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Learning, and Learning about Learning

by w. mark leader, editor

We learn best when we are actively engaged with a subject rather than passively absorbing information, and in the case of science, engagement can mean doing research. That concept informs many of the articles in this, the annual Education issue of the ASCB Newsletter. For example, in Kelly Salmon’s feature article on p. 12, you can learn how the New Hampshire Academy of Science is helping high school students learn science by doing science—real science, not cookbook lab exercises where the results are known in advance. Community college students, too, benefit from participation in research, says Education Committee co-chair George Risinger, who is profiled in this issue (p. 42). And according to research reported in CBE—Life Sciences Education and discussed on p. 36, two aspects of undergraduate research experiences—mentorship and project ownership—influence students’ decision to pursue STEM careers. Teaching science well is about teaching curiosity, argues Andrew Murray in his President’s column.

One popular way of increasing student engagement is to flip the classroom—expose students to instructional material outside of class while bringing engaging activities into the classroom. But many faculty members remain skeptical of this approach. How can you convince your colleagues that it is good for students? Labby may be able to help (p. 40).

You can learn a lot from your students, too. By collecting data in your classroom you can discover what works best for students and what they might need help with. (This approach—being scientific about your teaching—is a key tenet of ASCB’s Declaration on Effective and Inclusive Undergraduate Biology Education, which Erin Dolan discusses in her feature article on p. 8.) But how do you get started? The Education Committee offers some advice in its column on p. 34.

Many ASCB members will be headed back into the classroom in just a few weeks. If you are among them we hope you find something of value in this issue of the Newsletter.
Liam Holt of New York University School of Medicine was one of seven scientists to receive the 2019 Pershing Square Sohn Prize for Young Investigators in Cancer Research. Holt is examining how pancreatic cancer cells adapt to survive under the physical pressure that builds up in tumors, and how this adaptation could be reversed to drive cancer cell death. Prize winners receive $200,000 per year for up to three years.

Olabisi Ojo, a former ASCB/Minorities Affairs Committee Linkage Fellow (2018), was recently chosen to be the chair of the Department of Biological Sciences at Albany State University (GA), where he is also an associate professor of biology. In addition, Ojo was recently awarded a fellowship by the Carnegie African Diaspora Fellowship Program to advance research in microbial genomics.

Apply for a COMPASS Outreach Grant

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Leon Lederman, a Nobel Prize–winning physicist who dedicated the latter part of his career to trying to improve science education in Chicago, said, “Those who never stop asking silly questions grow up to be scientists.” I know about the quote because I used to haunt the Boston Museum of Science with my kids when they were little. Was I trying to STEMwash them? No, fine a museum as it is, we were mostly taking refuge from the Boston winter in a place where they could still run around and yell without getting frostbite or death stares.

How do we recreate even a fraction of the excitement, curiosity, and joy about the world that Phoebe and Bennet wallowed in as they tore around the Museum of Science, and does recreating it matter? I’ll deal with the second question first.

**Why Curiosity Matters**

Education matters thrice over. First, wanting to know how things work is a defining feature of humanity. The technological consequences of answering that question have created and transformed civilizations and produced the machinery that we scientists use to ask our silly questions.

Second, citizens are going to be forced to make harder and harder choices about the world we live in. As the seas, temperature, pollution, and population rise and as natural resources, food and water security, the number of useful antibiotics, and political restraint fall, we will need to decide what we will sacrifice today to bequeath our children and grandchildren a healthy world.

Third, and to me most importantly, it looks like encouraging curiosity is one of the best hopes for encouraging the civil discourse we will need to make the difficult compromises necessary to get to the end of this century and beyond.

As I mentioned in my February column, Dan Kahan and his colleagues who perform research on cultural cognition demonstrated two things: that they can measure “science curiosity” and that curiosity is the one factor that mitigates the frightening tendency to use more education to opine more forcefully based on your political leanings rather than on rational analysis of the nonpartisan evidence.

These findings raise a key question: Can we teach people to be curious in the sense of caring about issues and wanting to find out about them and then use the evidence they’ve gathered to think clearly? As a
perennial optimist, I believe we can, but as a realist, I think we’ve done a horrible job so far. In my travels, I’m struck by the weakness in the correlation between the amount of education and the intrinsic curiosity of the people I talk to. For those who lost theirs, where did their inborn curiosity wash away? My deeply amateur take is that there are three culprits: parents, the Web, and schools.

