

Newsletter

Biophysical Society

May

2012

DEADLINES

Weak Protein-Ligand Interactions

October 14–18, 2012
Beijing, China

June 11
Abstract Submission
July 12
Early Registration

Lipid-Protein Interactions in Membranes

November 1–5, 2012
Hyderabad, India

July 8
Abstract Submission
August 15
Early Registration

57th Annual Meeting

February 2–6, 2013
Philadelphia, Pennsylvania

October 1, 2012
Abstract Submission

Video Contest

June 15
Member Voting

2013 Thematic Meeting: Membrane Protein Folding



May 19–22, 2013
Seoul, South Korea

The 2013 BPS Thematic Meeting, organized by Society members *Karen Fleming* of Johns Hopkins University and *James Bowie* of UCLA, will bring together researchers in the membrane protein folding field. Co-sponsored by the Biophysical Society and the Korean Institute for Advanced Study (KIAS), the meeting will focus

on fundamental aspects of how membrane proteins fold ranging from physical chemistry (in vitro and in silico) to aspects of folding in the cell. In addition, the meeting will feature practical implications of protein folding such as protein design, stabilization and misfolding in disease.

A call for 2014 Thematic Meeting topics will be sent to all Society members in June of this year.

Weak Protein-Ligand Interactions: New Horizons in Biophysics & Cell Biology

October 14–18, 2012
Beijing, China

Speakers and deadlines on page 6

Lipid-Protein Interactions in Membranes

November 1–5, 2012
Hyderabad, India

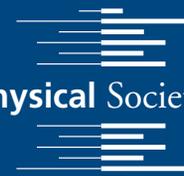
Speakers and deadlines on page 7

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Grants and Opportunities

Name: Eppendorf & Science Prize for Neurobiology

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

Who May Apply: Neurobiologists with advanced degrees received in the last ten years and not older than 35 years of age.

Application Deadline: June 15, 2012

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

Name: P&G's Focusing on Industrial Recruitment of Scientific Talent (FIRST) Conference

Objective: To give top early career scientists a broad overview of research in industry as well as an opportunity to network and interact with P&G managers.

Who May Apply: Primarily intended for African American, Hispanic, and Native American doctoral and postdoctoral scientists from STEM disciplines who want to learn more about industrial research careers. Other qualified candidates, including foreign nationals, also will be considered for participation. Applicants must have a doctoral degree or expect to receive one within 9–12 months of the conference date.

Application Deadline: June 30, 2012

Website: http://us.experiencepg.com/home/phd_first_conference

Members in the News



Jack Szostak of Massachusetts General Hospital and Society member since 2004 received the 2011 Harold C. Urey Medal from the International Astrobiology Society.



Helen Berman of Rutgers University and Society member since 1980 is the recipient of the Protein Society's Carl Brändén Award.



Charles Brooks of the University of Michigan and Society member since 2007 received the Hans Neurath Award from the Protein Society.



Barry Honig of Columbia University and Society member since 1979 received the Protein Society's Christian B. Anfinsen Award.



Michael Sheetz (left, upper picture) of Columbia University and Society member since 1984 and **James Spudich** (left, lower picture) of Stanford University and Society member since 1981 were awarded the 11th Annual Wiley Prize in Biomedical Sciences, along with Ronald Vale of the University of California, San Francisco.



Frances Separovic of the University of Melbourne and Society member since 1985 was elected Fellow of the Australian Academy of Science.

The Market Leading Back-illuminated EMCCD Camera

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The New iXon Ultra

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Biophysicist in Profile

Taner Z. Sen

"I first met Taner at the stairs of the Engineering Building at Bogazici University," says *Burak Erman*, a professor in the Department of Chemical and Biological Engineering at Koc University, of Taner Z. Sen, Computational Biologist for the United States Department of Agriculture Agricultural Research Service (USDA-ARS) and Collaborator Assistant Professor in the Department of Genetics, Development and Cell Biology at Iowa State University. "He introduced himself to me, then asked me what he should do to become a great scientist." Coming from Sen, the question was perfectly natural. Sen's childhood brimmed with science experiments, encouraged by his mother, an elementary school teacher. She demonstrated that water expands when it freezes

by filling two containers, freezing one, and leaving the other at room temperature. "After being amazed by this simple experiment, I started putting all kinds of mixtures in the freezer," Sen says. He froze everything from sugar to oil to fruit flies and observed the effects. He read insatiably, finding role models in *Science and Technology*, published by the Scientific and Technological

Research Council of Turkey. "In each issue, there was a biographical section about famous Turkish scientists, and I thought I could be a scientist just like them," Sen says. By the time he entered Bogazici University as a freshman majoring in chemical engineering, Sen knew just where to look for a flesh-and-blood mentor. "I didn't know why he took for granted that I knew the answer," says Erman. "Out of many possible answers, I only said he should first become a good student!"

Sen, already a student by nature, began working in Erman's lab in the Polymer Research Center at Bogazici University the following summer.

