

Out of the pandemic comes something good?

It's hard to believe, but the pandemic has led to some potentially permanent changes that have benefited the American Physical Society Division of Biological Sciences (APS DBIO) Community. More inside.

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APS DBIO NEWSLETTER

June 2022

EDITOR: SARAH MARZEN

APS March Meeting: Past and Future

The pandemic has made several changes to the APS March Meeting, some liked and some not. First, the formerly in person meeting was and may now be hybrid. Second, there are an unprecedented number of abstracts— nearly 900 from formerly 500. And third, over fifty Focus Session organizers and not just those on the APS DBIO Program Committee are involved with sorting the sessions and soliciting abstracts, giving more “power to the players”, said APS DBIO Chair Margaret Cheung.

The last of these is a behind-the-scenes change that may encourage APS DBIO members to submit ideas for Focus Sessions and Invited Sessions, and to submit nominations for the invited speakers in August. The roughly fifty organizers of the sessions meet to understand what sessions might be held,

solicit abstracts through their personal social networks, and meet again to organize abstracts into sessions.

Meanwhile, the first of these changes seems to elicit a mixed response. A poll was sent to those who attended the American Physical Society March Meeting 2022, and while everyone was happy that there was a March Meeting, the pre-recorded talks could have gone more smoothly, according to APS DBIO Program Chair Joshua Shaevitz. 95% of in-person attendees said that pre-recorded talks were “not as good as live talks,” with many leaving the room during pre-recorded talks. Almost 40% of respondents said that in the future, the meeting should not be hybrid.

However, APS is keen to make hybrid sessions work. The APS March Meeting

can be expensive, and a hybrid meeting allows physicists to attend who might have commitments that preclude travel or are coming from other countries. “Hybrid comes with mixed feelings, but I don’t think it’s going to go away anytime soon. Perhaps APS will improve the experience of pre-recording,” said Cheung.

The sticking point seemed to be the pre-recorded talks. The deadline for submission of pre-recorded talks was very early for most of our members, resulting in a large number of missing recordings. This impacted both in-person attendees for speakers who were not present at the meeting and virtual attendees who were then unable to see many of the talks. While a live hybrid meeting might be possible, streaming every session live is expensive because

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But how is the “sausage” for APS March Meeting made?

It’s easier to effect change in the community than you might think!

The goal of the entire sorting process is to have the “optimal set of sorting categories”, said Joshua Shaevitz of Princeton, an APS DBIO ExComm member.

There are two, but really four, ways that people can contribute abstracts to sessions at APS. They differ in their amount of control that the organizer has in shaping how the community discusses their favorite issues.

AMOUNT OF INPUT



Contributed Sessions

All remaining abstracts, if they can’t be sorted into Focus Sessions or were not invited, are sorted into contributed sessions. Some examples of contributed sessions from last year:

Pre-selected Focus Sessions

If a Focus Session was successful last year, it is used again, with the expectation that enough people will again submit abstracts to make up at least one session. Sometimes, Focus Sessions are combined or split into multiple sessions, depending on the number of relevant abstracts.

Focus Sessions

New Focus Sessions can be proposed and used to sort abstracts. The organizer typically also solicits abstracts using their personal social network. Sometimes, new proposed Focus Sessions are combined with other Focus Sessions if there are not enough abstracts or split into many if there are too many. All Focus Sessions have two invited speakers.

Pandemic community engagement elaborates on how to get involved

The pandemic increased mental health issues, financial difficulties, and medical issues across the board; but surprisingly, out of the pandemic came something good – the community engagement seminars.

The latest Zoom community engagement panel showcased diverse panelists with a variety of experience with organizing and running sessions at the APS March Meeting. These are held every month at times determined by

the organizer, to be found later in the newsletter, with panelists chosen by the organizer. The organizer endeavors to find diverse panelists for these community engagement activities.

At the latest community engagement panel, panelists discussed the ups and downs of proposing sessions and sorting abstracts into sessions.

