your local fair. Contact scifairs@biophysics.org with questions.

Looking for a Job or New Employee in Biophysics?

Are you graduating soon? Are you looking for the next step in your career? Visit the Society Job Board by going to <http://www.biophysics.org/jobs> for a list of active job openings. Employers, don't forget that as a member you receive reduced pricing when posting jobs to the site.

Biophysical Society Thematic Meetings 2016

Engineering Approaches to
Biomolecular Motors:
From in vitro to in vivo
Vancouver, Canada
June 14-17, 2016



Liposomes, Exosomes, and
Virosomes: From Modeling
Complex Membrane Processes to
Medical Diagnostics and
Drug Delivery
Ascona, Switzerland
September 11-16, 2016



Mechanobiology of Disease
Singapore
September 27-30, 2016

For more information visit
www.biophysics.org

Biophysical Journal

Know the Editors



Vasanthi Jayaraman

Vasanthi Jayaraman
University of Texas

Editor, Channels and
Transporters Section

Q: What are you currently working on?

We are studying the conformational dynamics of ligand gated ion channels using fluorescence and vibrational spectroscopies. The goal is to start at the level of ligand protein interactions and understand how these interactions control conformational changes in the protein, and ultimately how these can be correlated to function. We have been able to do these using ensemble measurements and are now working on doing the same at the single-molecule level.

Q: What excites you about your current work?

The advances in Cryo-EM are making it possible to determine structures of a large number of membrane proteins. These structures provide a rich foundation for the dynamic measurements that we do in our lab. Being able to visualize how these molecules move and how that correlates to function and more importantly to do it at the level of single molecules is to me very fascinating.

Q: What has been your most exciting discovery as a biophysicist?

While every little discovery to me is exciting, I still look back with nostalgia to my days as a graduate student when I was working on hemoglobin and was able to use time-resolved resonance Raman spectra to map the complete conformational change starting at the heme and culminating in the classical allosteric transition from the R to the T state. To be able to make the movie of this classical allosteric protein was to me a defining moment.

Q: Who would you like to sit next to at a dinner party?

If it were anyone alive or dead then it would be *Rosalind Franklin*. There are several versions regarding her contributions to the DNA structure and it would be great to be able to hear her version of it and also maybe get a glimpse of what it was like to be a woman scientist in those days. I am sure her tips would be invaluable!

Q: At a cocktail party of non-scientists, how would you explain what you do?

We are looking at how brain cells communicate with each other. The protein we are looking at is like an on switch and a chemical “glutamate” turns the switch on. We are interested in understanding how this small chemical can move a large protein and cause the switch to turn on. Since this switch is critical in processes such as learning and memory, and problems in the switch are involved in pathologies such as stroke or epilepsy, our hope is to understand how this switch works so that we will be in a better position to rationally manipulate the switch to work the way we would like it to work.

Q: How do you stay on top of all the latest developments in your field?

Given their ease, I do rely on the search engines to provide me with updates based on key words and authors. But I still like to browse journals. I try to do this as often as I can and always find something that I would otherwise not have found through the search engines. I guess that makes me old-fashioned!