He stayed on in the lab to complete his master's degree, working on a number of ongoing projects involving polymer science, rubber elasticity, and local chain dynamics and performing simulations of synthetic polymers. The projects were in collaboration with *Ivet Bahar*, now *John K. Vries* Chair in Computational & Systems Biology at the University of Pittsburgh School of Medicine. "Under the leadership of Ivet Bahar and Burak Erman, the Polymer Research Center was this exciting, intellectually stimulating place for physical and biophysical computational research," Sen says. A serious student and a hard worker in the lab, Sen continued to enrich his scientific training by reading not only academic papers, but poetry, philosophy, and literature. He encouraged his lab mates to do the same. "Taner has that extra dimension where he looks at life also from a philosopher's eyes," says Erman, "a dimension which 99% of the students and colleagues I met during my academic career happen to lack."

In addition to his experience in Erman's lab, a side project during his master's work involving quantum chemical modeling of asparagine deamidation in collaboration with *Viktorya Aviyente* convinced Sen that he indeed loved computational science. He was drawn to "being able to express the biological phenomena with mathematical equations," he says. "You have to always make a myriad of assumptions, and sometimes some of them are incredibly wrong, but mathematizing a problem grants you a predictive power and allows you to generate testable hypotheses." While working on his PhD in Polymer Engineering at the University of Akron in Ohio, he decided to do some experimental work to complement his computational training. He then took a postdoc position at Iowa State University in *Robert Jernigan's* lab, working in collaboration with *Andrzej Kloczkowski* on protein dynamics, interactions, and networks. "Taner was always fully responsible, reliable, and reputable in every way," Jernigan says. "I knew I could always trust anything that he had done."

"Being a government research scientist is a great thrill. There may be less freedom in research subjects compared to academia, but knowing that your research is useful to others is very fulfilling."

—Taner Z. Sen

Working on a variety of projects with a variety of people primed Sen for the position he holds today at the USDA-ARS and Iowa State University. “My research is advancing on many different fronts,” he says. “I am working on building a metabolic network for maize; understanding the origins of thermostability in endoglucanases, which are crucial enzymes for biofuels; predicting hub proteins as part of biological networks; and tailoring polymer-protein interactions on a molecular level for medical applications.” Each project is undertaken with a different collaborator. “Building collaborations and being aware of what is going on at the forefront of biophysics have helped my career tremendously,” Sen says. One of Sen’s collaborators, *Andrew Rader*, Assistant Professor in the Department of Physics at Indiana University-Purdue University Indianapolis, annually doubles as his roommate during the Biophysical Society (BPS) Annual Meeting. “We would discuss various projects we were working on or thinking about as we walked back to the hotel room,” Rader says. These chats led to in-depth calculations in between scientific sessions and left both parties with work to do in the interim. “When we got together the next year we realized we were both looking at protein thermostability from slightly different perspectives, he more bioinformatically and I more structurally,” Rader says. Their complementary analysis resulted in at least one paper.

Sen makes a point to foster new collaborations among those he mentors as well. *Ragothaman Yennamalli*, now a postdoc at University of Wisconsin-Madison, was Sen’s very first postdoc. Sen exposed Yennamalli to a variety of projects with several collaborators, including Rader, like *Jeffrey Wolt*, *Eve Wurtele*, *Ling Li*, and *Marit Nilsen-Hamilton*. “He introduced me to people in his professional network, thereby expanding my network,” says Yennamalli. “If he is excited about a topic or subject, his enthusiasm is contagious to people around him.” Now Sen and Yennamalli are collaborators, using molecular dynamics simulation to further study endoglucanase and to understand its relation to thermostability. “Taner is a serious guy but is also always ready with a laugh and to make or appreciate a joke,” says Nilsen-Hamilton, one of Sen’s more recent collaborators. “This makes our collaboration so much more enjoyable.”

Sen’s position centers around collaboration, but not only with fellow researchers. “In a government lab, different practices exist depending on the agency and the research groups,” he says. “From my experience working in the USDA-ARS, research priorities are directed by the stakeholder groups. These stakeholders can be scientists working with a particular species, or industry groups representing, for example, breeders.” Though Sen takes his cue from the stakeholders, there’s some wiggle room for actually getting the job done. “The stakeholders do not guide day-to-day activities of scientists, but rather provide broad general guidelines for the agency, which are implemented in 5-year project plans of individual research groups,” he says.

When he’s not ensconced in his daily activities in the lab, Sen volunteers. He’s a member of the BPS Public Affairs Committee, which works to strengthen communication between scientists and the general public. He talks to high school students about their science projects in the State Science & Technology Fair of Iowa each year when he serves as a judge for the organization, helping to generate a positive experience for students considering careers in the sciences. “I am planning to write a career guide for young scientists to share my experiences in science,” he says. “I want to help students become better prepared to gauge their career options and expectations.” Sen hopes that such a career guide will educate students about available career options in science in academia, government, and industry. Chances are that Sen’s six-year-old son Burak will be well prepared himself, should he choose a scientific career: Sen’s kitchen serves as a makeshift lab for the science experiments he and Burak conduct together.

