PRX Life: A New APS Journal for the Biological Physics Community

By Orrin Shindell

This May, the APS DBIO Community Engagement Committee hosted a panel discussion about the newly-launched Physical Review X Life with Editor-In-Chief Margaret Gardel and Managing Editor Serena Bradde. The discussion focused on how the journal operates and what kinds of research manuscripts they intend to publish.

PRX Life is an open access journal aimed at the biological physics community published within the American Physical Society family of journals. The editorial board consists of Gardel and Bradde and thirteen other biological physicists working in various areas.

The essence of a PRX Life article should be that it addresses some biophysical question. For example, manuscripts that feature soft matter research should reflect on the bearing of that research on some problem in biological physics.

The journal is intended to cover all areas of the physics of living systems across scales, from molecules and cells to organisms and ecosystems. Research using any methodology—experimental, computational, or theoretical—is acceptable. There is no set length for manuscripts; they may be short letters or longer research papers.

The editors are currently employing a "light" collaborative review process where reviewers are given access to each other’s reviews for a brief period in which they may respond to the other reviewers’ comments. The collaborative review process has helped reviewers from different disciplines to better understand the scientific significance of the interdisciplinary manuscripts submitted to PRX Life.

The open access fee will be waived through the end of 2023 and the editors encourage researchers in the biological physics community to submit their work.

The panel discussion may be viewed at the APS DBIO Workshops and Networking page: https://engage.aps.org/dbio/resources/workshops-networking.
Opinion: The World is Coming for US Science Talent

By Moumita Das

Science’s best and brightest must jump through hoops to study and work in the United States. Without common-sense immigration reform, they will look elsewhere — and the US will lose out.

A few decades ago, I was a quiet girl from West Bengal, India. Even before I knew what physics was, I marveled at the thread it stitched through the natural world — an insect that could walk on water, a rainbow that shimmered on the surface of an oily puddle.

Today, I am a theoretical physicist in Rochester, New York, and my specialty is cells and tissues. My team has bolstered scientists’ understanding of the cytoskeleton, the scenes that holds cells together, and the cartilage that cushions joints. This research, which has received millions of dollars in funding from the US government and private foundations, could shape the development of new materials — imagine a prosthetic limb that heals its shape the development of new materials... 

By Drs. Marchetti and Prakash, many international scientists in the US graduated from American institutions, and many want to stay. The US would be wise to let them. College enrollment is stalling at US universities, even as the need for STEM workers is projected to grow more than twice as fast as the need for non-STEM workers.

But here’s the thing: I’m far from unique. For decades, STEM immigrants in the US like me have built great businesses, invented new technologies, and conducted crucial research. In 2019, immigrants made up 19% of the total STEM workforce, including 45% of workers with PhDs. Immigrants are projected to attract growing numbers of international students. These and other countries, like Japan and Germany, are changing their laws to make it easier for skilled immigrants to study and stay.

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3. Engaging potential biophysicists by building on this by adding random noise to the “best puzzles” – for example, trying to teach people to learn by doing. You can see if that makes the system behave in a way to teach biophysics in a modern way. 4. Biophysics is a great opportunity to teach people to learn by doing. You can see if that makes the system behave in a way to teach biophysics in... 

By Alice LB Rayne and Sarah Marzen

On June 13 at 4 PM ET, moderator Nancy Forde and panelists Jane Kondrat, Raghav Parthasarathy, and Joshua Shavelitz gathered to discuss philosophies on and tips for teaching biophysics. Here are some of the tips that resulted.

1. Thinking of science as a series of problems to solve, with biophysics having the “best puzzles” — for example, trying to determine how cells measure their size and work out when to divide.

2. Engaging potential biophysicists by showing them biophysics’ remarkable ability to make sense of things in the world, from how surfactants in lungs to help you breathed through to new gizmo work... 

5. Project-based classes are also a great way to teach biophysics in a modern way. For lab work, undergraduate students could be paired up with graduate students to carry out the practical element and then assessed by poster sessions to determine what they understood and how they communicated that.

6. Finally, does biophysics give us an opportunity for a methodological revamp of the curriculum, teaching in a more modern, joined-up way? This could give an opportunity to focus on teaching students to understand how things work, rather than learning by rote. For example, teaching chemical concentrations in terms of $\text{mol}$, not necessarily those of APS DBIO.

