BPS Bulletin
THE NEWSLETTER OF THE BIOPHYSICAL SOCIETY
Biophysical Society

Future of Biophysics Burroughs Wellcome Fund Symposium

The 2025 Future of Biophysics Burroughs Wellcome Fund speakers will highlight the work of young scientists who are currently conducting cutting-edge research at the interface of the physical and life sciences.

The speakers selected for 2025 are *Sandipan Chowdhury*, University of Iowa, Carver College of Medicine; *Huong Tran Kratochvil*, University of North Carolina at Chapel Hill; *Leonel Malacrida*, Institut Pasteur de Montevideo; and *Yang Yang*, Van Andel Institute.


Sandipan Chowdhury


Huong Tran Kratochvil


Leonel Malacrida


Yang Yang

The Symposium in its 17th year will be held on February 17, 2025. *Sudha Chakrapani* and *Christopher Yip*, Program Co-Chairs for the 69th Annual Meeting, will co-chair the symposium.

"Coming soon to a lab near you: 'The Future of Biophysics!' We are excited to showcase these four incredible young researchers at this year's Symposium supported by the Burroughs Wellcome Fund. The 2025 speakers represent the breadth, depth, and diversity of biophysics, not only today but indeed for future generations. We can't wait for the show to begin!"

—*Sudha Chakrapani* and *Christopher Yip*

President's Symposium at BPS2025

Biophysics for a Sustainable Future

Sunday, February 16, 10:45 AM, USA Pacific

As leaders of an innovative international community working at the interface between physics and biology, biophysicists can be powerful change agents on issues of sustainability. We can and must bring to bear our expertise, creativity, and rigor to preserve the planet for future generations.

Join us for the President's Symposium at BPS2025 in Los Angeles where speakers *Steven Chu*, *Jennifer DuBois*, *Michelle O'Malley*, *Scott Weitze*, and *Susan Marqusee* will address ways in which biophysicists can engage with sustainability research, present concrete examples of research with a strong impact on sustainability, discuss funding opportunities, and propose how to make your daily research practices more sustainable.

Inside

Stay Connected with BPS


Gabriela K. Popescu

BPS for a Sustainable Future

As biophysicists, we know better than anyone else that, on this planet, there is no such thing as a free lunch! Given that our Universe is one where mass and energy are conserved and entropy is always increasing, we understand that, here on Earth, one cannot make something from nothing. Therefore, absolute sustainability—indefinite growth, or even maintenance of the current situation—is aspirational only. How can we reconcile such fundamental principles with the desire to survive and continue to thrive as a species?

Defining a sustainable future. A more practical aspiration is for progress that "meets the needs of the present without compromising the ability of future generations to meet their own needs." This currently prevalent definition was articulated in 1987 by the United Nations Brundtland Commission. Since then, all the 191 United Nations Member States have pledged to an action plan for sustainability, the 2030 Agenda for Sustainable Development. It represents the most realistic and effective pathway to a sustainable future by aiming to end poverty, to protect the planet, and to resolve inequities.

Specifically, the Agenda articulates 17 Sustainable Development Goals. Included among these goals are ending poverty and hunger; ensuring good health and well-being; achieving gender equality and reducing inequities; safeguarding clean water and clean energy; taking action to preserve the climate and the biosphere on land and water; making communities inclusive, safe, resilient, and sustainable; and adopting responsible consumption and production. Achieving these goals requires effective coordination, mobilization, and deployment of resources, including discovering and communicating new knowledge, training a highly skilled and informed workforce, and creating innovative solutions.

Why should BPS invest in sustainable future initiatives and programs? The short answer is because it is the right thing to do. In addition, the mission, vision, and values upheld by BPS require that we bring our collective expertise, global authority, creativity, and innovative power to bear on the challenge of a sustainable future.

The BPS vision is "to harness the full potential of biophysics to seek knowledge, improve the human condition, and preserve the planet for future generations." As leaders, it is incumbent upon us to create opportunities for our members to engage in effective ways with sustainability efforts. As global players, we are perfectly positioned to represent a powerful partner in the world-wide effort to achieve sustainability. Moreover, our dedication to scientific excellence; integrity and transparency; diversity, equity, and inclusion; and community building endows us with the credibility, authority, and expertise to contribute in meaningful ways to achieving many of the 17 Sustainable Development Goals.

How can BPS contribute to a sustainable future? The BPS Council posed this exact question to the newly formed Committee on Sustainability (COS; https://www.biophysics.org/about-bps/governance/committees), charging the committee "to develop strategies and coordinate activities that support member engagement with sustainability research, support member transition into sustainable research, and harmonize some of the policies of BPS with the objectives of sustainable development." Over the past year, the committee has met monthly to develop and articulate short- and long-term objectives and programs to achieve these goals.

One of the first lines of action is to raise awareness within the BPS community. At the 2025 BPS Annual Meeting in Los Angeles, it will be my privilege to moderate the first "President's Symposium: Biophysics for a Sustainable Future." Working together with my colleagues from the COS, we developed a program that we hope will inform, inspire, and stimulate our members to engage more effectively with sustainability goals, whether by developing new research projects, by reorganizing their labs to be more energy wise, or by advocating in a more powerful way for a sustainable future.

Steven Chu, Nobel laureate and the 12th US Secretary of Energy, has graciously agreed to kick off this symposium. He will emphasize the essential role that biophysics, and therefore biophysicists, can play in finding viable solutions. Next, we will hear about funding opportunities for biophysics research related to sustainability goals, and about means to create a culture of sustainability in the lab. The symposium will also include research presentations from biophysicists who have already developed successful research programs that inform sustainability goals. Join us Sunday morning, February 16, for this inaugural event and then that afternoon for a panel discussion sponsored jointly by the COS and the Public Affairs Committee (PAC), where you can engage in a more direct conversation about funding opportunities in research related to sustainability.

How can you engage in activities for a sustainable future? I posed this question to *Emmanuel Margeat*, who chairs the newly formed COS. He told me that the committee is actively seeking junior members. He explains, "We are encouraging Early Career and Student Members of BPS to join us on the Committee on Sustainability or to participate in one of our

working groups. We want to make sure the voices of the younger generations are heard as our Society works towards a sustainable future for biophysics."

To express interest, or with any questions or suggestions related to how BPS can support our members to engage with sustainability goals, please contact me at popescu@buffalo.edu or staff at society@biophysics.org. We want to hear from you. I hope you will join us at the "President's Symposium: Biophysics for a Sustainable Future" on Sunday, February 16, 2025 at 10:45 AM, and for the COS/PAC panel discussion "Sustainability in Scientific Research" at 2:30 PM that afternoon.

In today's highly interconnected and complex world, sustainability requires concerted, deliberate, and global efforts. Let's ensure that biophysicists are part of the solution.