“We are computationally more capable today to model biological systems than ever before,” he says. Even so, the system isn’t perfect—something that Sen intends to change for the better. “Overcoming the hurdles in analyzing and integrating experimental outcomes will enable better modeling of biological interactions and energetics,” he says, “which in turn will provide a better understanding of how molecular phenomena give rise to phenotypes that are beneficial to medicine, energy, and the environment.” In his position, he is well placed to truly make a difference.



Taner Sen playing chess with his son Burak.



Taner Sen and his son Burak conducting science experiments in Sen’s kitchen.

2012 Thematic Meetings

Weak Protein-Ligand Interactions: New Horizons in Biophysics & Cell Biology

October 14–18, 2012, Beijing, China

The Biophysical Society, the Institute of Biophysics of Chinese Academy of Sciences, and the Biophysical Society of China are jointly organizing a meeting, *Weak Protein-Ligand Interactions: New Horizons in Biophysics and Cell Biology*, which will be held October 14–18, 2012 at the Friendship Hotel in Beijing, China. This meeting will emphasize technological advances and applications in studying weak protein-ligand interactions, using a variety of cutting-edge biophysical, biochemical, and cell biology techniques.

Abstract Submission Deadline: June 11, 2012

Some speakers will be selected from among submitted abstracts.

Speakers

Alexandre Bonvin, Utrecht University, The Netherlands

Marie-France Carlier, National Center for Scientific Research, France

Jack Greenblatt, University of Toronto, Canada

Angela Gronenborn, University of Pittsburgh

Dorit Hanein, Sanford-Burnham Medical Research Institute

Lan Huang, University of California, Irvine

Hualiang Jiang, Shanghai Institute of Materia Medica Chinese Academy of Sciences, China

Tom Kerppola, University of Michigan

Carolyn Larabell, University of California, San Francisco

Gil Lee, University College Dublin, Ireland

Rong Li, Stowers Institute for Medical Research
Yunyu Shi, University of Science and Technology of China

Dmitri Svergun, European Molecular Biology Laboratory, Germany

Gerhard Wagner, Harvard University

Erich Wanker, Max Delbrück Center for Molecular Medicine, Germany

Clare Waterman, National Institutes of Health

Mingjie Zhang, Hong Kong University of Science and Technology



Lipid-Protein Interactions in Membranes

November 1–5, 2012, Hyderabad, India

Sponsored by the Biophysical Society, the *Lipid-protein Interactions in Membranes: Implications for Health and Disease* meeting will take place in the Centre for Cellular and Molecular Biology (CCMB) in Hyderabad, India. This meeting will focus on contemporary issues in this area with special emphasis on lipid interactions of membrane proteins and possible implications in health and disease. The meeting will provide novel information and insight into membrane processes by bringing together the minds of leading researchers across various area of contemporary membrane research.