BJ is now on
Twitter

@BiophysJ

Biophysical *Journal* Call for Papers

Special Issue: Genome Biophysics

Editor: Tamar Schlick, New York University

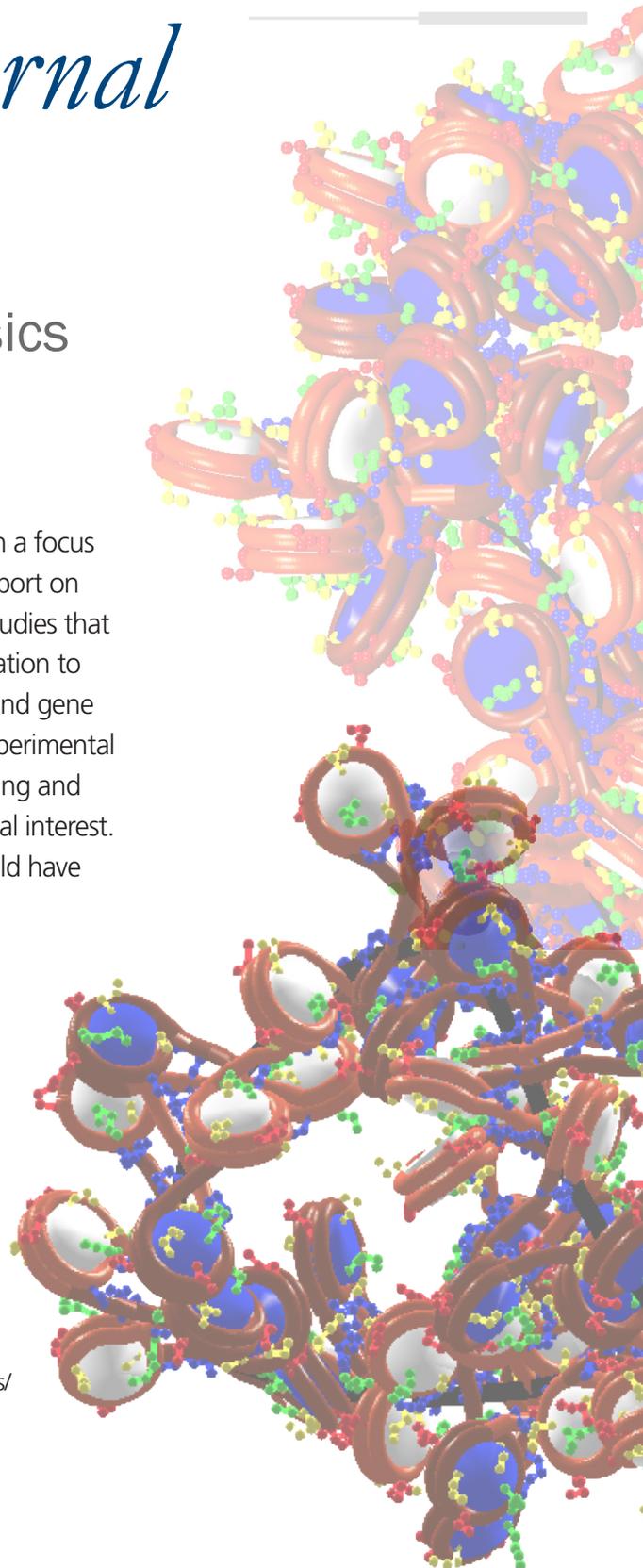
For publication February 2017

Biophysical Journal will publish a special issue of the Journal with a focus on Genome Biophysics. The Journal welcomes submissions that report on advances in the field of Genome Biophysics and its applications. Studies that highlight biophysical aspects of genome organization and their relation to cellular functions such as transcription, translation, development, and gene regulatory mechanisms are invited. Research studies using both experimental and computational techniques on chromatin structural states, folding and function, and the dynamic organization of the nucleus are of special interest. The journal aims to publish the highest quality work. Articles should have significance and appeal to a broad community of biophysicists.

Deadline for submission: July 1, 2016

- Please include a cover letter stating that you would like to be part of the special issue on Genome Biophysics
- Select "Special Issue: Genome Biophysics" when up-loading your submission.
- Instructions for authors can be found at: http://download.cell.com/images/edimages/Biophys/Instructions_to_Authors.pdf
- Journal publication fees will apply
- Questions can be directed to the BJ Editorial Office at BJ@biophysics.org or (240) 290-5545.

To submit, visit biophysj.msubmit.net



Thematic Meetings

Polymers and Self Assembly: From Biology to Nano- materials

In October of 2015, the Biophysical Society co-sponsored a thematic meeting with Brazilian funding agencies in Rio de Janeiro on polymers and self assembly, bridging themes from biology to nanomaterials.

The meeting brought together biophysicists who study protein polymers — both those occurring normally, such as bacterial flagellar filaments, F-actin and microtubules, and those occurring pathologically, such as amyloid — with materials scientists, chemists, and physicists who work on synthetic peptides, polymers, and designed structures. The emphasis of the meeting was on the structure and dynamics of self-assembled polymers using state-of-the-art techniques, with a special focus on Cryo-EM, which has enjoyed great advances in the last few years and now allows many supramolecular structures to be readily solved at near-atomic resolution.

On a sunny afternoon in Rio de Janeiro at the Copacabana beach, speakers and attendees got together in an informal reception well tempered with classical and bossa nova Brazilian music. The following day, the meeting opened with comments from *Edward Egelman* and *Jerson Silva*, members of the organizing committee. The first two sessions were devoted to protein polymers.