With warm wishes for a safe, healthy, joyful, and sustainable holiday season,

—*Gabriela K. Popescu*, President

Biophysical Journal Call for Papers

Special Issue: Retinal Proteins: Experiment and Computation

Editors: ***Ana-Nicoleta Bondar, University of Bucharest and Forschungszentrum Jülich***
Gebhard Schertler, Paul Scherrer Institut
Ching-Ju Tsai, Paul Scherrer Institut

Biophysical Journal will publish a special issue titled "Retinal Proteins: Experiment and Computation," dedicated to high-quality research on retinal proteins. We welcome submissions on all topics addressed at the 20th International Conference on Retinal Proteins, ICRP 2024, Interlaken, Switzerland. This includes cell signaling with retinal proteins; retinal proteins for optogenetics applications; discovery of new retinal proteins; physiology of retinal proteins; structure, function, and dynamics of retinal proteins; and advanced experimental and computational methods to study retinal proteins.

The Journal aims to publish the highest-quality work; articles should have sufficient importance to be of general interest to biophysicists regardless of their research specialty. Please contact the editors with queries about scope and suitability.

Deadline for submission: June 30, 2025

To submit, visit https://www.editorialmanager.com/biophysical-journal/

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Rebecca Berlow

Rebecca Berlow

Areas of Research
Intrinsically disordered proteins, protein-protein interactions, and nuclear magnetic resonance

Institution
University of North Carolina at Chapel Hill

At-a-Glance

In her early years, *Rebecca Berlow*, Assistant Professor in the Department of Biochemistry and Biophysics in the School of Medicine at the University of North Carolina at Chapel Hill, became interested in the inner workings of the world around her, thanks in part to her father, a radiologist who took her to work and showed her X-rays of her toys. She started doing biophysics research as an undergraduate and now focuses on intrinsically disordered proteins involved in regulating transcription.

Rebecca Berlow grew up in Delmar, New York, outside of Albany. She shares, "My father was a radiologist, and I credit him for my interest in biomedical research—when I was young, he brought me to work with him and took X-rays of my toys so that I could see what was inside. That piqued my curiosity for seeing things that may not be visible to the naked eye. My mother was a high school Spanish teacher. She shared her love for teaching and education and taught me how to empower students and to never underestimate the benefits of making students feel valued and safe. She also instilled upon me the importance of keeping a well-stocked snack drawer… this practice is alive and well in my current research group."

Berlow attended Johns Hopkins University in Baltimore, Maryland, for her undergraduate studies, earning her bachelor's degree in chemistry. "To be honest, I was doing biophysics research before I even knew that the field of biophysics existed!" says Berlow. "My first introduction to both scientific research and biophysics was in college. I completed two and a half years of undergraduate research in *Joel Tolman*'s lab in the Chemistry Department at Johns Hopkins University, where I got my start in using solution nuclear magnetic resonance spectroscopy to characterize protein structure and dynamics. During this time, I was fortunate to work alongside several graduate students who took me under their wing, taught me about biophysics, answered my never-ending stream of questions, and helped set me on the path toward graduate school."

After her graduation, she obtained her PhD in molecular biophysics and biochemistry in *Patrick Loria*'s lab at Yale University, where she first learned about her future research focus, intrinsically disordered proteins (IDPs).

Berlow worked as a postdoctoral fellow in the lab of *Peter Wright* and *Jane Dyson* at Scripps Research Institute in La Jolla, California. Berlow elaborates, "I became interested in IDPs during graduate school, when my future postdoctoral advisor Peter Wright came to give a seminar in our department. I had never heard of IDPs before the seminar, but I was really interested in Peter's talk and the reception it received from the faculty in the audience. IDPs were a recent discovery at that time, and suffice to say not everyone was convinced of their biological relevance and importance yet. I continued reading about developments in the IDP field as I finished my PhD, and my graduate advisor Patrick Loria also allowed me to work on a side project in the lab on an IDP involved in coagulation. That project made me realize how much more there was to learn about IDPs, so I was thrilled to have the opportunity to do so as a postdoc."

Berlow explains, "I think that the lack of stability in scientific careers is quite challenging. In my opinion, there is too much pressure on trainees to change institutions as a prerequisite for advancement and limited flexibility for accommodating exceptions to training timelines. Earlier in my career I did not challenge these norms, but toward the end of my postdoc, my father was diagnosed with a terminal illness, and I found myself juggling my research and my personal life in ways that would have made a move to a new institution impossible. I was extremely fortunate to have fabulous mentors and colleagues who supported me during this time, allowing me the opportunity to continue my path toward independence without requiring me to compromise on my values or my commitment to my family. They are the reason I am still working in science today. I think it is far too easy for many of us to forget the human side of science in the pursuit of new discoveries, and I am incredibly grateful to have worked alongside people who supported me as a person as much as my research."

These days, Berlow is an Assistant Professor in the Department of Biochemistry and Biophysics in the School of Medicine at the University of North Carolina at Chapel Hill and a member of the Lineberger Comprehensive Cancer Center. She notes, "My growing research group is studying IDPs that are involved in transcriptional regulation. Many of the proteins we are working with are environmentally responsive and have

Berlow lab members on a group outing to a local farm.

altered behaviors in different cellular contexts. We are using a range of biophysical and biochemical methods to characterize these behaviors and their relationship(s) to biological function."

Berlow says, "The field of biophysics is constantly evolving. It is always exciting to see what topics are at the forefront or gaining renewed interest. I think a lot of this evolution comes from biophysics becoming an increasingly inclusive discipline that bridges many scientific fields and backgrounds. I am constantly reminding myself to keep an open mind and to consider new ways for approaching a scientific problem. I believe that we do our best research when we allow ourselves to be creative and open to implementing a range of different methods and approaches." She adds, "My favorite thing about biophysics is that it is no one thing…it is many things and is continually open to interpretation. I like to think of biophysics as the scientific equivalent of a 'Choose Your Own Adventure' book."

Asked about the future of the field, Berlow shares, "Looking forward, I hope to improve communication about biophysics and the collective impact of our work. Biophysicists know why we are excited about our research and what we can learn from biophysics, but as a group, we don't always do the best job of sharing that enthusiasm with others. Scientific communication is important to me—I am teaching a class about it right now!—and I think we often undermine the impact of our own work by focusing too much of our communication on specialist audiences."

Berlow has found a scientific home in the Biophysical Society, which has helped expand her professional network and fostered collaborations. She states, "My involvement with the Biophysical Society has been a bright spot of my career thus far. I attended my first Annual Meeting in 2016, and I immediately got involved with the Intrinsically Disordered Proteins Subgroup as the Postdoctoral Representative. This was a fantastic opportunity to start learning about how the Society operates and to participate in planning and promotion of the Subgroup's activities." She continues, "I also gave my first major conference talk at the 2018 Annual Meeting in San Francisco, which I was able to attend due to support from a travel award from the Education Committee. Since then, I have been involved with the Society in various ways, including my current roles as an Associate Editor of *Biophysical Reports* and a member of the Committee for Professional Opportunities for Women. Each of these opportunities has given me the chance to expand my professional network, learn about new advances in biophysics, and keep in contact with the many friends, collaborators, and mentors that I have met along the way."