Abstract Submission Deadline: July 8, 2012

Speakers

Mibel Aguilar, Monash University, Australia

John E. Baenziger, University of Ottawa, Canada

B. George Barisas, Colorado State University

Francisco J. Barrantes, Pontificia Universidad Católica, Argentina

Andrew Brown, University of New South Wales, Australia

Amitabha Chattopadhyay, Centre for Cellular & Molecular Biology, India

Andrew H. Clayton, Swinburne University, Australia

Diego de Mendoza, Universidad Nacional de Rosario, Argentina

William Dowhan, University of Texas Medical School at Houston

Sadashiva Karnik, Cleveland Clinic

Antoinette Killian, Utrecht University, The Netherlands

Toshihide Kobayashi, RIKEN, Japan

Roger E. Koeppe, II, University of Arkansas

Rachel S. Kraut, Nanyang Technological University, Singapore

Akihiro Kusumi, Kyoto University, Japan

Barry Lentz, University of North Carolina at Chapel Hill

Irena Levitan, University of Illinois, Chicago

Erwin London, State University of New York at Stony Brook

Boris Martinac, Victor Chang Cardiac Research Institute, Australia

Frederick R. Maxfield, Weill Cornell Medical College

Hassane S. Mchaourab, Vanderbilt University

Paul O'Shea, University of Nottingham, UK

Manuel J. Prieto, Instituto Superior Técnico, Portugal

Thomas Pucadyil, IISER, India

Jean-Marie Ruysschaert, Free University of Brussels, Belgium

Thomas P. Sakmar, Rockefeller University

Laurence Salome, CNRS, France

Durba Sengupta, National Chemical Laboratory, India

Frances Separovic, University of Melbourne, Australia

Robert M. Stroud, University of California, San Francisco

Musty J. Swamy, University of Hyderabad, India

Lukas K. Tamm, University of Virginia Health Sciences Center

Gregory A. Voth, University of Chicago

Anthony Watts, University of Oxford, UK

Felix Wieland, Heidelberg University, Germany

Subgroups

Bioenergetics

The Bioenergetics Subgroup held two symposia at the 56th Annual Meeting on February 24, 2012. The morning symposium, entitled *Mitochondrial Respiratory Chain Disease and Therapeutics*, was organized and chaired by *Shelagh Ferguson-Miller* and *Lawrence Prochaska*. The symposium covered a wide range of mitochondrial disease-related topics from the organism level down to molecular structures with approximately 200 people in attendance. The first speaker, *Russell Swerdlow*, University of Kansas, presented on *Mitochondria and Sporadic Neurodegenerative Disease*, focusing on the relationship between brain aging, neurodegenerative disease, and mitochondria, showing that a large group of patients with Alzheimer's exhibited mutations in mitochondrial DNA encoding subunits of cytochrome c oxidase. *Maik Huttemann*, Wayne State University, presented on *Cytochrome c Oxidase: An Illuminating Target For Non-Invasive Treatment of Ischemia/Reperfusion Injury* and reported exciting findings on the protective effects of near-infrared radiation on ischemia/reperfusion injury, which indicate new directions in clinical treatment of heart attack. *Andrew Dillin*, Salk Institute, presented on *Perception of Mitochondrial Stress By Distal Cells: The Mitokine Hypothesis*, describing recent findings from studies in *C. elegans* that suggest that mitochondria may establish and perpetuate the rate of aging for the whole organism using specific mitokine signals that are transmitted from cell to cell. *Lawrence Prochaska*, Wright State University, presented on *Modeling Mitochondrial Respiratory Chain Diseases; Mutational Analysis of Cytochrome Oxidase Subunit III*. He described studies using *R. sphaeroides* mutants in cytochrome oxidase to model human disease states and found that perturbation of conserved lipid binding sites in subunit III of the enzyme leads to inactivation of enzymatic activities which can partially be restored by the addition of lipid.

The afternoon symposium on *Structure-Function of Hetero-Oligomeric Membrane Protein Complexes*, organized by *Bill Cramer* and *Di Xia*, presented

a structure-function perspective on membrane protein complexes for which an understanding of bioenergetic mechanisms is central to understanding. *Petra Fromme* described a new approach to structure determination of membrane proteins by time-resolved nano-crystallography using an X-ray free electron laser. *Leonid Sazanov* reported on structure and mechanism of the respiratory NADH dehydrogenase, complex I. *Di Xia* discussed the mechanism of bifurcated electron transfer at the quinol oxidation site of the cytochrome *bc₁* complex. *Bryan Krantz* discussed the energetics of Anthrax toxin translocation, which undergoes unfolding during translocation through a channel made by bacterial protective antigen, and is powered by the electrochemical trans-membrane proton gradient, for which a structure-based mechanism was proposed. *Robert Stroud* described the crystallographic structure and function of the protein-translocating channel **Sec*YEβ* complex from the archaeon **Pyrococcus furiosus**.

The 2012 Young Bioenergeticist Award was given to *Kambiz Alavian*, who is a postdoctoral fellow in the laboratory of *Elizabeth A. Jonas* at Yale University. Congratulations to Kambiz, who emerged as the winner among four young bioenergeticists, all with excellent credentials.

—*Gyorgy Hajnoczky*, Bioenergetics Subgroup
Co-Chair

Membrane Biophysics

2012 Annual Symposium: The focus of the 2012 Membrane Biophysics Subgroup Symposium was *Dancing with New Structures- Insights into Transport Function*. The meeting was organized and chaired by *Paul Slesinger*, Salk Institute, and reported on cutting-edge structure-driven studies of both transporters and ion channels.

After the Symposium, the annual Cole Award dinner was held, and *Meyer Jackson*, University of Wisconsin received the 2012 Cole Award. He regaled the audience with tales from his career, including his period in the NIH Laboratory of Biophysics (founded by *Kacy Cole*), as well as his more recent work on synaptic vesicle fusion.

2013 Annual Symposium: *Diomedes Logothetis*, Virginia Commonwealth University, the incoming subgroup Chair, and *Brad Rothberg*, Temple University, are busy organizing the 2013 the Membrane Biophysics Symposium. The 2013 program will aim to feature macromolecular assemblies regulating structure and function of ion channels and transporters. Feel free to contact the organizers if you have new, exciting stories to present. The program will be submitted to the Society in draft form by the end of July, 2012. Stay tuned for more details, and see you in Philadelphia!

Elections: *Henry Colecraft*, Columbia University, was elected Chair-elect at the 2012 Subgroup business meeting. He will be responsible for organizing the 2014 symposium. *Chris Ahern*, University of British Columbia, was elected Secretary-Treasurer. He will take over for *Mike White*, who has held the position for the last three years.

We thank all of the nominees running for office and everyone for participating in the voting. If you would like to join the Membrane Biophysics subgroup and attend the dinner next year, please visit <http://www.biophysics.org/MembershipSubgroups/Subgroups/tabid/103/Default.aspx>

Subgroup Email List: The subgroup has an email distribution list. Members may contact *Chris Ahern* (chrisahern@gmail.com) for information about sending out email announcements of conferences or meetings.