The first talk by *Gillian Fraser*, *Building a Flagellum on the Bacterial Cell Surface*, elegantly addressed the problem of how during flagellum assembly, unfolded subunits destined for the growing structure are exported across the cell membrane. Beautiful NMR data were presented to illustrate structural changes in the membrane export machinery as flagellar subunits bind prior to capture into the export chain. This lecture was followed by *Self-Assembly of Actin in Cell Motility: From Molecules to Movement*, presented by *Marie-France Carlier*, and *Cation Release Modulates Actin*

Filament Mechanics and Drives Severing Vertebrate Cofilin, presented by *Enrique De La Cruz*. The two talks aptly illustrated how the assembly of actin into helical filaments controls many eukaryotic cell movements and the action of cofactors.

The last talk of the morning session, *Filament Capping Regulates the Bacterial Tubulin-like Cytoskeleton*, was delivered by *Frederico Gueiros Filho* and provided an excellent example of how FtsZ, the tubulin ortholog of prokaryotes, orchestrates cell division in bacteria and how it is regulated by peptide (MciZ).

Session II, on protein polymers, began with *Edward Egelman's* talk *Cryo-EM of Protein Polymers at Near-Atomic Resolution Yields New Insights*, a fabulous overview of the recent advances of Cryo-EM toward solving the structure of biological polymers. *Richard Garratt* explained *How to Build a Septin Filament*, addressing the rules that support spontaneous filament assembly with the aid of crystallographic approaches and other biophysical methods. Still focused on the mechanisms of filament assembly in bacteria, *Robert Robinson* presented *The Varied Geometries of ParM Cytomotive Filaments in Bacterial Plasmid Segregation*. The afternoon session ended with *Kildare Miranda's* *Asymmetry of Polyphosphate Polymers in Ion-rich Organelles*, showing how inorganic polyphosphate polymers have proven to play important roles in cell physiology.

Session III switched gears, centering on the theme From Silk to Amyloid. Two lectures set the tone on the mysteries of spider silk, the first by *Anna Rising*, *Spider Silk Assembly Is Mediated by a Lock and Trigger Mechanism*, and the second by *Jan Johansson*, *Development of Recombinant Spider Silk Proteins with Tunable Assembly Properties for Biomimetic Spinning*. These talks illustrated the amazing mechanical properties of protein-based silks and how they can serve as a basis for the development of novel biomaterials. The next talks further developed the idea of using biopolymers and amyloids as biomaterials, with *Thomas Scheibel's* talk *Structural Protein: Self-Assembling Biopolymers for Various Applications* and *Guil-*

laume Lamour laying out the *Nanomechanics of Amyloid-like Polymers Made of Self-assembled Mouse Prion Proteins*. The next four talks delved into the dynamics, energetics, and structure of amyloid fibrils and precursors, with *Louise Serpell*, *Exploiting Amyloid Fibrils as Functional Bionanomaterials*, *Jerson Silva*, *Hydration and Cavities in Amyloid Fibrils and Oligomers Modulated by Hydrostatic Pressure*, *Cong Liu*, *Structure-based Designs of Amyloids with Novel Function for Nanomaterials*, and *Francesco Ruggeri*, *Amyloid Structural and Nanomechanical Characterization at the Individual Aggregate Scale*. Ranging from the devastating consequences to human health that result in neurodegenerative diseases and cancer, to potential applications as bionanomaterials, these talks provided news of the state-of-art of the amyloid field.

The first two talks of Session IV continued to explore mechanistic and structural aspects of protein misfolding diseases, with *Debora Foguel*'s presentation, *Transthyretin-related Diseases: From the Patient to the Protein*, and *Monica Freitas*'s presentation, *Protein Misfolding Pathways Probed by Solution and Solid-State NMR*. The session ended with *Jean-Marie Ruyschaert*'s talk, *Lipid Nanoparticles and Amyloids Activate Receptors of the Innate System*.

The following day was dedicated to the topic of design of peptide/protein polymers. The first three talks addressed the challenge of imitating life to create new self-assembling materials as well as potential applications in materials science and medicine, with *Dek Woolfson*, *New-Peptide Based Assemblies and Materials by Design*, *Vince Conticello*, *Protein Assemblies by Design*, and *Alline Miller*, *Self-Assembling Peptide-based Materials for Regenerative Medicine*.