BPS Comes Together to Support NIH at the Rally for Medical Research

The 2024 Rally for Medical Research, the seminal advocacy event in support of medical research funding at the National Institutes of Health (NIH), occurred on September 19. The Rally puts a spotlight on the incredible research that the NIH funds and asks Congress to ensure the maximum funding amount possible for the NIH in the next fiscal year. This year, approximately 300 scientists, physicians, and health research advocates from 32 states and the District of Columbia participated in over 190 virtual meetings with Senators and Representatives and their policy staff.

NAM Issues Report Advising New Body to Guide Biomedical Research

The National Academy of Medicine (NAM) recently issued a report, "The State of the U.S. Biomedical and Health Research Enterprise: Strategies for Achieving a Healthier America," that outlines several recommendations to improve the US biomedical research enterprise, implement efficiencies, and break down silos.

The panel calls for better coordination of existing research dollars spent by the public and private sectors. To do that, the president and Congress should create an advisory body to craft a "national strategic vision" for biomedical research across federal agencies, academic companies, and philanthropies. Other countries and regions already do this, the report says, citing China, Singapore, and the European Union's Horizon Europe program.

The new advisory body would look for ways to coordinate biomedical research across sectors and fill gaps. For example, it could help guide a "funding collaborative" that would pool contributions from NIH, industry, philanthropy, and venture capital and direct it toward priorities identified by the new advisory board. The panel also makes a pitch for federal research agencies to support more of what some call "convergence science," which brings biology together with physical sciences, math, engineering, and social science.

The report repeats familiar messages about the need to grow and diversify the domestic workforce. Those range from bolstering K–12 science education to boosting support for young investigators and helping postdocs become independent faster. The report also calls for allowing foreign scientists on temporary visas to receive federal grants, part of broader reforms to US immigration policies that many experts say are needed to attract and retain more international scientists.

White House Releases First Quadrennial Science and Technology Review

The White House Office of Science and Technology Policy (OSTP) released its inaugural "Quadrennial Science and Technology Review" at the end of September. The review was a directive included in the CHIPS (Creating Helpful Incentives to Produce Semiconductors) and Science Act. The directive required OSTP to conduct a comprehensive review of US science and technology enterprise every four years. In addition, the CHIPS and Science Act also mandates the development of "a comprehensive national science and technology strategy for the United States to meet national research and development objectives over the following four-year period." This inaugural review will guide the formulation of the forthcoming national strategy.

The review acknowledges that while the US science and technology ecosystem remains "robust" and unmatched in its scope and impact, it faces growing challenges from deteriorating research infrastructure and China's increasing competition. The federal government spent $97 billion on research in fiscal year 2023 (FY 2023), with nearly half of that amount coming from the Department of Health and Human Services, and the budget caps in FY 2024 affect the full range of research and development (R&D)-supporting agencies. The report emphasizes the urgent need for federal investment in physical R&D infrastructure.

Key areas recommended for future R&D focus include national security, climate change, public health, and artificial intelligence. The report highlights that "the most pressing strategic challenge to our national security comes from powers that combine authoritarian governance with a revisionist foreign policy," specifically identifying China's strategic ambition to reshape the international order and its expanding economic, military, and technological capabilities as a significant concern.

Biomedicine Cautiously Explores AI

According to a survey conducted by Ithaka S+R published in mid-October, biomedical researchers are actively dabbling in using AI but are distrustful because of concerns over accuracy and ethics (Ruediger, D., McCracken, C., and Skinner, M. Adoption of generative AI by academic biomedical researchers. Ithaka S+R. https://doi.org/10.18665/sr.321415). In a survey of more than 700 biomedical researchers around the world, more than 60% reported having tried tools such as ChatGPT. Uses included writing, editing, generating hypotheses, and synthesizing scientific literature. Although most were infrequent users, 24% reported that they use AI regularly for such tasks, and more than half said that they would be interested in adopting AI tools specifically for biomedical research.

New National Science Board Members Announced

President *Joe Biden* appointed eight new members to the National Science Board (NSB) last week, filling all the vacancies on the 24-member panel. Among the new members is sociologist *Alondra Nelson*, who was acting director of the White House Office of Science and Technology Policy earlier in the Biden administration and issued a major policy memo directing all science agencies to require that the research they fund be free to the public at the time of publication. The other appointees are Universities Space Research Association CEO *Jeffrey Isaacson*, former National Institute of Standards and Technology Director *Willie May*, former White House Deputy CTO *Ryan Panchadsaram*, University of Maine President *Joan Ferrini-Mundy*, University of Southern California computer scientist *Yolanda Gil*, University of Florida computer scientist *Juan Gilbert*, and naval engineer *Sarah O'Donnell*. The NSB oversees the National Science Foundation, and its members serve six-year terms.

Around the World

Pacific Science Academy Launches

Scientists in the Pacific Islands gathered in Samoa to announce the launch of the Pacific Islands Academy of Sciences. The Pacific Islands were the last area of the world without a regional or national scientific academy, and those behind the new Academy believe it will give the culturally diverse, widely scattered, and limited number of Pacific Island scientists a unified voice on problems with global and local impact. A main priority of the academy will be to implement a mentoring program to support young Pacific Islanders interested in pursuing careers in research. The academy will name 12 Foundation Fellows from the region to get its operations up and running. Additional Fellows will be drawn from researchers who have the Pacific as their primary focus of study.

Know the Editor

Jianping Fu
University of Michigan

Editor, Cell Biophysics
Biophysical Journal

Jianping Fu

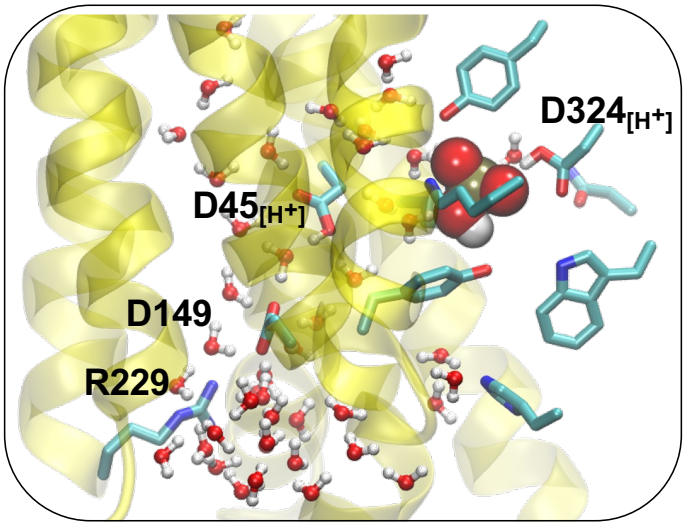
What are you currently working on that excites you?

I'm particularly excited about the emerging field of stem cell–based human embryo models, which serve as valuable in vitro tools for studying human development and disease. Developed from human pluripotent stem cells, these models mimic key aspects of early human development. Over the past decade, we and others have focused on creating various models to recapitulate stages from pre-implantation to gastrulation and early organogenesis. With proper bioengineering controls, these models are proving effective for exploring cellular behaviors and the genetic and signaling interactions driving embryogenesis. My group is currently working on models that replicate the formation of organ primordia from different germ layer lineages and using them to investigate fundamental questions about signaling and genetic mechanisms and biomechanical feedback in early human development. I'm eager to see what the next decade brings for this field.

