

Biophysics Beyond the Boundaries

BPS 2023



67th Biophysical Society Annual Meeting
February 18–22, 2023

Important Deadlines

Abstracts

Abstract Submission: October 1, 2022
Abstract Revision and Withdrawal: October 5, 2022

Competitions

Student Research Achievement Awards (SRAA): October 5, 2022
Undergraduate Poster Awards (UPAC): January 5, 2023

Registration

Early Registration: July 1, 2022–January 5, 2023
Regular Registration: January 6–February 22, 2023

Travel Awards

Available for students, postdoctoral researchers, and scientists of all career levels. We strongly encourage members from all geographic locations, underrepresented communities, and at all career levels to apply. Applications will be evaluated by the Society's committees for Inclusion and Diversity, Professional Opportunities for Women, Membership, and Education.

Deadline for applications: October 5, 2022

Registration

Join the Society or renew your membership for 2023 to:

- Submit or sponsor an Annual Meeting abstract
- Pay reduced registration rates and save up to \$275
- Apply for Annual Meeting Travel Awards and Family Care Grants
- Apply to poster competitions

To join, go to
www.biophysics.org/join

REGISTRATION TYPE	REGISTRATION ONLY	MEMBERSHIP & REGISTRATION
BPS Regular Member	\$290*	\$495
BPS Early Career Member	\$265*	\$362
Student Member	\$80*	\$105
Emeritus Member	\$80	\$80
Nonmember	\$540	\$495
Early Career Nonmember	\$540	\$362
Student Nonmember	\$130	\$105

*2023 Society membership dues must be paid.

For complete details, visit biophysics.org/2023Meeting

A NOTE FROM THE PROGRAM CHAIRS

We are excited to present the program for the 2023 Annual Biophysical Society Meeting. We can all agree that the last few years represent an epochal moment for science in human history. Basic science discoveries were translated into treatments for human diseases at an astonishing pace. Advances in biophysics at various levels is central to these developments. This meeting will showcase incredible breakthroughs in new drug developments and protein structure prediction. Other symposiums will highlight the emerging complexity of cellular membranes, RNA and genomic organization. Workshops will feature developments in the computational drug discovery, spectroscopic and microscopy approaches for high throughput research. We look forward to seeing you next year in San Diego!



Baron Chanda

Washington University
in St. Louis



Janice Robertson

Washington University
in St. Louis

2023 Program Committee

Baron Chanda, Washington University in St. Louis, Program Co-Chair

Janice Robinson, Washington University in St. Louis, Program Co-Chair

Michelle Digman, University of California, Irvine

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Joseph A. Mindell, NINDS, NIH

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Arthur G. Palmer III, Columbia University, ex-officio

Ibrahim Cissé, MIT, 2024 Program Co-Chair

Elizabeth Villa, University of California, San Diego, 2024 Program Co-Chair

Biophysical Society Lecturer



Ardem Patapoutian, Scripps Research/HHMI

How do you feel? The Molecules that Sense Touch

Ardem Patapoutian is a molecular biologist specializing in sensory transduction. His research has led to the identification of novel ion channels and receptors activated by temperature, mechanical force, and increased cell volume. His laboratory has shown that these ion channels play crucial roles in sensing temperature, touch, proprioception, pain, and regulating vascular tone. Patapoutian was born in Lebanon in 1967 and attended the American University of Beirut for one year before he immigrated to The United States in 1986 and became a US citizen. He graduated from UCLA in 1990 and received his Ph.D. at Caltech in the lab of Dr. Barbara Wold in 1996. After postdoctoral work with Dr. Lou Reichardt

at UCSF, he joined the faculty of Scripps Research in 2000, where he is currently a Professor in the Department of Neuroscience. He also held a position at the Genomics Institute of The Novartis Research Foundation from 2000-2014. Patapoutian was awarded the Young Investigator Award from the Society for Neuroscience in 2006 and was named an Investigator of the Howard Hughes Medical Institute in 2014. He is a fellow of the American Association for the Advancement of Science (2016), a member of the National Academy of Sciences (2017) and a member of American Academy of Arts and Sciences (2020). He is a co-recipient of the 2017 Alden Spencer Award from Columbia (with David Ginty), the 2019 Rosenstiel Award for Distinguished Work in Basic Medical Research (with David Julius), the 2020 Kavli Prize in Neuroscience (with David Julius), the 2021 BBVA Foundation Frontiers of Knowledge Award (shared with David Julius), and the 2021 Nobel Prize in Physiology or Medicine (with David Julius).

ABOUT THE BIOPHYSICAL SOCIETY

The Biophysical Society was formally founded in 1958 to lead the development and dissemination of knowledge in biophysics. It does so through its many programs, including meetings, publications, and committee outreach activities. The Society consists of over 9,000 members who work in academia, industry, and government agencies throughout the world.