Why We Fail to Teach Curiosity

Parents seem like a surprising culprit, but I think that a surprising fraction of parents are primarily interested in finding their kids a secure, remunerative position in an increasingly competitive world. Given the choice of spending the same amount of money on an education that places their children in respected, secure, and well-paid jobs and one that would teach their children to think, question, intellectually challenge individuals and society, and potentially take worse-paying and more ephemeral jobs to encourage others to do likewise, I fear that many parents, at every level of society, would pick the sure thing.

And how can I be picking on the Web, when I visit Wikipedia, PubMed, and other sites to answer questions 10 or more times a day? For two reasons. First, I spend substantially longer watching sports and playing car-racing video games, making me as addicted to the new opium of the masses as many students. Second, I’d argue that the instant, fragmentary absorption of information from the Web produces a different, more disconnected, less thought-provoking knowledge than the old-fashioned reading of a book. Knowing that answers might be pages, rather than a hyperlink away, induces people to try and generate the answers themselves as they read on.

The last culprit is school. I want to emphasize that I’m a fan of teachers and know how hard their jobs are. From standing in front of graduate and college students and intellectually flailing, I’m well aware of how hard it is to get ideas across and keep students engaged. And if teaching well has been hard for me at three very selective universities, teaching well to all your students gets much, much harder as the mix of students gets more complex and the resources of schools get worse. Nevertheless, I think we could do better.

How We Can Do Better

I believe we can improve teaching at every educational level by trying to enact three principles: having teachers emphasize that neither they nor anyone else knows everything, that the key is to learn how to think and formulate questions much more than it is to accumulate facts and even concepts, and that you can do actual, knowledge-producing experiments in any classroom.

Here’s an example of an experiment from my own English high-school education. As a junior and senior, I took a fantastic biology class using a curriculum designed by the Nuffield Science Project. A substantial part of the class was for us to design, execute, and interpret simple experiments. One spring day our job was to design a test for the existence of the paranormal. Someone had a pack of cards. We collected the aces and kings, sent our volunteer, Richard, out of the room, put the eight cards down on the bench, face-down, and brought him back. Richard felt the emanations from all eight cards and
then calmly turned over all four aces. We calculated that there was a 6% chance he’d gotten lucky, sent Richard back out, and brought him back, and he did it again, and again after a fellow experimenter had taken him out of the building to prevent peeping, and again after we had brought our teacher over, and again, and again.

Pressed, our clairvoyant finally abandoned the emanation theory and told us that whoever had held the cards while he was out of the room had held the aces and kings in separate hands and had bowed the aces a hair more than the kings, and that he, Richard, had uniquely been able to see and exploit the subtle difference. I’ve never forgotten the day when I really learned that careful observations and simple explanations are a scientist’s most potent weapons and that extraordinary claims (the emanations) require extraordinary skepticism.

Why am I devoting a President’s Column to waffling about how to encourage curiosity and apportioning blame for its dearth? The answer is simple. Every member of ASCB, from its most august and senior ranks to those of you who have signed up as undergraduates, is an educator, whether you’re talking to your colleagues, your family, your roommates, your students, or the person occupying the barstool next to you. And as you educate, you can try to elicit and answer questions from your audience rather than feeding them a more than all-you-can-eat smorgasbord of facts or droning on to the point where their eyes glaze over and their attention wanders. The more you can get your audience to question you, the more engaged they’ll be, the more you’ll have fun, and the more you’ll want to do more.

About the Author
Andrew Murray is 2019 ASCB President. He is Herchel Smith Professor of Molecular Genetics, Howard Hughes Medical Institute Professor, and Director of the NSF/Simons Center for the Mathematical and Statistical Analysis of Biology at Harvard University.
ASCB has taken a bold step to help educators adopt effective teaching and mentoring practices. Specifically, ASCB has adopted a Declaration on Effective and Inclusive Undergraduate Biology Education.¹ The Declaration offers concrete, actionable recommendations for stakeholders in life science education: faculty members, teaching staff, graduate students, departments, institutions, and organizations that support undergraduate education.

Implementing Vision and Change

The Declaration on Effective and Inclusive Undergraduate Biology Education builds on the Vision and Change report,² which is considered the guiding document for transformation of undergraduate biology education. Created a decade ago through a joint effort of biologists and educators and with sponsorship and leadership from the American Association for the Advancement of Science, Howard Hughes Medical Institute, National Science Foundation, and National Institutes of Health among others, Vision and Change offers guidance based on decades of research on student learning and development and driven by the changing landscape in higher education. It calls for shifts:

- From content coverage to conceptual understanding and competency building,
- From treating students like empty vessels into which we pour biological details to helping students develop biological expertise by engaging in thinking and working like scientists, and
- From teaching select students whose backgrounds have primed them for success in college to serving all students who want to pursue higher education regardless of their backgrounds or circumstances.