What has been your most exciting discovery as a biophysicist?

The most exciting, as well as unexpected, discovery from my group so far is our finding of the intrinsic self-organizing properties and innate developmental potential of human pluripotent stem cells, which allow these cells to form multicellular structures and undergo spontaneous symmetry breaking to create patterned embryonic-like tissues, even when cultured under uniform conditions. Often, these patterned tissues can progressively develop from one developmental stage to the next, following the natural developmental program of a human embryo. My collaborators and I were extremely excited about these initial unexpected findings, and at that moment, I was convinced that stem cell–based human embryo models would become essential tools for advancing human developmental biology. Indeed, after these initial discoveries, I completely switched my research focus to stem cell–based embryo modeling and the study of human developmental biology.

Editor's Pick



Biophysical Journal

Kinetic network modeling with molecular simulation inputs: A proton-coupled phosphate symporter
Yu Liu, Chenghan Li, Meghna Gupta, Robert M. Stroud, and Gregory A. Voth

"In this work, multiscale reactive molecular dynamics, hybrid quantum mechanics/molecular mechanics, and classical molecular dynamics, including enhanced free energy sampling, are integrated to construct a bottom-up kinetic model for a proton-coupled phosphate transporter. This framework provides an expansive view of the potential reaction pathways, illuminating the transitions from phosphate-bound outward-facing states to phosphate-released inward-facing states. Through this comprehensive approach, not only can the influence of molecular interactions on reaction rates be investigated, but also the optimal pH observed for the transporter's functional activity can be revealed. This research also has significant implications for transporters overall by providing a framework for such complex biomolecular processes."

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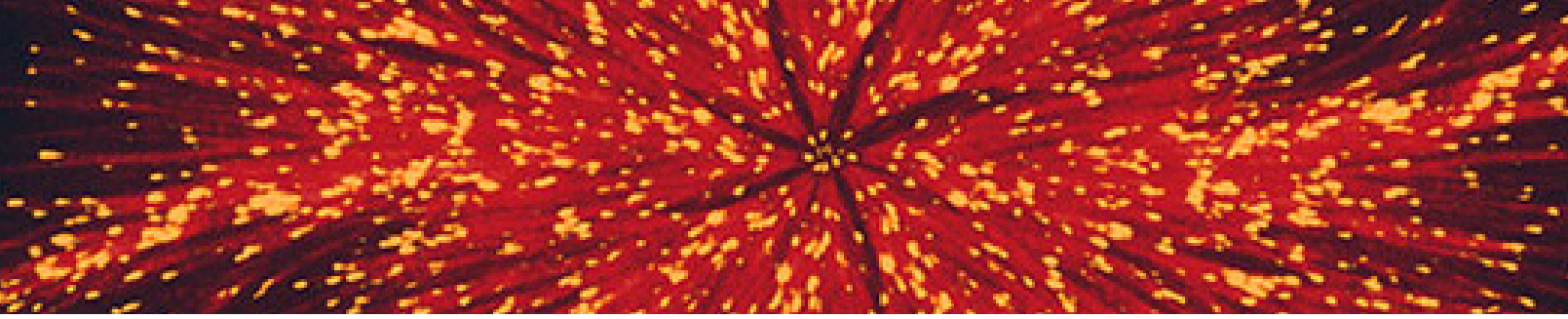


Call for Applications: Editor-in-Chief of *Biophysical Reports*

Open for infinite possibilities

The Biophysical Society is seeking the next Editor-in-Chief for its open access journal, *Biophysical Reports*, to support the Society's strategic goals:

- Foster a Diverse and Inclusive Global Community
- Enhance the Sharing of Knowledge
- Invest in the Future of Biophysics
- Advocate for Biophysics

Biophysical Reports publishes Letters, short Reports, and full-length Articles for rapid publication, which can be written for specialists or general audiences. The journal welcomes submissions describing new results, methods, or technologies. The journal complements *Biophysical Journal* by providing a vehicle for articles with rapid turnaround in a fully open access journal. *Biophysical Reports* publishes original research in all aspects of biophysics, from the molecular to whole-organism levels.

The Editor-in-Chief should embody the scientific standards of the Society, support its mission, and have a vision for the future of the journal. This appointment will begin January 1, 2026, for a single five-year term. This is an exciting opportunity to be at the forefront of biophysics and to lead a high-quality open access publication.

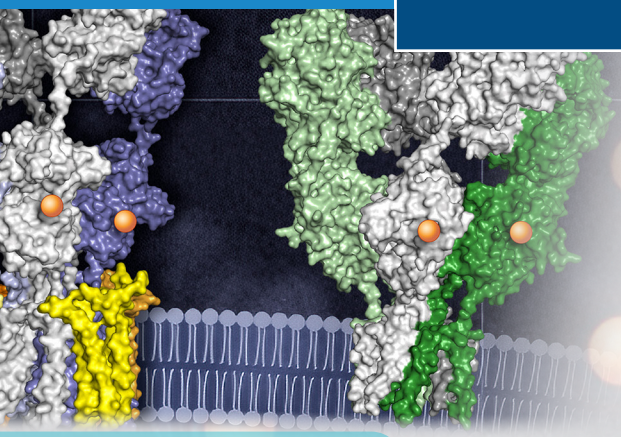
The Editor-in-Chief will:

- Lead the editorial team;
- Recruit exciting manuscripts through attendance at international conferences and scientific meetings;
- Shape the future editorial direction of a journal that is now beyond the startup phase;
- Work with Society Office staff on day-to-day editorial management; and
- Collaborate with staff and the Society's publishing partner, Cell Press, on effective workflows, journal website features, marketing, and social media promotion of the journal.

The successful candidate will have:

- Broad interest across the full spectrum of biophysics,
- Project and/or people management skills,
- Strong organizational skills,
- Strong written and oral communication skills, and
- Interest in engaging with the scientific community.

The Publications Committee welcomes applications from candidates who support and are dedicated to the Society's values. There are no restrictions on scientific interests, background, gender, or geography. To apply, please submit a cover letter outlining the motivations for your interest. We will also accept nominations. We will consider applications until March 1, 2025. Confidential applications should be made to the Publications Committee through the Society Office (jlong@biophysics.org).



BPS 2025 los angeles

February 15–19, 2025 california

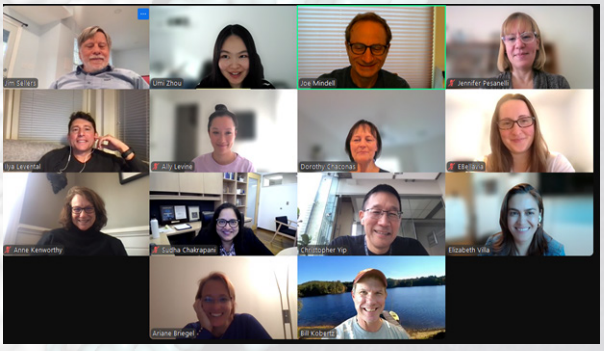
Present Your Late-Breaking Research and Inspire Tomorrow's Solutions!