—*Mike White*, Membrane Biophysics Subgroup
Past Secretary-Treasurer

Biopolymers in vivo

Symposium 2012: The variety of topics this year was breathtaking, ranging from atomic-level views of biopolymer stability and folding under crowded conditions, to the birth and death of ribosomes and signaling complexes in living cells.

We kicked off the afternoon with our first changing of the guard. Having helped found our Subgroup, *Margaret Cheung* relinquished the Chair to *Pernilla Wittung-Stafshede*. In related news,

our Chair-Elect is *Lila Gierasch*, and *Michael Feig* continues as our Secretary Treasurer.

Thomas Record set the tone for the symposium in his keynote talk by describing how the hard repulsive effects of crowding can be separated from the more conventional chemical interactions. *Christine Keating* followed up with a fascinating account of how combinations of aqueous polymer solutions can mimic the cytoplasm. *Sarah Woodson's* focus was on her pioneering work on crowding effects on nucleic acids.

The selection committee had a difficult task choosing postdoc-talk awardees from the large number of excellent poster abstracts, but they chose well. *Fred Etoc* moved the symposium into real cells and showed—literally—how magnetic manipulation of signaling “hotspots” can reveal the secrets of signal amplification, and *Sangjin Kim* went all super-resolution on us to show the spatial organization of mRNA in bacterial cells.

Huan-Xiang Zhou stuck mainly to simulations to show how crowding affects protein folding and ligand binding at the atomic-level. *Gary Pielak* rounded out the experiment-based talks by describing his mostly empirical studies on how crowding, both *in vitro* and in cells, affects protein stability and RNA folding. The symposium ended on a high point with *Terence Hua's* fascinating and quantitative talk relating bacterial growth laws to what happens in cells at the level of the ribosome and proteome.

After only an hour's rest, we reconvened for an outstanding subgroup dinner at La Villa in the Gas Lamp District. The dinner not only provided sustenance and a convivial atmosphere, it also delivered an outstanding networking opportunity for grad students, postdocs, faculty and speakers. If you could not attend the dinner this year, we urge you to sign up next time.

We hope to see you in the crowd in Philadelphia.

—*Gary J. Pielak & Huan-Xiang Zhou*
2012 Symposium Organizers

IDP

Anuja Chandrasekar, University of Texas Health Science Center, was the recent Student Research Achievement Award winner for the IDP subgroup. Anuja investigates the intrinsically disordered protein neurogranin, one of the molecules implicated in synaptic plasticity. Neurogranin's only documented function *in vivo* is to bind to calmodulin. She uses *in vitro* biochemical approaches, along with mathematical simulations to address the role of neurogranin in regulating calmodulin dynamics. As a biomedical engineering undergraduate, she was attracted to the complex function of the brain, and specifically molecules acting as memory stores.

Elisar Barbar and *Jianhan Chen* completed their terms as Subgroup Chair and Secretary-Treasurer,

and *Doug Barrick* and *Steve Metallo* took over as Subgroup Chair and Secretary-Treasurer. The Subgroup elected *Ashok Deniz* and *Liz Rhoades* as Chair-Elect and Secretary-Treasurer-elect. *Ursula Jakob* and *Garyk Papoian* were elected Co-Chairs for the 2013 IDP Subgroup Symposium and *Richard Kriwacki* was elected Council member. The Subgroup also elected two new junior officers: *Maria Antonieta Sanchez Farran*, Pennsylvania State University, as the Graduate Student Representative and *Ariele Viacava Follis*, St. Jude's Research Hospital, as the Postdoctoral Representative.

Remember to like the BPS Intrinsically Disordered Protein Subgroup on Facebook to receive live updates and notifications on recent IDP publications!

—*Steven Metallo*, IDP Secretary-Treasurer

Stay Connected

Be sure to get the latest news and updates on the Annual Meeting and other Society news by following the Biophysical Society on Twitter, Facebook, and the official BPS Blog!



Twitter: @BiophysicalSoc



Facebook: facebook.com/biophysicalsociety



Blog: biophysicalsociety.wordpress.com

BPS-sponsored Networking Event in Charlottesville

June 15, 2012
University of Virginia
Charlottesville, Virginia



Robert Nakamoto,
University of Virginia,
Host

This event will bring together biophysicists and college-level science educators from the universities and colleges in Virginia to discuss the teaching of biophysics to undergraduates.

For more information, visit www.biophysics.org and click on "Membership."



Public Affairs

BPS, Congressmen Urge Appropriators to Support NIH

The Biophysical Society joined 212 other organizations from the medical and research fields in sending a letter to the House and Senate Labor-HHS Appropriations Committees urging them to provide at least \$32 billion for the National Institutes of Health (NIH) in FY 2013. The letter, sent by the Ad Hoc Group for Medical Research, of which the Biophysical Society is a member, states that this funding recommendation “represents the minimum investment necessary to avoid further loss of promising research and at the same time allows the NIH’s budget to keep pace with biomedical inflation.” The coalition also submitted a written statement for the record to the House Labor-HHS Appropriations Subcommittee.