All the problems related to designing bionanomaterials were laid out by speakers using different strategies. *Akif Tezcan*'s talk, *Protein Self-Assembly by Rational Chemical Design*, showed how metal coordination and disulfide bonding can be useful. *Joel Schneider*, *Racemic Hydrogels from Enantiomeric Peptides: Predictions from Linus Pauling*, reported that hydrogel materials can be prepared from self-assembling beta-hairpin peptides. *Maité Paternostre*, *pH Dependent Peptide Self-Assemblies: A Mechanism as Old as Viruses* showed a decapeptide that self-assembles into nanotubes with different properties depending on pH, a property shared by viral structures.

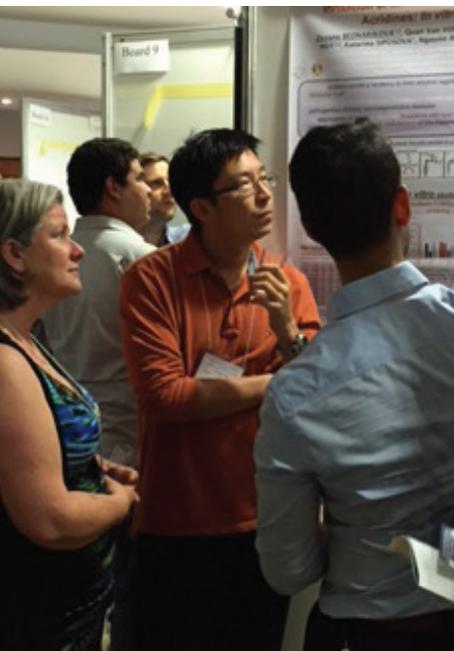
The last two talks of the day were *Ivan Korendovych*, *Short Peptides Self Assemble in the Presence of Metals to Produce Catalytic Nanomaterials* and *Gina-Murela Mustafa*, *Designing Peptides Self Assemble on Graphene to Create Remarkably Stable, Precisely Organized Structures*.



Meeting attendees representing 18 countries participated in the four-day meeting consisting of seven plenary sessions, and lots of opportunities for discussion and sharing of research.

By the Numbers

BPS thematic meetings have been held on five continents and in 11 different countries since their inception in 2010.



Over 47 abstracts were submitted for poster presentation.

The last day was devoted to bio-inspired polymers. *Cait MacPhee's* talk, *Bacterial Strategies for Protein Self-Assembly at Interfaces*, and *Sarah Perrett's* talk, *Self-Assembly of Protein Nanofibrils That Display Active Enzymes*, both provided excellent examples of how polymers and nanofibrils can display their wares in terms of function. Not only does nature use the good amyloids, but also this can be exploited by humankind for potentially self-assembling materials with diverse functions, such as enzyme immobilization. *Markus Weingath* continued in the same line to show how nanovesicles self-assembled from amphiphilic peptides have promising applications in drug delivery, in his lecture, *The Supramolecular Organization of a Peptide-based Nanocarrier at High Resolution*.

And a good example of putting together nature and human design was provided by *Ting Xu* in *Hybrid Biomaterials Based on Natural and Synthetic Polymers: From Basics to Applications*. In the same vein, *Ronald Zuckermann* presented excellent examples of bio-inspired polymeric applications, lecturing on *Synthesis, Folding, and Assembly of Sequence-defined Peptoid Polymers*, while *Jon Parquette* explored *Immobilization of RubisCO by Self-assembled Nanotubes*.

The challenge of designing new material for biomedical and engineering application was the focus of the last talks of the meeting, with *Mibel Aguilar*, *Supramolecular Self-Assembly of β -Peptides: New Materials with Tunable Morphology and Chemical Function*, *C. Jeffrey Brinker*, *Inorganic Polymerization at Cellular Interfaces*, *Tom Russell*, *Interfacial Assembly of Synthetic and Natural Nanoparticles*, and *Dave Adams*, *Multi-component Supramolecular Hydrogels*.

There were two poster sessions with nearly 80 poster presentations. The meeting ended with the announcement of the Biophysical Journal Poster Awards by *Enrique de La Cruz*.

The banquet at Churrascaria Fogo de Chão was an opportunity for the attendees to taste Brazilian cuisine. There was also an excursion to Corcovado and the surrounding area, providing an occasion for the attendees to enjoy the wonders of Rio de Janeiro, with its beaches and mountains, that have earned it the title Marvelous City. We are sure that these social activities inspired many rich discussions, novel ideas, and collaborations.

The meeting was a great success, encouraging lively exchanges among junior and senior researchers.