Late Abstract Deadline: January 4, 2024
Did you miss the early abstracts submission deadline but have research findings you are ready to share? Submit your late abstract to receive valuable feedback and be included along with the abstracts that were submitted by the October 1 deadline.

Did You Receive Your Programming Notice?
Programming notices were sent the week of November 25 to those who submitted abstracts by the October 1 deadline. Check your email and contact the Society Office if you did not receive notification.

Abstracts Programmed

Program Committee members along with Council reviewed and sorted submitted abstracts, which were programmed during the virtual programming meeting into 63 platforms and 116 poster sessions. Over 600 posters will be presented each day of the meeting. This year there also will be 20 "Symp Select" talks as well as 189 platform flash talks. BPS members finalized programming of platform and poster sessions for the 2025 Annual Meeting.



BPS members and staff meeting to finalize programming of platform and poster sessions, left to right starting with top row: Jim Sellers, Umi Zhou, Joe Mindell, Jennifer Pesanelli, Ilya Levental, Ally Levine, Dorothy Chaconas, Erica Bellavia, Anne Kenworthy, Sudha Chakrapani, Christopher Yip, Elizabeth Villa, Ariane Briegel, and Bill Kobertz.

The Society thanks the Program Committee, Council, and members who participated in the planning, reviewing, sorting, and programming this year. Their work ensures that the final program reflects the breadth of research areas in biophysics with as few programming conflicts as possible. The 2025 Program Committee members are *Sudha Chakrapani*, *Christopher Yip*, *Gilad Haran*, *Kumiko Hyashi*, *Syma Khalid*, *Francesca Marassi*, and *Joseph Mindel*. The other Society members who participated are *Manu Ben-Johny* and *David Piston*.

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"Chance encounters can lead to great insight and opportunities that you may not have considered before. The chance encounters and the time for elaboration are exponentially increased by attending the Biophysical Society Annual Meeting."

— *Samuel Cho*, Wake Forest University

Calling All Bloggers **Application Deadline: January 7, 2025**

Interested in sharing your thoughts about the scientific sessions, career development workshops, hot spots in Los Angeles, or anything else Annual Meeting-related with the biophysics community? Apply to serve as a guest blogger for BPS! You can enhance the experience of your fellow attendees by sharing your perspective, while also adding blogging to your list of accomplishments! To apply, visit www.surveymonkey.com/r/BPSblog2025.

Public Affairs Sessions

NEW Sustainability in Scientific Research

Sunday, February 16, 2:30 PM–4:00 PM, USA Pacific

Join the Public Affairs Committee and the Committee on Sustainability as they host a joint session exploring public and private funding opportunities available to biophysicists conducting research involving sustainability. This new interactive session will explore how the basic and biomedical scientific approaches impact public health, ecological, environmental, geological, geographic, and planetary-scale thinking.

AI Policy in Biomedical Research

Monday, February 17, 1:00 PM–2:30 PM, USA Pacific

Join the Public Affairs Committee as it hosts a panel exploring the policies and regulations on AI that are emerging at a rapid pace from Washington, DC. This panel will explore the impacts of White House Executive Orders on AI and pending legislative efforts impacting AI use in scientific research. The panelists will be: *Rommie Amaro*, University of California San Diego; *Kavita M. Berger*, Board on Life Sciences, National Academies of Sciences; and *Steph Batalis*, Center for Security and Emerging Technology, Georgetown University.

Inside NIH: Explore Biophysics Grant Opportunities in Key Institutes

Tuesday, February 18, 1:30 PM–3:30 PM, USA Pacific

The National institutes of Health (NIH), with its 27 Institutes and Centers, can cause researchers moments of pause as they navigate where their research is best applied. While each Institute and Center has its own distinct focus of research, there is a considerable amount of overlap and coordination that does occur—particularly in biophysics research. Join the Public Affairs Committee as we welcome Program Directors from the National Institute on General Medical Science (NIGMS), the Center for Scientific Review (CSR), the National Cancer Institute (NCI), and the National Institute on Neurological Disorders and Stroke (NINDS).

Student Volunteers

Deadline: January 6, 2025

Receive free registration by volunteering your time at the Annual Meeting. Undergraduate and graduate students can volunteer six hours at the Annual Meeting in exchange for complimentary meeting registration. You must be a member of the Society with registration fully paid. To apply, send an email to meetings@biophysics.org by January 6, 2025. For more information, visit www.biophysics.org/2025meeting/general-info/student-volunteers.

Inside Perspectives and Opportunities: NSF Grants

Tuesday, February 18, 3:30 PM–5:00 PM, USA Pacific

The National Science Foundation (NSF) is one of the largest federal funders of biophysical research each year alongside the National Institutes of Health. Through the Division of Molecular and Cellular Biosciences, scientists continue to advance basic and biomedical research. Join us for an insider's perspective on the various divisions offering grant funding within NSF and learn how to put together a strong grant application.

Publications Sessions

Meet the Editors—*Biophysical Journal*, *Biophysical Reports*, and *The Biophysicist*

Monday, February 17, 10:00 AM–11:15 AM, USA Pacific

Take this opportunity to meet editors of all three of the Society's prestigious journals! The Editors-in-Chief, members of the Editorial Boards, and BPS staff will be available to answer your questions about what areas of research the journals cover, how to give your paper the best chance of being accepted, the submission process, special issues, and anything else related to BPS journals.

Current and Future Landscapes of Review and Publishing

Monday, February 17, 2:15 PM–3:45 PM, USA Pacific

Peer review and dissemination of research results are still vital parts of scientific research, but scholarly publishing is constantly evolving. Authors, funders, publishers, university libraries, and others are all affected by the change. Different approaches to peer review and government and funder mandates for open access publication continue to influence publishing as authors do their best to share their research, maintain their funding, and advance their careers. This panel will discuss these and other issues shaping the publishing landscape.

Don't Wait—Reserve Your Hotel Today!

Deadline: January 26, 2025

biophysics.org/**2025meeting**

Emerging Theoretical Approaches to Complement Single-Particle Cryo-Electron Microscopy

Trieste, Italy, October 21–25, 2024

The field of biophysics is experiencing a remarkable shift, fueled by pioneering advances in cryo-electron microscopy (cryo-EM) complemented by groundbreaking advances in computational methodologies. The recent Biophysical Society Thematic Meeting gathered global experts to address critical challenges in processing, validating, and interpreting cryo-EM data, and how best to apply computational modeling and simulations to complement experimental findings.

The field of computational biophysics serves as a cornerstone of structural biology, which continues to give rise to methods for generating interpretable atomic and dynamic models from experimental structural data. This meeting emphasized this essential role of computational biophysics in structural biology, as it united leaders in cryo-EM technology and computational science, focusing on advanced data-processing techniques and the complex dynamics of large biomolecules visualized via cryo-EM. Sessions also covered the latest developments in electron tomography and multiscale modeling, which allows for unprecedented detail of cellular components, their interactions, and their regulation.