The same week the Ad Hoc letter was sent, a bipartisan group of 49 senators, led by Senators *Bob Casey* (D-PA) and *Richard Burr* (R-NC), sent a letter urging the Senate Appropriations Committee to “maintain a strong commitment to funding the NIH....” The letter states, “We believe that it is essential to continue federal support for medical research funding because of the potential health benefits for all Americans and the importance of ensuring that our Nation remains at the forefront of medical research.”

Representatives *Ed Markey* (D-MA) and *Brian Bilbray* (R-CA) submitted a similar bipartisan letter, signed by more than 150 Members, to the House Appropriations Committee leadership.

Also at the end of March, NIH Director *Francis Collins* and several institute directors testified in front of the Senate Labor-HHS-Education Appropriations Committee regarding the agency’s FY 2013 budget. Issues of major concern to Senators in attendance were the president’s proposal of flat funding in FY 2013 and the potential impact of sequestration, the automatic cuts to the federal budget that will

take place in January 2013 if Congress does not find a way to cut funding to the agreed upon level.

Both Chairman *Tom Harkin* (D-Iowa) and Ranking Member *Richard Shelby* (R-Ala.) praised NIH and expressed concerns about the US’s ability to remain the world leader in medical research under a flat budget for NIH. Senator Shelby noted that the administration’s request “does not keep pace with biomedical research inflation and as a result in inflationary adjusted dollars the NIH is 17% below where they were ten years ago.”

In response to a question from Chairman Harkin on the impact of sequestration Collins stated that the potential cut would amount to a \$2.4 billion loss for NIH and result in roughly 2,300 fewer research project grants, almost a quarter of new and competing grants. Success rates for new applications would fall to historically low levels.

Call for 1,000,000 More STEM Graduates

The President’s Council of Advisors on Science and Technology (PCAST) released its report entitled “Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, and Mathematics” in February. According to PCAST, the report “provides a strategy for improving STEM education during the first two years of college” and “is responsive to both the challenges and the opportunities that this crucial stage in the STEM education pathway presents.”

According to the report, over the next decade, approximately one million more college graduates in STEM fields will be needed than expected under current assumptions. Presently, fewer than 40% of students who enter college intending to major in a STEM field complete a STEM degree. Increasing the retention of STEM majors from 40% to 50% would generate three-quarters of the targeted one million additional STEM degrees needed over the next decade.

In order to increase the retention rate of STEM majors, PCAST identified five recommendations:

- Catalyze widespread adoption of empirically validated teaching practices;
- Advocate and provide support for replacing standard laboratory courses with discovery-based research courses;
- Launch a national experiment in post-secondary mathematics education to address the mathematics-preparation gap;
- Encourage partnerships among stakeholders to diversify pathways to STEM careers; and
- Create a Presidential Council on STEM Education with leadership from the academic and business communities to provide strategic leadership for transformative and sustainable change in STEM undergraduate education.

To read the report in full or the accompanying fact sheet, go to <http://www.whitehouse.gov/administration/eop/ostp/pcast>.

San Diego Meeting Survey Winners

Congratulations to *Renee Dalrymple* of the University of Wisconsin, *Jean-Luc Pellequer* of the Atomic Energy Commission, France, and *Mario Rosasco* of the University of Washington, for winning complimentary registration to the Biophysical Society's 57th Annual Meeting in Philadelphia, Pennsylvania, February 2–6, 2013.



Renee Dalrymple



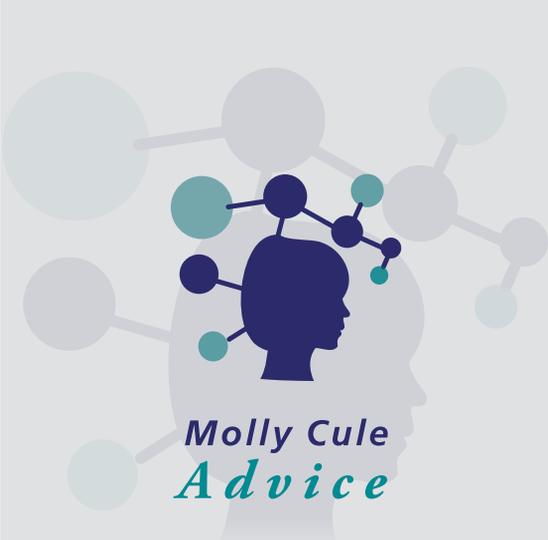
Jean-Luc Pellequer



Mario Rosasco

Their names were selected from among all the meeting attendees who submitted a complete 2012 Annual Meeting survey.

Thanks to all attendees who took the time to complete the questionnaire!



**Molly Cule
Advice**

Need career advice?

Ask *Molly Cule*, the new career advice column from the Early Careers Committee. *Dear Molly Cule* appears on the BPS Blog every other month to answer your career-related questions. Visit <http://biophysicalsociety.wordpress.com/> to get the latest career advice, join in the conversation, or to submit your own career conundrum.