Though panelists represented a diverse range of experiences, all acknowledged

that proposing sessions and sorting abstracts seems to allow a degree of power over the direction of the communities. One, Daniel Weissman, was a first-timer whose one Focus session had blossomed into five and who organized session dinners to enable junior and senior scientists to mix. Another, Sima Setayeshgar, had one Focus session blossom into three, and had her own personally-championed sessions subsumed into one of the three. Due to the pandemic, the sorting process actually involved all session organizers, as opposed to what used to happen – an exclusive in-person meeting at Washington, DC for a few. “It gave voice to people who are organizing things,” said Ajay Gopinathan of UC Merced, an APS DBIO ExComm member.

APS DBIO ExComm member Margaret Gardel was more explicit about how proposing sessions shaped her community for years to come. “We can sculpt the sessions to be the way we want,” she said. Fifteen years ago, there were no sessions on cytoskeletons. Now, it’s a pre-selected Focus Session, meaning that it is a typically successful Focus Session.

Recording available [here](#).

Invited Sessions

For maximal control over what is presented at APS March Meeting, someone or many people can propose an Invited Session, in which only invited speakers present. Only about seven of these sessions can come from DBIO-- including jointly sponsored ones, which count for half-- and so getting an Invited Session is competitive.

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one has to pay for bandwidth and cameras in every room.

Shaevitz is optimistic, saying, “I think some of this will improve. The APS Program Committee is already working to make next year’s meeting a success.” However, he sees in person meetings as having networking benefits that are not carried yet by Zoom instantiations. “I think Zoom gets you part of the way to those things but it does not get you all the way.”

It may be the case that a hybrid meeting makes it easier for people to attend and encourages more abstracts, leading to what Cheung called “unprecedented enthusiasm” and “phenomenal progress”. However, Cheung sees whether or not the meeting is hybrid and the number of abstracts as two separate things.

Meet some of your new APS DBIO ExComm members!



Photo credit: Alain Herzog, EPFL

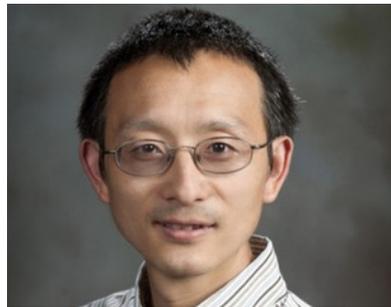
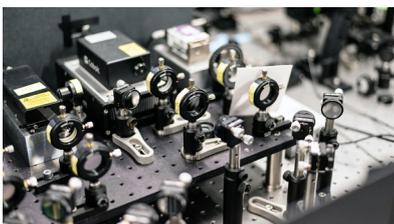
Suliana Manley, Ecole Polytechnique Fédérale de Lausanne (EPFL)

FAVORITE PAPER FROM MY GROUP:

Whichever one I'm working on at the moment. I get very enthusiastic about each project. We're currently working on a manuscript that is on bioRxiv, about event-driven microscopy. We've implemented a feedback loop between a super-resolution microscope and a neural network trained to detect mitochondrial fissions, to adapt the microscope acquisition rate in real time.

WHERE I THINK BIOPHYSICS IS HEADED::

I think biophysics is one of the most diverse fields around, and it will continue to head in many directions simultaneously.



Jianhua Xing, University of Pittsburgh

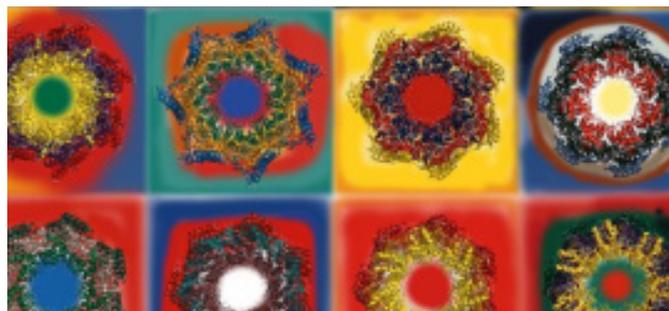
FAVORITE PAPER FROM MY GROUP:

"Achieving diverse and monoallelic olfactory receptor selection through dual-objective optimization design", PNAS (2016). Theoretical physicists are drawn towards simplicity. While biologists always emphasize that details really matter in living systems, physicists tend to abstract a problem to uncover universal laws. A main objective in biological physics studies is to reveal simple unifying principles underlying living systems. A problem that has puzzled biologists for decades is how one and only one olfactory receptor genes is selected for expression in olfactory sensory neurons. In this work we showed how the simple and familiar physics of cooperativity is exploited to achieve such a seemingly challenging task, and how such a simple model can make numerous testable predictions. The "aha" moment came after I spent a couple of days reading the

background biology papers then went out for a walk. I like to refer to the following quote from Einstein when I present this work, "Our experience hitherto justifies us in trusting that nature is the realization of the simplest that is mathematically conceivable".