More than 80 participants from around the globe gathered in the beautiful city of Trieste, Italy, a cultural crossroad of Mediterranean, Central European, and Eastern European heritage. The location at the International School for Advanced Studies (SISSA), a highly regarded biophysics research hub, provided an inspiring backdrop for this collaborative event. The scientific diversity of the presentations and the intimate setting fostered enthusiastic conversations about the need for methodological advancements, especially in validation and reproducibility within cryo-EM research, underscoring the collaborative push to enhance single-particle cryo-EM applications and associated simulations.

The meeting was notable for its geographic, gender, disciplinary, and background diversity, with participants from North and South America, Europe, and Asia. There were 21 invited speakers, 14 short talks (pulled from submitted abstracts), and 29 posters showcasing the creativity of the community, with representation from 17 countries: Australia, Canada, China, Czech Republic, France, Germany, India, Italy, Japan, Poland, Singapore, Slovenia, South Africa, Spain,

Sweden, United Kingdom, and the United States. An outstanding number of women scientists contributed as both speakers and poster presenters, reflecting a commitment to inclusivity in the field.

The meeting organizers, *Giulia Palermo* (University of California, Riverside), *Rommie Amaro* (University of California, San Diego), *Gabriel Landera* (Scripps Research), *Alessandra Magistrato* (SISSA), and *Joanna Trylska* (University of Warsaw), would like to thank all the participants, the Biophysical Society, the European Center for Atomic and Molecular Calculations (CECAM), and the sponsoring foundations for supporting our scientific community as we continue to push the frontiers of biophysics.

Meeting Organizers from left to right Alessandra Magistrato, Giulia Palermo, Joanna Trylska, and Gabriel C. Lander.

Congratulations to the Winners of the *Biophysical Journal* Poster Competition

The *Biophysical Journal* sponsors poster awards at each BPS Thematic Meeting to highlight and support the work being done by the next generation of researchers.

At the Emerging Theoretical Approaches to Complement Single-Particle Cryo-Electron Microscopy Thematic Meeting, 4 presenters were selected for their excellent research from the 21 posters that were shown.

Student Winners and Poster Titles:

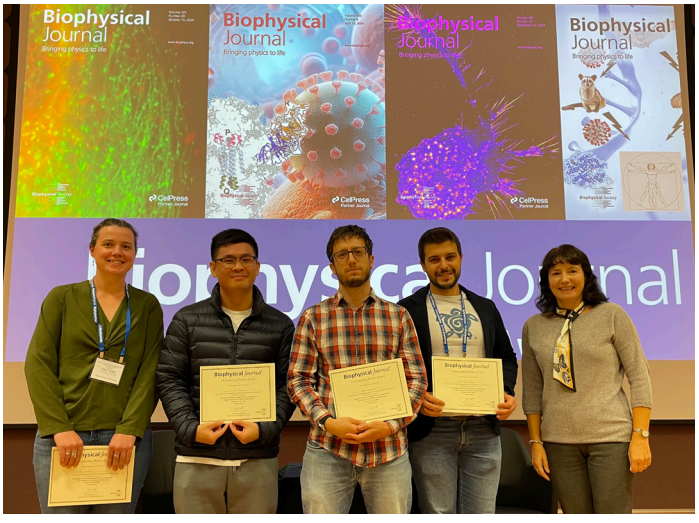
Elisa Moller, University of Maryland, USA
Polymer Extracted Structure of the Mechanosensitive Channel MSCS Reveals Lipid-Mediated Mechanism of Inactivation

Joel Yeo, National University of Singapore, Singapore
Ghostbuster—A Diffraction Tomography Algorithm for Cryo-EM Particle Refinement

Postdoc Winners and Poster Titles:

Fabio Lapenta, International Center for Genetic Engineering and Biotechnology, Italy
Cryo-EM Structure of the 8 MDA Human Vault Particle at 3.2 Angstrom

Ricardo Rozza, SISSA, Italy
Molecular Mechanism of Zinc-Catalyzed Covalent Splicing Modulation



Biophysical Journal poster award winners (from left to right): Elisa Moller, Joel Yeo, Fabio Lapenta, and Ricardo Rozzo, along with conference Organizing Committee Co-Chair Joanna Trylska.

By the Numbers

Between January 1 and October 31, 2024, the "What is Biophysics" page on the Society's website received 38,502 views.

Grasping Opportunities for Professional Development as a Postdoc

Molly Cule
Advice

The time spent as a postdoc can be some of the most exciting, enjoyable, and rewarding of your scientific career. You can learn or hone a new technique, acquire knowledge to further specialize in a particular area, or apply your skills to a new field of research. In addition to continued scientific training after graduate school, this time period provides various opportunities to develop professional skills and build confidence that will be vital for your future career, whether that is in or out of academia. With that said, all this potential combined with an already busy schedule can make choosing a direction to take quite challenging. To make that task a bit easier, below are some ideas and opportunities that you can access as a postdoc that will help you develop key transferable skills to take steps to future independence and make the most of your postdoc experience.

Write a development plan and seek training. One of the first steps for any postdoc is to define clear professional goals for this stage. Your postdoc experience is a key part of your career development, so plan to finish it well-equipped for the next steps in your chosen career path. Setting clear goals of what you want to achieve and thinking about what you need to do to get there is vital for continued professional development. Whether you want to gain informal experience or seek more formal didactic training, empowering yourself to internally reflect on your strengths and weaknesses can help identify opportunities to address them. Many institutions and societies offer courses or tips on important topics including public speaking, networking, and resilience, and the BPS website is a great resource for articles and webinars on career development.

Attend and present at conferences. Presenting your work and receiving feedback from peers at conferences is a key aspect of being a scientific researcher. Being able to summarize your findings into a short presentation and responding to constructive criticism are key transferable skills that are useful in any future career path. Whether you can attend big international scientific events like the Biophysical Society Annual Meeting or smaller institutional symposia, interacting with colleagues from different backgrounds and career levels also expands your network and increases your visibility to potential future collaborators, grant reviewers, and employers.

Volunteer. Serving on a committee or getting involved in outreach will allow you to develop key communication and organizational skills that will serve you well throughout your career. Volunteering to organize events, helping student organizations, or even visiting a local school can give you insight into how different organizations work, opens your eyes to new experiences, and may even highlight a different career path that you had not previously considered.

Apply for grants, travel awards, and other funding opportunities. The grant writing process hones critical skills such as project planning, budgeting, and effective communication, which are valuable in both academia and industry. Successfully obtaining funding through a grant or travel award not only raises your profile in the scientific community, enhancing your visibility and recognition among peers, it is also a significant achievement that enhances your CV and makes you more competitive for future academic or industry positions.