Careers

Taner Z. Sen, Computational Biologist for the United States Department of Agriculture Agricultural Research Service (USDA-ARS) and Collaborator Assistant Professor in the Department of Genetics, Development and Cell Biology at Iowa State University, answers some common questions about working for the USDA-ARS and discusses some differences between being a postdoc in a government versus an academic setting. (To read more about Sen's position at the USDA-ARS, see Biophysicist in Profile, page 4.)

Where can I find information about available postdoctoral positions in the USDA-ARS?

Open positions in the Federal Government are advertised at www.USAJobs.gov. Once there, you can enter "postdoctoral research associate" as a search keyword. The site allows you to search using specific terms in your area of interest by browsing the position advertisements, but as a rule of thumb, use general rather specific descriptions. For example, searching using "biophysicist" or "biophysics" can return zero hits, but separate searches of "biology," "physics," "chemistry," or "computational" can lead to a position you may not know you are qualified for.

Is US citizenship a requirement to work in the USDA-ARS?

Because the USDA-ARS is a federal agency, only US citizens can obtain permanent scientist positions there. However, the USDA-ARS can hire a foreign national as a postdoctoral research associate if he or she:

- is a US citizen;
- is lawfully admitted for permanent residence and is seeking citizenship as outlined in 8 U.S.C. 1324b(a)(3)(B);
- is admitted as a refugee under 8 U.S.C. 1157 or is granted asylum under 8 U.S.C. 1158 and

has filed a declaration of intention to become a lawful permanent resident and then a citizen when eligible; and/or

- owes allegiance to the US (for example, natives of American Samoa and Swains Island).

What is the average salary of a postdoctoral research associate working at the USDA-ARS?

Salary is an area that makes work in the Federal Government as a postdoctoral research associate very attractive. The Federal Government uses a pay scale to pay its employees. Postdocs are usually hired by the USDA-ARS at the GS-11 grade. However, the final grade determination is based on individual experience. In some cases, even experienced postdocs start at the GS-11, Step 1 level. This placement can depend on many factors, including position description and budgetary constraints. The exact salary amount is determined by the position's geographic location in the US. You can find 2012 salary figures on the US Office of Personnel Management website at www.opm.gov/oca/12tables/indexGS.asp. For example, in April of 2012, the base salary and locality pay for GS-11, Step 1 level for Richmond, Virginia was \$58,569. Most locations will be listed under "Rest of the United States," which has \$57,408 listed for GS-11, Step 1. The salaries for postdocs in the USDA-ARS are very competitive compared to postdoc salaries in academic positions.

How does a postdoctoral position at the USDA-ARS differ from academic postdoctoral positions?

The main difference depends on the position description. When hired at the USDA-ARS, a postdoc will become a part of a Current Research Information System (CRIS) project, five-year projects that fulfill stakeholders' needs. Depending on the CRIS project, these stake-

holders can be farmers, breeders, or scientists working with a specific species. Stakeholders' feedback identifying their needs and peer review for scientific quality shape the aims of a CRIS project. Some CRIS projects resemble academic projects, pursuing hypothesis-driven research. Others provide services. Still others create tools for the communities they were created to serve. For job seekers, it is of vital importance to read the position description very carefully. These federal position descriptions are written using specific language and you are expected to devote 100% of your time to your project according to the description provided in the advertisement. In contrast, your project in academia may change its course depending on the current funding situation. In the USDA-ARS, you are hired to fulfill a certain role in an already funded project, so your research is not likely to change after a few months on the job.

Flexibility of and compensation for work hours stand out as another difference between working in academia and working in the USDA-ARS. In academia, work hours are usually determined arbitrarily by the principal investigators. There can even be discrepancies between work hours required by postdocs in the same department. Not so in the USDA-ARS. Without exception, postdoctoral research associates are required to work 40 hours a week. If they attend a conference or other event that necessitates working additional hours that week, they are either financially compensated or permitted to take time off in the following weeks.

For more information about careers with the USDA-ARS, visit www.ars.usda.gov/Careers/careers.htm

Society Mentor Board

Seeking career advice, trying to network, or have general questions about biophysics? Interested in volunteering as a mentor?

Sign up on the Mentor Board and start connecting today!

[www.biophysics.org/Professional Development](http://www.biophysics.org/Professional-Development)



Looking for a Job?

The Biophysical Society Job Board is the place to find jobs related to biophysics around the world. View the latest jobs and upload your resume today!

Employers: Don't forget to take advantage of member rates to find your next postdoc, professor, or researcher.

Go to www.biophysics.org and click "Job Board" from the main page.



Student Spotlight

Annika Barber

Thomas Jefferson University
Covarrubias Lab

Q: What initially attracted you to biophysics?

Coming from a molecular biology background in which I focused on signaling cascades, I found it exciting to look at the structure-function interplay of a single protein and explore proteins as molecular machines in their own right. I continue to enjoy how biophysics research allows me to combine diverse disciplines—from computational modeling to electrophysiology to molecular biology and biochemistry—to address relevant questions.

Q: What is your current research project?