Colleges and universities across the country have been working to make Vision and Change a reality. Moreover, the authors of Vision and Change wisely recognized that, to achieve widespread improvement of undergraduate biology education, faculty and institutions could not operate in isolation. Rather, life science societies, like ASCB, need to support their members in effecting change by:

- Recognizing outstanding contributions to undergraduate education through awards or other honorifics, which could then be leveraged to promote undergraduate teaching,
- Offering professional development on teaching, learning, diversity, and inclusion for current and future faculty, and

By Erin L. Dolan
• Creating spaces for disseminating educational research during meetings and in society journals.

**ASCB’s Commitment to Undergraduate Education**

ASCB’s deep and longstanding commitment to undergraduate education is apparent in its leadership on all of these fronts. ASCB established the Bruce Alberts Award for Excellence in Science Education over two decades ago to recognize individuals who have made innovative and sustained contributions to science education. ASCB offers teaching and mentoring professional development during workshops, roundtable discussions, and other sessions during its meetings. The Society has recently moved to improve accessibility of professional development by making sessions available year-round through webinars. Since 2002, ASCB has published *CBE—Life Sciences Education (LSE)*, which publishes research and evaluation studies in biology education and has grown into the leading biology education journal. ASCB has promoted undergraduate education in myriad other ways, including travel grants for undergraduates, undergraduate poster sessions and competitions, and free annual meeting registration for community college educators.

**How Can We Be Better Teachers and Mentors?**

Clearly, ASCB isn’t just talking the talk, it’s walking the walk. Yet, Society leadership has also recognized that there remains only modest uptake of effective teaching and mentoring practices by typical faculty members. The Declaration on Effective and Inclusive Undergraduate Biology Education was created to help close the gap between what research shows about how to teach and mentor undergraduates and what we faculty do as instructors and mentors. The core tenets of the Declaration are that

• We must use evidence to inform how we teach and mentor;
• Scientific progress can best be made when individuals who bring diverse perspectives, knowledge bases, and skillsets are actively engaged; and
• We must establish and make widespread use of processes to support, motivate, and reward faculty members for teaching and mentoring effectively and inclusively.

What does this mean for our work as faculty members? It means we need to bring our scientific habits of mind to the work we do as educators and mentors, what is known as “scientific teaching.” We need to collect
and analyze data on our teaching, on our mentoring, and on our students’ learning and development. Then we need to take action based on the results, using the results to improve what we do and ultimately to benefit our students. Here are some places for faculty to start.

**The next time you teach, ask yourself:** What data can I collect right now to tell how well my students are understanding something I am teaching? Consider dedicating two minutes at the end of class to hand out index cards to your class and ask students to write 1) one thing they learned and 2) one thing they are still confused about or one question they have. Students don’t have to identify themselves; they just need to respond to the prompts. Then collect the cards and read through them quickly to figure out what the most common question or point of confusion was. Start your next class by addressing that question or confusion. Over time, you will develop a better sense of where students are struggling with material and ways you can teach to help them overcome those struggles. For more ideas on how to collect and make use of educational data to make decisions, see the LSE article “From Assays to Assessments—On Collecting Evidence in Science Teaching.”

**The next time you teach, ask yourself:** What am I doing to make sure that all students in my class have an opportunity to learn? What am I doing to ensure my students feel like they have a place in the scientific community? Consider conducting a short survey using questions drawn from the LSE article “Considering the Role of Affect in Learning: Monitoring Students’ Self-Efficacy, Sense of Belonging, and Science Identity.” You can distribute hard copies of the survey or use a Web polling tool like Poll Everywhere. This could help you figure out how your students feel about their science learning experiences and their confidence in science, which may be more influential factors in their career decision making than whether or not they have excelled in science class. If some (or all) of your students’ responses suggest they are not very confident and don’t feel like they belong in science, consider using tried-and-tested strategies for improving student engagement and building a sense of community in the classroom that can ultimately improve student learning and success.

**The next time you are working with your research group, ask yourself:** What data can I collect right now to improve my research groups’ learning and development and my mentoring skills? Again, consider asking your research group to spend just a few minutes at the end of group meeting writing responses to these prompts on an index card: 1) What was the most helpful or informative part of today’s group meeting? 2) What is one suggestion you have for improving future group meetings? Then review their responses to see what seems to be working that should continue and what actions could be taken to improve the effectiveness and inclusiveness of group meetings.