In addition to Annual Meeting discounts and the right to sponsor an abstract, member benefits include:

- Access to the Membership Directory, the Find a Biophysicist (FaB) Network, and the Primarily-Undergraduate Institution (PUI) Network

- Participation in BPS Subgroups to connect with peers and experts within focused areas of research
- An online subscription to the *Biophysical Journal*, as well as reduced charges when publishing
- The *BPS Bulletin*, a monthly member newsletter to stay informed about what is happening in biophysics and the Biophysical Society.
- Access to free webinars with career experts to help you thrive and advance in your professional role
- Get involved as a volunteer leader in BPS to make connections and gain experience
- Opportunities for travel and meeting support funds

“ Since graduate school, BPS Annual Meetings have given me a sense of community by creating an environment in which I can find peers, collaborators, future colleagues, and amazing mentors. Annual meetings are the best time of the year, as I often get to meet biophysicists from around the world that I only knew from research articles or Twitter, while reuniting with those that I've met before!

— *Tugba Ozturk, Washington University in St. Louis*

SUBGROUP SYMPOSIA

Delve deep into a subject area with symposia organized by these dynamic, focused communities.

- **Bioenergetics, Mitochondria, and Metabolism**
- **Bioengineering**
- **Biological Fluorescence**
- **Biopolymers in vivo**
- **Channels, Receptors, and Transporters**
- **Cryo-EM**
- **Intrinsically Disordered Proteins**
- **Macromolecular Machines and Assemblies**
- **Mechanobiology**
- **Membrane Fusion, Fission, and Traffic**
- **Membrane Structure and Function**
- **Membrane Transport**
- **Motility and Cytoskeleton**
- **Multiscale Genome Organization**
- **Nanoscale Approaches to Biology**
- **Physical Cell Biology**
- **Single-Molecule Forces, Manipulation, and Visualization**
- **Theory and Computation**

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Submit Your Abstract - Deadline October 1, 2022

SCIENTIFIC SYMPOSIA

Amyloid Structure, Dynamics, and Proteostasis

Elizabeth Rhoades, University of Pennsylvania, USA, *Chair*
David Eisenberg, University of California, Los Angeles, USA
Robert Tycko, NIDDK, NIH, USA
Manu Sharma, Weill Cornell Medical College, USA

Viral Recognition and Entry

James Munro, University of Massachusetts, USA, *Chair*
Ekaterina Heldwein, Tufts University, USA
Megan Stanifer, University of Florida, USA
Juan Reguera, AFMB: Laboratoire Architecture et Fonction des Macromolécules Biologiques, France

Artificial Enzymes: Protein Dynamics and Directed Evolution

Lynn Kamerlin, Uppsala University, Sweden, *Chair*
Huimin Zhao, University of Illinois at Urbana-Champaign, USA
Donald Hilvert, ETH Zurich, Switzerland
Steven Schwartz, University of Arizona, USA

Fuzzy Complexes

Benjamin Schuler, University of Zurich, Switzerland, *Chair*
Jennifer Hurley, Rensselaer Polytechnic Institute, USA
Katherine Stott, University of Cambridge, United Kingdom
Max Staller, University of California, Berkeley, USA

Ion Channels on Drugs

Vera Moiseenkova-Bell, University of Pennsylvania, USA, *Chair*
Fredrik Elinder, Linköping University, Sweden
Stephen J. Tucker, University of Oxford, United Kingdom
Ryan Hibbs, University of Texas Southwestern Medical Center, USA

Allosteric Modulation of GPCRs

Arthur Christopoulos, Monash University, Australia, *Chair*
Madan Babu, St. Jude Children's Research Hospital, USA
Ron Dror, Stanford University, USA
Moran Shalev-Benami, Weizmann Institute of Science, Israel

Unholy Matrimony of Channels and Transporters

Show-Ling Shyng, Oregon Health and Science University, USA, *Chair*
Jianping Wu, Westlake University, China
Harley Kurata, University of Alberta, Canada
David Stokes, New York University, USA

Bacterial Barriers

Randy Stockbridge, University of Michigan, USA, *Chair*
Gurol Suel, University of California, San Diego, USA
Joanna Slusky, University of Kansas, USA
Camilo Perez, University of Basel, Switzerland

Mechanisms of Membrane Insertion

Bil Clemons, California Institute of Technology, USA, *Chair*
Rebecca Voorhees, California Institute of Technology, USA
Eunyoung Park, University of California, Berkeley, USA
Ian Collinson, University of Bristol, United Kingdom

Mechanotransduction Complex in Hair Cells

Robert Fettiplace, University of Wisconsin-Madison, USA, *Chair*
Marcos Sotomayor, Ohio State University, USA
Pingbo Huang, Hong Kong University of Science and Technology
Angela Ballesteros Morcillo, NIH, USA