—*Jerson Silva*, Federal University of Rio de Janeiro, Brazil, on behalf of the organizers:

Vince Conticello, Emory University, USA
Edward Egelman, University of Virginia, USA
Louise Serpell, University of Sussex, United Kingdom
Ting Xu, University of California, Berkeley, USA

Biophysics in the Understanding, Diagnosis, and Treatment of Infectious Diseases

In November of 2015, the Biophysical Society sponsored a thematic meeting on the understanding, diagnosis, and treatment of infectious diseases. The meeting was held at the Spier Winery in Stellenbosch, South Africa. As participants arrived in South Africa they were immediately greeted by the refreshing weather, beautiful landscape, and wonderful food and drink. The location of the meeting was carefully chosen in relation to the topic. Africa has some of the highest rates of mortality due to infectious diseases; therefore, it was particularly impactful to have an entire conference discussing novel biophysical approaches to combat these issues.

Each day was organized either around a specific disease or area of biophysics. The meeting brought together a broad range of experts whose fields ranged from crystallography to Cryo-EM to molecular biology. The majority of speakers focused their presentations on their work against tuberculosis, malaria, or HIV/AIDS.

The meeting also served as a platform to facilitate discussion both during and in-between sessions. Of the 103 attendees, 33 students from South Africa were also able to attend. This was an exceptional setting for students, who would not normally have direct access to authorities in such diverse areas of biophysics, to learn from and interact with experts in biophysics. Furthermore, several speakers report that the meeting stimulated the development of new collaborations.

The meeting's organizing committee members included *James Sacchettini*, Texas A&M University, United States, and *Trevor Sewell*, University of Cape Town, South Africa.

—*James Sacchettini*, Texas A&M University



Biophysical Society 61ST Annual Meeting

February 11–15, 2017
New Orleans, Louisiana

National Lecturer: Eric Betzig

Housing Opens: March 14

biophysics.org/2017meeting

Student Center



Martin Fossat

Martin Fossat

Department of Biological Sciences

Rensselaer Polytechnic Institute,
Department of Biological Sciences, Troy, NY

Q: What led you to study biophysics?

I decided to follow biophysics after three years of physics undergraduate studies in France. My original interest in science came from astronomy, a subject about which I read a lot when I was a teenager. One of my favorite books included a full description of the steps separating the big bang from humans, from stellar formations to evolution. I have always been fascinated by understand-

ing the world we live in and the reason that we exist. Eventually, I grew tired of pure physics because the field leans more toward technological advances. Having reached a significant level of understanding, I decided to get a master's degree in biophysics because it is a large field and there is so much to explore in biology in order to answer questions about the mechanisms of life. This was, for me, a whole new horizon of thoughts to explore.

Student Center is a new feature in the Newsletter, where student members can share their experiences on how they decided to enter the field of biophysics. Send a photo and your answer to CCurry@biophysics.org.

Grants and Opportunities

Phase I Research on Research Integrity

Objective: To foster innovative approaches to empirical research on societal, organizational, group, and individual factors that affect, both positively and negatively, integrity in research.

Deadline: April 22, 2016

Website: <http://www.grants.gov/custom/viewOppDetails.jsp?oppId=280999>

Conferences on Research Integrity

Objective: To aid in the development of multi-disciplinary networks to build upon existing evidence-based research and stimulate innovative approaches to preventing research misconduct and promoting research integrity.

Deadline: April 22, 2016

Website: <http://www.grants.gov/custom/viewOppDetails.jsp?oppId=280981>

Nominate your Colleague

2017 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

biophysics.org/awards

Molly Cule

When used properly, social media tools—particularly Twitter and LinkedIn—can be a powerful medium for scientists, students, postdocs, and faculty alike. They can be used for networking, finding collaborators, promoting your work, connecting with job opportunities, and more. This article provides some general tips and guidance for using Twitter and LinkedIn to your advantage.

Twitter:

Twitter is a great platform for following scientific trends, whether in your own field or others. Scientists in some fields like genomics and bioinformatics are very active on Twitter—sharing details of their research, commenting on newly published work, recruiting graduate students, postdocs, or even getting help on scientific protocols!