WHERE I THINK BIOPHYSICS IS HEADED::

We are in a "big data" era of biology. While statistics-based data science approaches are currently dominant, I vision that data-based and -inspired theory of physics development will transform the field. Theoretical frameworks similar to what we have developed in condensed matter and chemical physics will provide insights into biological systems, which are not transparent otherwise. Meanwhile the rich physics in biological systems will serve as a unique playground for advancing our understanding of complex systems.



Reminders to nominate yourself or others for prizes of all sorts!

BY ANDREW MUGLER



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APS Fellowship

DBIO encourages fellowship nominations of diverse candidates with outstanding contributions to the biological physics community through any of the following: research, service, outreach, pedagogy, or mentoring. Candidates must be APS members in good standing at the time of nomination submission.

For more information and to submit a nomination, visit <https://www.aps.org/programs/honors/fellowships/>.

Max Delbruck Prize in Biological Physics

This is the highest APS award to recognize outstanding achievement in biological physics research. The prize consists of \$10,000, an allowance for travel to attend the meeting at which the prize is awarded, and a certificate. Nominations are open to scientists of all nationalities regardless of the geographical site at which the work was done. The prize may be awarded to more than one investigator on a shared basis.

For more information and to submit a nomination, visit <https://www.aps.org/programs/honors/prizes/delbruck.cfm>.

Award for Outstanding Doctoral Thesis Research in Biological Physics

This award recognizes doctoral thesis research of outstanding quality and achievement in any area of biological physics and encourages effective written and oral presentation of research results. The Division of Biological Physics presents the award annually, consisting of \$1,500, a certificate, travel & registration costs to attend and give an invited talk at the APS March Meeting. Doctoral students at any university in the United States or abroad who have passed their thesis defense for the Ph.D. any time from April 1st two years before the year in which the award is to be presented until March 31st in the year before the award is to be presented, are eligible for the award.

For more information and to submit a nomination, visit <https://www.aps.org/programs/honors/prizes/biological.cfm>.

Early Career Award for Biological Physics Research

This award recognizes outstanding and sustained contributions by an early-career researcher to biological physics. The Division of Biological Physics presents the award annually, consisting of \$2,000, a certificate, up to \$1000 U.S. or \$1,500 international travel reimbursement, and a registration waiver to receive the award and give an invited talk at the APS March Meeting.

For more information and to submit an application, visit <https://engage.aps.org/dbio/honors/prizes-awards/dbio-early-career-award>.

Calendar of upcoming events



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Life at a PUI

Networking
with Biophysics
Faculty from
Undergraduate
Institutions

MODERATOR: ORRIN SHINDELL

Have you wondered how to write a successful grant while working at an undergraduate institution, or how to set up a lab on a budget, or how to balance teaching and productive research? In this session, experienced biophysics faculty working at undergraduate institutions will speak to these questions and then host conversations among participants. The goal is to meet and learn from one another to support biophysicists working primarily with undergraduates. Everyone is welcome to attend.

PANELISTS:

Benjamin Stottrup, Janet Sheung,
Rae Robertson-Anderson



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Applying for faculty positions

How to Apply for a
Faculty Job in the
Field of Biological
Physics

MODERATOR: JIANHUA XING

After productive postdoctoral studies, now you want to look for a faculty position. You may have a number of questions about the process. Where to find the position announcement? Private or public universities? Primarily research or undergraduate institutes? Traditional physics departments or other departments? What to emphasize in the statements? How to interact with the recruitment committee? In this workshop sponsored by APS DBIO, a group of panelists at various career stages will provide to-do and not-to-do advice on job applications from perspectives of both recruiters and applicants.

PANELISTS:

Sarah Marzen, Jennifer Ross, Andrew Spakowitz, Jing Yan



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Biological Physics/ Physics of Living Systems: A Decadal Survey

12 PM EST



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Teaching Biophysics

12 PM EST

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