As faculty members, we spend a lot of time giving feedback to members of our research group, but we rarely ask them for feedback. **The next time you are meeting one-on-one with someone in your research group, consider pointing out this imbalance and asking them:** What feedback do you have for me? Regardless of the approach you take, you must be patient and open. Ask questions if you need clarification to understand the feedback, but otherwise just listen and do not respond by defending your decisions. Your research group members may not feel comfortable offering feedback the first few times you ask, but if you keep asking they will believe that you are sincerely interested in what they have to say.

Most importantly, don’t let best be the enemy of good. If you are not comfortable thinking about how to collect, analyze, and use educational data because it seems so different from scientific data, remember that there are many things you have done in your research that you were not initially trained to do. Yet, we can all learn and ASCB is here to help. The Education Committee has collaborated with ASCB staff to redesign parts of the ASCB
website to highlight teaching resources aligned with principles of effective and inclusive education. ASCB is also continuing its professional development programming on effective and inclusive education, hosting Online with LSE webinars during the academic year and hosted a regional educator meeting, titled Teaching Tomorrow’s Scientists, this past spring (see p. 22). Finally, ASCB is redoubling its efforts to ensure that all programs and offerings have strong representation and participation by individuals from diverse backgrounds. The Declaration on Effective and Inclusive Undergraduate Biology Education is an important part of an ongoing effort to help us all better prepare and support the next generation of scientists and scientifically engaged citizens.

Footnotes and References


About the Author

Erin L. Dolan is a professor of Biochemistry & Molecular Biology and Georgia Athletic Association Professor of Innovative Science Education at the University of Georgia, Editor-in-Chief of LSE, and Co-chair of the ASCB Education Committee.
Teaching Science through Research in Middle and High School

By Kelly Salmon

There is a consensus that a hands-on approach to teaching science helps students learn better.\textsuperscript{1,2} But how much do teaching labs reflect what scientists do every day? Many teaching labs have recipe-like directions with a known output. This is great for teaching methods and concepts, and fits well into class time. Students can, however, distinguish “school science” of rote experiments from real science where the results are unknown.\textsuperscript{3,4} Authentic science engages students by not using a recipe, forcing them to plan, think critically, and analyze data in a way that many instructional labs do not. Students find unexpected hurdles and learn that results are sometimes not as expected, but find themselves inspired because they have learned persistence, critical thinking, and the truth that answers in science always produce more questions. A retrospective study found students exposed to scientific research in high school are more likely to have and keep a STEM career than those who do not experience research until college.\textsuperscript{5}

As the Senior Scientist for the New Hampshire Academy of Science (NHAS), I manage a STEM lab that operates solely for middle and high school students and teachers. The NHAS is a nonprofit state academy affiliated with the American Association for the Advancement of Science (AAAS). We support all facets of STEM, although many of our projects have been in biology (thankfully, for this cell biologist). In summer and after-school programs, we enable students to explore novel research questions, guiding them through literature searches to formulate testable hypotheses, experimental design, data analysis, and presentation of results.

A Lab with a Twist

Our lab is run like a graduate research lab with a twist. Because students pursue individual interests, the range of topics became quite broad. As the program has grown, we have started establishing topic areas with available projects both to help students focus and to help us keep up as mentors. Since each project is unique in its techniques and hurdles, it can be difficult to assess progress (like grad school). Students take a multiple-choice quiz upon entering and leaving the program to assess competence in statistics, equipment, unit measurements, etc., so we can get a sense of knowledge gained, and surveys gather information about how we can improve. We track students through school and help them prepare for their next steps.

As expected, projects undertaken by sixth graders are simpler and more observational than projects pursued by high schoolers. All students go through initial safety, instrument, and ethics training. Communication and collaboration are also emphasized. We start most days with a roundtable lab meeting to discuss progress and troubles. Our lab has a hierarchy of experience seen in many research labs that enables newer students to learn from those who have used techniques before and the experienced students to reinforce their knowledge by teaching.
At the end of each research program, students present findings to their peers and a panel of local experts. Any student who makes substantial progress in his or her work submits a summary paper for NHAS peer review. If approved, students can submit an abstract for the AAAS annual meeting. There, students present posters, are inducted into the Junior Academy, and are introduced to the wider scientific community. Peer review, presentations, and publications (even at the level of an AAAS abstract) are milestones. We focus on the scientific merit of the experimental process, even if the result is negative. This is another valuable lesson that research instills: You will sometimes fail. It is how you continue on that is important.

**Training Teachers, Too**

Last year, we piloted a program to train local teachers to bring this type of science education to their institutions. Teachers got a crash course in research techniques and the types of questions those techniques could answer. Afterwards, they returned to their school as research mentors with ongoing equipment and scientific support from the NHAS. This produced independent study programs at two high schools and a lab program at a museum. The teachers have reached out to local experts for additional support and we started a database of mentors for students and teachers. Going forward, we will provide teachers with a project that they can take with them (like postdocs leaving a lab).