- Take advantage of the list feature on Twitter – have several different lists following key people and organizations. There are pre-existing lists online of the most influential science-related accounts such as one put together by *Science*, (<http://ow.ly/Yrcsf>), and one published by the Sanford Burnham Prebys Medical Discovery Institute (<http://ow.ly/Yrcy3>). Also follow Twitter accounts of companies and institutions with which you are interested in finding a job.
- Scientific conferences are a great venue to find people in your own field who are active on social media. Check out the official hashtag for the conference or meeting and follow it both before and during the conference. Promote your poster or talk using the hashtag.
- When you post or re-tweet make sure to add some thoughtful, original commentary. Think about the value you can add to the discussion.

- As in your scientific publications, always give credit or references when applicable, via hyperlinks.
- Keep your scientific and personal profiles slightly different. You don't have to talk exclusively about science or work on Twitter, and in fact it is useful to have your personality show through, for example, if you have an interesting hobby. But don't make it all photos of your brunch, however delicious it might look.

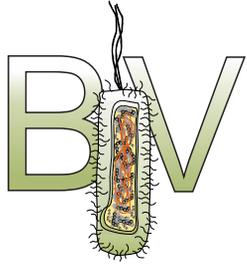
LinkedIn:

LinkedIn's major value is in job searching, especially in industry. In addition, LinkedIn features such as Groups, Pulse, and Share, are useful tools for keeping up with the latest trends and news.

- Have a photo on LinkedIn – make sure it looks professional (no vacation pictures from Hawaii). First impressions really do matter.
- Be succinct and to the point in your profile. Make sure that you use keywords to highlight your skill sets – recruiters find candidates by searching for keywords. Check out job ads to figure out which keywords you should use.
- Do not be shy in reaching out to people on LinkedIn (or Twitter) – the worse they can do is ignore you. That being said, be courteous and cognizant of the fact that everyone leads a busy life. If you are connecting with someone for the first time, do not start the conversation asking for a job.
- If you make a new connection at a conference or networking event, connect with the person on LinkedIn as soon as you can. When sending the invitation to connect, add a few customized lines to replace the default message with a more contextual greeting, for example, "it was great talking to you about single molecule imaging at the Biophysical Society meeting in LA last week."



Molly Cule
Advice



Subgroups

Biopolymers in Vivo

A million thanks to all who attended the Biopolymers in Vivo Symposium on Subgroup Saturday of the Annual Meeting! If you are not already a member of the subgroup – and if you enjoyed our speaker presentations and want to hear equally outstanding talks in the future – we urge you to become an official member. Subgroup membership is free for students and just \$20 for the rest of us. Society members can join the BIV subgroup at any time by completing the online form or paper application found on the BPS subgroup homepage: www.biophysics.org/Membership/Subgroups/tabid/103/Default.aspx.

In the most recent budget year, membership dues covered only 15% of our operating expenses, making BIV largely dependent on corporate sponsorships. Simply put, Biopolymers in Vivo needs more members to maintain its high profile.

Another fun way to support the Subgroup is to buy clothing or gifts that feature the BIV logo. Chair *Gary Pielak* and past-chair *Martin Gruebele* were both seen sporting their BIV shirts in Los Angeles. Rumor has it that Gary was asked for his autograph while touring Beverly Hills in his logo apparel. If you want to be (mistakenly) identified as a celebrity, or simply need a unique gift for a lab mate or colleague, then please visit the BIV store where 10% of your purchase is returned to the Subgroup: www.zazzle.com/biopolymers_in_vivo.

—*Daryl K. Eggers*, Subgroup Secretary-Treasurer

Motility

This has been a banner year for the Motility subgroup as three of our members won major BPS awards: (more information on these and other 2016 BPS awards can be found at <http://www.biophysics.org/AwardsFunding/SocietyAwards/Awardees/tabid/5497/Default.aspx>).

Sophie Dumont won the Margaret Oakley Dayhoff award, honoring her “significant contributions to the understanding of cell division through the development of the first cell division system for concurrent mechanical and molecular perturbations and nanometer-resolution imaging.”

Yale Goldman (former Society president, past subgroup co-chair and subgroup keynote speaker) won the Distinguished Service Award “in recognition of his innovative scientific research, effective and generous mentoring, administrative leadership in the Society, and serving as a role model for biophysicists for over four decades.”

Steve Block (former Society president and national lecturer, past subgroup keynote speaker and subgroup chair) won the Founder’s Award for his “achievements in single molecule biophysics and his introduction of the optical tweezers to the scientific community.”

—*Charles Sindelar*, Subgroup Co-chair



Obituary



Kamal Shukla

Molecular Biophysics lost a hero, a leader, and above all, a friend.