I am investigating how general anesthetics modulate voltage-gated cation channels. I have found dual modulation of a voltage-gated potassium channel by a related class of general anesthetics. Currently, I am combining computational and electrophysiological approaches to determine what regions of the protein are involved in drug binding and allosteric effects on channel gating.

Q: What do you hope to do after graduation?

I will pursue postdoctoral training to continue applying my expertise in ion channel biophysics while expanding my knowledge of structural biological approaches and computational modeling.

Q: Why did you join the Biophysical Society?

Initially I joined the Biophysical Society in order to attend my very first national scientific meeting and present my poster. Now attending the Biophysical Society meeting is the highlight of my year and reenergizes me with the excitement of interesting conversations and new ideas with colleagues and experts in my field.

Q: What (or who) inspires you scientifically?

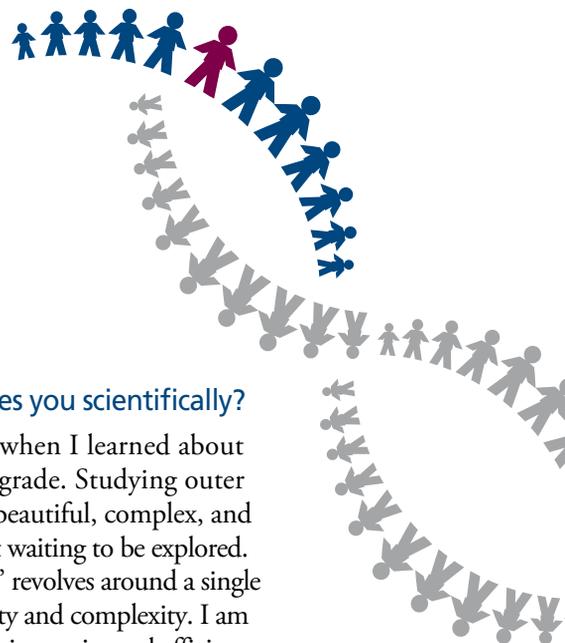
I decided to be a scientist when I learned about space exploration in third grade. Studying outer space opened my eyes to a beautiful, complex, and incredibly huge universe just waiting to be explored. While my current “universe” revolves around a single protein, there is no less beauty and complexity. I am continually awestruck by the ingenuity and efficiency of biological machines and the most beautiful moments are those when they in fact seem simplest.

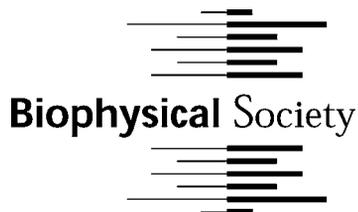
Manuel Covarrubias, Barber's PI, says:

“Annika joined my lab about three years ago with no background in ion channel biophysics. However, when she asked to do a research rotation under my guidance, she expressed an extraordinary interest in learning quantitative physical methodologies to study biological problems in depth. She was not deterred by the challenge. She stayed in my lab, quickly learned ion channel electrophysiology and biophysics and took a project to investigate the molecular mechanisms of general anesthesia. Her first full-length paper was recently published in the Biophysical Journal. More recently, her insatiable curiosity to explore the intricacies of membrane proteins at the atomic level led her to learn molecular dynamics simulation in the Klein lab at Temple University, where she has made substantial progress in a collaborative effort to investigate voltage-gated ion channels and their interactions with general anesthetics. It has been a special pleasure to mentor her as she sharpens her innate problem-solving skills and applies biophysics to discover molecular mechanisms and their physiological implications.”

Suggest a Student or Postdoc to Spotlight

Do you have a spotlight-worthy student or postdoc in your lab? Send his/her name to society@biophysics.org.





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UPCOMING EVENTS

BIOPHYSICAL SOCIETY NEWSLETTER MAY 2012

July

July 8–13, 2012

Intrinsically Disordered
Proteins

West Dover, Vermont

www.grc.org/programs.aspx?year=2012&program=intrinsic

July 14–18, 2012

8th FENS Forum of
Neuroscience

Barcelona, Spain

<http://fens2012.neurosciences.asso.fr/>

August

August 3–16, 2012

Achievements and Applications
of Contemporary Informatics,
Mathematics, and Physics
(AACIMP) Summer School
Kyiv, Ukraine

<http://summerschool.ssa.org.ua/>

August 5–10, 2012

Electron Donor-Acceptor
Interactions

Newport, Rhode Island

<http://grc.org/programs.aspx?year=2012&program=elecdonor>

September

September 25–26, 2012

3rd Annual Single Cell
Analysis Summit

San Diego, California

<http://selectbiosciences.com/conferences/index.aspx?conf=SCAS2012>

September 30–October 3, 2012

4th Conference of the Mediterranean
Neuroscience Society

Istanbul, Turkey

www.mns2012.org/call-for-symposia/

October

October 2–5, 2012

6th Peptide Engineering
Meeting

Atlanta, Georgia

www.umass.edu/pem6

October 16–17, 2012

Systems Biology Europe
Madrid, Spain

<http://selectbiosciences.com/conferences/index.aspx?conf=SBE2012>