The views expressed in opinion pieces are not necessarily those of APS DBIO.
Connecting PUI Faculty: Not Why, But How

By Sarah Marzen

There have been two webinars so far to connect faculty from primarily undergraduate institutions, or PUI faculty. On August 30, Executive Committee Past Chair Margaret Cheung hosted a webinar on what it means to be involved in DBIO? And on July 18, at 4 PM ET, panelist Patricia Soto said, the question is not why, but how. Said moderator Orrin Shindell, “The goal of these… events has been to try to build connections between us. In many ways, there aren’t natural ways for us to interact as PUI faculty, but we do have some things that are of common concern which are different from the R1 environment.”

Panelists brought up several ways that PUI faculty might connect...

1. The most intensive option for PUI networking is a National Science Foundation (NSF) Research Coordination Networks (RCN) Grant. This “supports networks that foster communication and new collaborations among scientists, engineers, and educators who share a common interest in a new or developing area of science or engineering.” Said Patricia Soto, “There has to be a protocol of effective communication, and it [the grant’s upkeep] has to have service from faculty… but what I have learned is that that type of service is not always recognized by the department chair.” An example of such a grant is the Mercury Consortium, where the research-intensive institution on the grant houses the computer cluster and part of the indirect grant money is used to host an annual conference. The Mercury Consortium has been around for about 20 years.

2. A less intensive option is meeting at the American Physical Society March Meeting or some other meeting and finding common ground that enables future collaborations and future funding. Panelists noted that research kept their teaching fresh.

3. The relatively new Living Physics Portal enables faculty teaching biological physics to share teaching materials without having to write an article for a journal, giving a lower barrier to entry. At PUIs, we have the particular challenge of having a much more limited curriculum than bigger institutions. We have fewer variations of any given intro class—and then we have way fewer advanced courses,” said panelist Catherine Crouch. “Several of my colleagues and I were part of launching what’s called the Living Physics Portal, which is a system for sharing curricular materials aimed specifically at introductory physics for life science students.” There are two libraries in the portal, said Crouch, one that merely requires an upload and one that requires a little more documentation. Teaching materials in the vetted library get a DOI, allowing you to put those teaching materials on your CV. “As far as I can tell there’s no list like that anywhere.”

4. A final option that enables future collaborations or networking efforts is signing up on a contact list for biophysics faculty at PUIs. Said Orrin Shindell, “As far as I can tell there’s no list like that anywhere.” Fill out https://forms.gle/PfgjL1sGx345fLeU7 to indicate interest in networking with other PUI faculty.

Interested in getting more involved in DBIO?

By Orrin Shindell

On August 30, Executive Committee Past Chair Margaret Cheung hosted a webinar to inform members of the DBIO governing structure, open positions, and volunteer opportunities. She emphasized that service is also a Chair, Chair-Elect, Vice Chair, and Treasurer serves a four-year term. There is also a Chair, Chair-Elect, Vice Chair, and Past Chair.

This year, there are the following openings for the executive committee: Vice Chair, 4 years; through Chair Line; two Members-at-Large; and one Early Career Member.

Formal nominations for these positions were due September 1; however, nominations remain open until the positions are filled. Nominations should be submitted using this submission form.

In addition to the Executive Committee, DBIO members may join subcommittees as ad hoc members. A list of committees and their current and past members may be found here. Nancy Forde, who moderated the webinar, suggested members who are interested in volunteering for a specific committee could contact that committee’s current chair.

Anyone interested in more information about the DBIO governing structure is encouraged to visit the governance page.

Calendar of upcoming events

Interdisciplinary early career faculty life: Charms and challenges

MODERATOR: ARMITA NOURMOHAMMAD

Early career faculty working on interdisciplinary topics in biological physics experience unique set of challenges. These include securing resources and funding for their research, providing mentorship and training to students with different scientific backgrounds, and working in departments which may be distinct from their own academic background. In this workshop we also discuss charms and challenges of being an early career interdisciplinary faculty with biological physicists from different levels of seniority and different departments. After some brief comments from panelists, we will hold a discussion about what support we might like to see and how we might go about providing it. Everyone is welcome.

PANELISTS:
Andrea Liu, Orit Peleg, Evelyn Tang, Thierry Emonet

Preparing for and navigating the academic job market: From grad students to faculty

https://engage.aps.org/dbio/resources/workshops-networking