Kamal Shukla arrived at the National Science Foundation (NSF) in 1990 with one grand vision — it was time to change molecular biophysics. This is what he accomplished during his 25 years as a program director in Molecular Biophysics at the Division of Molecular and Cellular Biosciences. Molecular Biophysics has not only completely changed, but has impacted many other areas of science. Thanks to Kamal Shukla, we are now a much broader community where scientists from many areas in the physical and life sciences work together. This unprecedented collaboration has revolutionized many important areas in the life sciences. Our scientific careers have been impacted and completely transformed by him. In his passing, we all lost a hero, a leader and above all a friend.

It is no exaggeration to state that Shukla was singularly responsible for the grand vision to bring the seemingly unrelated fields of biology and physical sciences together. He tirelessly promoted this vision by synergizing a diverse community of scientists from physics, chemistry, and biology to create a large group of researchers who are now working on a bewildering array of cutting-edge problems in biology using the most rigorous tools in the physical sciences. Shukla facilitated this transformation for a quarter century with input from the community, and in the process encouraged scientists in all stages of their careers, especially young scientists. What he accomplished is nothing short of extraordinary. Science at the interface of the physical and life sciences is now one of the most exciting research areas, and Kamal created the proper conditions for the development of this field starting many years ago when few people understood the importance and potential of the field.

One of Shukla's most impressive attributes was his deep engagement with the scientific community through direct discussions and participation in key

scientific meetings. He was fully aware of the cutting-edge problems as seen by individual scientists. Because he had an extremely broad perspective and understanding, more than any individual principal investigator, he routinely saw what was possible in the future. He had an uncanny ability to identify leaders of the field when they were young and just starting their career. Many of the successful scientists in molecular biophysics started their career with the sole support of Shukla's program at the NSF. His achievements within the National Science Foundation are legendary. A National Academy report highlights the Grand Challenges of research at the intersection between physical and life sciences. Shukla best personifies the spirit of that report because he catalyzed interdisciplinary research at that interface for several years. With disarming personal charm, Shukla brought together scientists of different stripes and forged connections between program directors in biological and physical sciences.

His premier achievement was the creation of the NSF program, Research at the Interface of the Biological, Mathematical and Physical Sciences (BioMaPS). This is now foundation-wide. Kamal Shukla started to lay the ground work several years ago by working with *Denise Caldwell* from the physics division on the need for fostering research at this interface. This effort grew at the NSF; it is now recognized as a priority and success at the NSF and has its own funding. This would have never happened without Kamal Shukla. In 2015, he was awarded the Biophysical Society Distinguished Service Award for "his tireless efforts in promoting research at the interface between the biological and physical sciences and exceptional leadership in uniting scientists from across many Directorates at the National Science Foundation."

Life will be difficult without Kamal. We will miss him deeply, but he will be remembered and his influence on our community will last forever.

Thanks Kamal for all you did!

José Onuchic, Susan Marqusee, and Dave Thirumalai



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UPCOMING EVENTS

BIOPHYSICAL SOCIETY NEWSLETTER MARCH 2016

May

May 15-20

Rethinking Functions, Revealing Mechanisms, Developing Medicines

Lucca, Italy

<https://www.grc.org/programs.aspx?id=12373>

May 16-20

7th Workshop on Neutron Scattering Applications in Structural Biology

Oak Ridge, TN

<https://conference.sns.gov/event/15/>

June

June 5-9

Autophagy: Molecular and Physiological Mechanisms

Whistler, Canada

<http://www.keystonesymposia.org/index.cfm?e=Web.Meeting.Summary&meetingid=1381&subTab=summary>

June 19-24

Adhesion: The Cellular Basis of Tissue Homeostasis and Dysfunction

Lewiston, ME

<https://www.grc.org/programs.aspx?id=12926>

July

July 3-8

Single-Molecule Microscopy: Life at a Higher Resolution

Hong Kong, China

<https://www.grc.org/programs.aspx?id=14331>

July 14-29

Plasmas with Complex Interactions - Exploiting the Non-Equilibrium

Andover, NH

<https://www.grc.org/programs.aspx?id=12574>

August

August 1-3

2nd International Conference on Parasitology

Manchester, United Kingdom

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

August 22-23

6th International Conference on Bioinformatics

Pennsylvania, PA

<http://bioinformatics.conferenceseries.com/america/>