Take part in peer review. Peer review is a critical component of the scientific process that helps to ensure the integrity and quality of research. Taking part in the peer review process not only helps to improve the clarity and robustness of research in the field, it allows you to stay up to date on the latest findings and enhances your critical thinking and analytical skills. To get involved in peer review you can ask your mentor to pass invites they receive on to you, apply for reviewer training programs like the Postdoctoral Reviewer Program offered by *Biophysical Journal*, or offer your services as a reviewer on specific journal websites.

Teach a class. Teaching can be a rewarding experience that enhances your career prospects, skills, and engagement with the academic community. Teaching a class not only reinforces your knowledge and understanding of a topic, but it can also help you to develop valuable skills such as public speaking, communication, and curriculum development, which are essential for academic and professional success. Because of this, gaining teaching experience can make you more competitive for a faculty position or leadership role where teaching responsibilities or mentorship are key components.

In summary, while it is easy to feel confined to your lab bench or computer during your postdoc training period, engaging in professional development activities will enhance your essential skills, expand networks, and increase career competitiveness. These activities provide opportunities for improving communication and leadership abilities, fostering collaborations and mentorship, and ultimately support career advancement and independent personal growth in your chosen future career.

—*Molly Cule*

Cheers! for Volunteers

Thaya Paramanathan

Thaya Paramanathan

Education Committee

Is this your first volunteer position for BPS? If not, what other positions have you held?

This is my first volunteer position as part of the Education Committee, but I have served as volunteer to judge both Undergraduate Poster Award Competitions (UPAC) and Student Research Achievement Award (SRAA) poster competitions for several years. I also served as a volunteer judge representing BPS at the High School Science Fair held in Boston to select the best biophysics-related poster.

Why do you volunteer?

I volunteer because I am passionate about passing on my love for biophysics to younger generations. Most of my activities revolve around encouraging undergraduate students and high school students to pursue the wonderful interdisciplinary field of biophysics. Their energy and enthusiasm are contagious; I love listening to their stories and connecting with them to mentor them in any way possible to become independent scientists. I came to the United States as a physics graduate student with no background in biology. I was fortunate to have *Mark Williams* at Northeastern University as my PhD mentor, who transformed me into a biophysicist. My postdoctoral advisors *Jeff Gelles* and *Jane Kondev* at Brandeis further shaped me into a better mentor. The Education Committee provides me with a platform to enhance the experience for undergraduate students at the BPS meeting and to help shape a biophysics curriculum that inspires love for the field, just as my mentors did for me.

What has been a highlight from your volunteer experience?

I would like to thank *Patricia Soto* for first inviting me as a guest to an Education Committee meeting, and BPS Executive Officer *Jennifer Pesanelli* and Council for giving me the opportunity to be part of the Education Committee. As part of the committee, I have taken a lead role in organizing the Undergraduate Poster Award Competition and the BPS Undergraduate "pizza breakfast" at the Annual Meeting. I was able to introduce, with the approval of the committee, a new system for judging the poster competitions that includes normalized scores to improve the evaluation process.

The passion I see from the future biophysicists at these events fills me with pride and hope that BPS is going to be in good hands. I have also been an active participant in the Primarily Undergraduate Institution (PUI) networking events and strive to attend every online gathering to connect with early career members who aim to become faculty at a PUI. We have wonderful members on the Education Committee alongside staff members *Ethan Yosebashvili* and *Elizabeth Vuong*. It is an absolute delight to work with them.

Do you have advice for others who might be thinking about volunteering?

As a person of color, I was always hesitant and shy to join any committee as a volunteer. However, after being an active member of the committee and being welcomed by everyone, I realized how much I could contribute to the field of biophysics. It has been a wonderful and fulfilling experience. The opportunity has not only broadened my network, but it has also given me many friends with similar interests. I strongly encourage joining BPS and volunteering based on your passion. You will find it a rewarding and joyful opportunity. You will be rewarded with self-satisfaction and happiness.

When not volunteering for BPS, what do you work on?

I joined Bridgewater State University (BSU), a PUI in southeastern Massachusetts, in 2014 and established the Single Molecule Biophysics research lab (BSU SMB lab). Here, we use optical tweezers to study the interactions of cancer drugs with DNA. More than 50% of BSU students identify as low-income, first-generation, and/or students of color. My passion lies is involving these students in research and mentoring them to become independent scientists. As my lab celebrates its 10th anniversary, I am most proud of seeing my students excel after graduation. This success fuels my motivation. In my leisure time, I love traveling, hiking, gardening, and playing basketball. If you visit my hometown of Jaffna in Sri Lanka, you'll find that I am known not for biophysics, but for basketball. My next goal is to bring more awareness of the impactful field of biophysics to Sri Lanka.

Daniele Di Marino


Daniele Di Marino

Daniele Di Marino (1982–2024) was an Italian molecular and computational biologist who dedicated his career to studying the relationship between protein structure and function with applications to human conditions, including cancer and neurodevelopmental disorders. Daniele was an associate professor in the Department of Life and Environmental Sciences at Polytechnic University of Marche, Ancona, Italy. Daniele tragically passed away at the age of 42, leaving an unfathomable void for the many people who loved him.

Born in Rome, Daniele's research career started at the intersection of computational biology, biophysics, molecular biology, neuroscience, and drug discovery across four countries (Italy, Belgium, Switzerland, and the United States). Daniele received his PhD in cellular and molecular biology from the Università degli Studi di Roma "Tor Vergata" in Italy, where he trained in computational biology and biophysics under the mentorship of *Alessandro Desideri*. During his doctoral studies, Daniele used molecular dynamics approaches to study the kinetics of the ADP/ATP mitochondrial carrier and understand the functional impact of genetic mutations associated with mitochondrial myopathies.

Eager to integrate his computational background with experimental experiences in neuroscience, Daniele joined the laboratory of *Claudia Bagni* at Katholieke Universiteit Leuven, Belgium. As a postdoctoral fellow, Daniele studied the structural mechanisms that govern regulatory complexes altered in a neurodevelopmental disorder called Fragile X syndrome. Daniele discovered that a conformational change in one such regulatory protein, CYFIP1, defines its transition between molecular complexes that coordinate protein synthesis and actin cytoskeleton remodeling in neurons.

Daniele then moved back to Rome for a second postdoctoral training in the laboratory of the late *Anna Tramontano* at the Università degli Studi di Roma "La Sapienza." While in the Tramontano lab, Daniele characterized the structural properties of an antimalarial drug target, the sarco/endoplasmic reticulum Ca2+ pump (SERCA). Daniele identified differences in the ability of a potent SERCA inhibitor to bind the plasmodium or the mammalian Ca2+ pump, with important repercussions on the design of plasmodium-specific drug derivatives.

After his residence in the Tramontano group, Daniele joined the laboratory of *Emilio Gallicchio* at the Brooklyn College of the City University of New York as a visiting scholar. While there, he used molecular dynamics simulations, parallel conformational sampling, and alchemical computational techniques to design a library of CYFIP1-mimic peptides as potential therapeutic tools for Fragile X syndrome.

Daniele then joined *Vittorio Limongelli*'s laboratory at the University of Italian Switzerland in Lugano, Switzerland, as a research associate. Using coarse-grained metadynamics, he studied the structural properties of G protein-coupled receptors to aid drug design. His work provides the structural basis for designing selective ligands with therapeutic potential against HIV, cancer, and inflammatory conditions.