50 Years After the Fluid Mosaic Membrane

Sarah Keller, University of Washington, USA, *Chair*
Madan Rao, National Centre for Biological Sciences, India
Drew Marquardt, University of Windsor, Canada
Ana Garcia-Saez, University of Cologne, Germany

The Molecular Sarcomere

Samantha Harris, University of Arizona, USA, *Chair*
Anna Grosberg, University of California, Irvine, USA
Dylan Burnette, Vanderbilt University, USA
Stefan Raunser, Max Planck Institute for Molecular Physiology, Germany

SCIENTIFIC SYMPOSIA

Cytoskeletal Cross Talk

Marileen Dogterom, Delft University of Technology, The Netherlands, *Chair*
Jessica Henty-Ridilla, SUNY Upstate Medical University, USA
Michael Murrell, Yale University, USA
Dana Nicole Reinemann, University of Mississippi, USA

Genome Organization

Elizabeth Hinde, University of Melbourne, Australia, *Chair*
Marco Foiani, University of Milan, Italy
Sua Myong, Johns Hopkins University, USA
Yuichi Taniguchi, Kyoto University, Japan

The RNA World

Jeffrey Chao, Friedrich Miescher Institute for Biomedical Research, Switzerland, *Chair*
Wendy Gilbert, Yale University, USA
Rhiju Das, Stanford University, USA
Katja Petzold, Karolinska Institute, Sweden

Proton Coupled Transport in Organelles

Simon Newstead, University of Oxford, United Kingdom, *Chair*
Joseph A. Mindell, NIH, USA
Rajini Rao, Johns Hopkins University, USA
Ambre Bertholet, University of California, Los Angeles, USA

Optogenetics and Beyond

Mikhail Shapiro, California Institute of Technology, USA, *Chair*
Elena G. Govorunova, University of Texas Medical School, USA
Emilia Entcheva, George Washington University, USA
Jared Toettcher, Princeton University, USA

Opportunities for Change: Setting Standards to Address Harassment in Science

Renae Ryan, University of Sydney, Australia, *Chair*
Michael Lauer, NIH, USA
Theresa Good, NSF, USA
Speaker to be announced

Predicting Protein Fold

John Moulton, University of Maryland, USA, *Chair*
Lucy Forrest, NINDS, NIH, USA
Kathryn Tunyasuvunakool, DeepMind, United Kingdom
Sameer Velankar, European Molecular Biology Laboratory's, United Kingdom

Biophysics of Mitosis

Mary Elting, North Carolina State University, USA, *Chair*
Meredith Betterton, University of Colorado, Boulder, USA
Lillian Fritz-Laylin, University of Massachusetts Amherst, USA
Dimitrios Vavylonis, Lehigh University, USA

WORKSHOPS

Computational Modeling of Binding Thermodynamics

Carol Post, Purdue University, USA, *Chair*
Zoe Cournia, University of Athens, Greece
Jay Ponder, Washington University in St. Louis, USA
Siewert Marrink, University of Groningen, The Netherlands
Lingle Wang, Schrodinger, Inc, USA

Developments in Nanopore Biosensors

Giovanni Maglia, University of Groningen, The Netherlands, *Chair*
Min Chen, University of Massachusetts Amherst, USA
Jens Gundlach, University of Washington, USA
Cees Dekker, Delft University of Technology, The Netherlands

Abstract Presentation Options

Present your research during this interactive, multidisciplinary meeting.

Platforms

- More than 500 speakers will be selected for platform presentations from those submitting abstracts
- Platform presentations highlight early career speakers

Posters

- Over 600 scientific poster presentations daily

Abstract Topic Categories

- Proteins
- Intrinsically Disordered Proteins, Aggregates, and Condensates
- Nucleic Acids
- Lipids and Membranes
- Cell Physiology and Bioenergetics
- Channels and Transporters
- Cytoskeleton, Motility, and Motors
- Systems Biology
- Biophysics of Neuroscience
- New Developments in Biophysical Techniques
- Bioengineering and Biomaterials
- Biophysics Education

Vibrational Tools for Biomolecular and Cellular Studies

Nien-Hui Ge, University of California, Irvine, USA, *Chair*
Wei Min, Columbia University, USA
Andrei Tokmakoff, University of Chicago, USA
Shen Ye, Tohoku University, Japan

High Throughput Single Molecule Spectroscopy

Joseph Puglisi, Stanford University, USA, *Chair*
Nynke Dekker, Delft University of Technology, The Netherlands
Gijs Wuite, Vrije Universiteit Amsterdam, The Netherlands
Ilya Finkelstein, University of Texas at Austin, USA
Marcel Goldschen-Ohm, University of Texas at Austin, USA