In 2019, Daniele joined the Department of Life and Environmental Sciences faculty at the Polytechnic University of Marche, where he established a successful interdisciplinary research group with competencies ranging from molecular biology and biochemistry to computational biology, biophysics, and protein engineering. The Di Marino lab focuses on understanding protein-protein interactions that regulate protein synthesis and translating structural inferences emerging from these studies to the design of novel drugs for applications in cancer and neurodevelopmental disorders. Inspired by his tireless work as a Red Cross ambulance volunteer during the height of the COVID-19 pandemic at the epicenter of the outbreak, Daniele also initiated a new line of research that led to the development of a graphene field-effect transistor biosensor design for the detection of all SARS-CoV-2 variants.

Daniele irradiated a bright light that extended beyond his talent as a scientist. He will be forever remembered for his contagious enthusiasm for science, charisma, and generous heart.

Members in the News


Jochen Guck

Jochen Guck, Max Planck Institute and Society member since 1999, was awarded the Leopoldina Greve Prize for 2024.

Grants & Opportunities

The Robert A. Welch Award in Chemistry

The purpose of this award is to foster and encourage basic chemical research and to recognize the value of chemical research contributions for the benefit of humankind.

Who can apply: Any person can submit a nomination, but no self-nominations are allowed.

Deadline: January 31, 2025

Website: https://welch1.org/awards/welch-award-in-chemistry/welch-award-guidelines

2025 Lasker Awards

The Albert Lasker Basic Research Award is for a fundamental discovery that opens up a new area of biomedical science. The Lasker-DeBakey Clinical Medical Research Award is for a major advancement that improves the lives of many thousands of people. The Lasker-Koshland Special Achievement Award in Medical Science is for research accomplishments and scientific statesmanship that engender the deepest feelings of awe and respect.

Who can apply: Anyone who has made an original and significant contribution in basic or clinical medical research is eligible for nomination.

Deadline: February 3, 2025

Website: https://laskerfoundation.org/awards/award-nominations/

Student Spotlight


Lauren Conger

Lauren Conger
Texas Tech University

What skill have you learned in your studies that you find useful in other aspects of your life?

In my biophysics studies as an undergraduate student, I learned that it is important to attempt and learn lab techniques that may feel beyond your current abilities. This has taught me that in research and every aspect of life, with perseverance and passion, you can achieve things that might seem out of reach.

Thank You for Donating!

The Biophysical Society extends heartfelt thanks to all donors for their generous support from November 1, 2023, to October 31, 2024. Your contributions empower us to expand travel awards, foster Student Chapters, enhance public affairs, and advance outreach initiatives. We couldn't do it without you—thank you for making a difference! Please find the list of our valued donors below.

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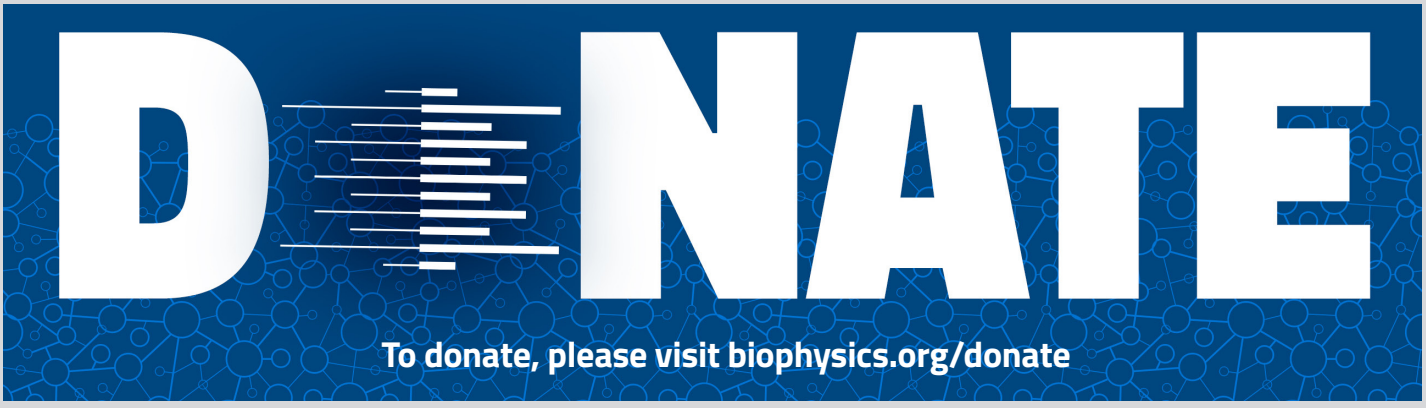

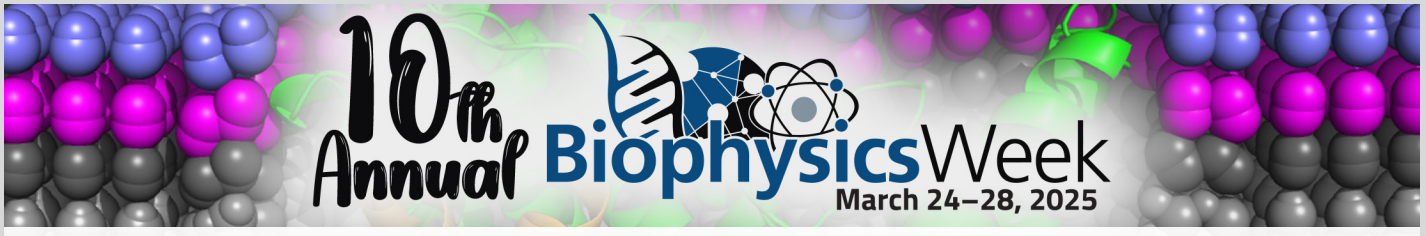

Host an Event to Celebrate a Decade of Biophysics Week!

Join us in celebrating the 10th Anniversary of Biophysics Week! This is your chance to engage with others and showcase vital research, contributions, and discoveries in biophysics.

We welcome all types of events—be it a virtual webinar, lab tour, or community panel discussion—and are here to help you promote your event! Whether you're a seasoned researcher, an aspiring student, or a science enthusiast, this is a perfect opportunity to get involved. Host your own event and help make this Biophysics Week the most memorable yet!

For more information, visit www.biophysics.org/outreach/biophysics-week/be-an-affiliate-event-organizer.

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BPS Bulletin
THE NEWSLETTER OF THE BIOPHYSICAL SOCIETY

December 2024

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www.biophysics.org/RENEW

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December 15, 2024

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December 15, 2024

BPS2025 Early Registration Deadline
January 7, 2025

BPS2025 Late Abstract Submission Deadline
January 7, 2025

BPS2025 Undergraduate Poster Award Competiton Deadline
January 7, 2025

BPS2025 JUST-B Application Deadline
January 7, 2025

Please visit www.biophysics.org for a complete list of upcoming BPS Important Dates.