The shift from recipe-based teaching to true experiment-based science is not easy. Even in the best of circumstances and with robust support, research is challenging. It asks more of teachers than we already ask, both time-wise and intellectually. Teachers must move from their comfort zones as distributors of knowledge to become collaborators in the scientific process. It requires access to equipment and extensive background knowledge and/or the advice of STEM professionals to ensure projects are attainable.

The NHAS’s guiding light is the understanding that students should be encouraged in their curiosity and know how to pursue questions in a scientific manner, whether they intend to go to college or not, and whether they intend to pursue STEM or not. Though we do want more people in STEM careers, it is also important that all citizens are scientifically literate, thinking critically and seeking out factual sources. Regardless of his or her career path, every person should be trained as a scientist, and hands-on research is the way to make that happen.

**References**


**About the Author**

Kelly Salmon is Senior Scientist for the New Hampshire Academy of Science.
Biology Education Researcher
Mary Pat Wenderoth Named 2019 Bruce Alberts Award Winner

By Mary Spiro

Mary Pat Wenderoth, a Principal Lecturer in biology at the University of Washington, has been named the 2019 winner of ASCB’s Bruce Alberts Award for Excellence in Science Education. The award honors an individual who has demonstrated innovative and sustained contributions to science education. She will receive the award at the 2019 ASCB|EMBO Meeting in Washington, DC, this December, where she will also present a lecture.

A. Malcolm Campbell, the Herman Brown Professor of Biology and Director of the James G. Martin Genomics Program at Davidson University, wrote in his nomination letter that Wenderoth should be lauded as a research scholar, even beyond her outstanding skills as a biology lecturer, a job title that requires no burden of research. Erin Dolan, professor in the Department of Biochemistry & Molecular Biology at the University of Georgia, Athens, and co-chair of the ASCB Education Committee, wrote in her nomination that Wenderoth’s founding of the Society for the Advancement of Biology Education Research (SABER) contributed significantly to the discipline of biology education research. “The SABER annual meeting is the meeting for biology education research in the U.S.,” Dolan said.

Wenderoth was kind enough to respond to some questions about her impressive career as a life science educator and scholar. A condensed version of her response appears here; her complete response appears on the ASCB Post.

What was your experience with science teachers when you were growing up? I have very fond memories of my high school biology teacher, Mr. Mudd. He came up with such creative ways to challenge us to think deeply about things and to try to solve logic problems. I remember him giving us a black box with four or five small rods sticking through the box. As you moved the box you could tell there were things inside. He challenged us to figure out what they were and how they might be associated with the rods. We also, of course, dissected frogs and other animals and it was fascinating to “see inside” the animals and figure out how the parts fit together and did a job.

What do you think is the greatest challenge to life science education today, and how can we overcome it? I think the greatest challenge for life science education research is gaining acceptance in academia. As life science education bridges two fields, education and a life science discipline, there are times I feel that we have a home in neither of them. The life science faculty sees us as education or social science and the education people see us as life science. Our value is that we focus on pedagogical content knowledge.
(among other topics). We know our discipline well and the challenges it presents to our students, and we are figuring out and testing the most effective way to help students meet those challenges. I realize that many interdisciplinary workers feel like they have a foot in two or more worlds and are not accepted fully by any of those worlds. It is just up to us to educate others about the value of our work.

For life science education, a big challenge is the enormity of the information that is out there. It will be impossible to keep up with teaching all this information to students. The challenge now is how to help students gain the skills they need to find and make sense of the information. We need to provide them with the structure they can use to filter and synthesize all the data and facts being discovered.

Also, we are seeing a greater diversity of students in our classroom. More students are gaining access to higher education, and this will lead to a more diverse workforce. As a biologist, I know that as diversity in an ecosystem increases so does the health and productivity of that system. The same is true for the workplace. A greater diversity of people brings a greater diversity of ideas and solutions. The challenge will be to meet the needs of this diverse population because higher education has been used to educating a more homogeneous and privileged population of students.

What led to the formation of SABER?

I would attend my professional meeting, the American Physiological Society, and there would only be two education talks, yet I paid so much money for registration, flight, hotel, etc. I thought other biology education researchers might have the same experience, so I reached out to them. I was able to get a Research Coordination Networks in Undergraduate Biology Education incubator grant from the National Science Foundation to fund a small meeting of faculty to talk about forming a new society. The next year, with the help of Rob Brooker at the University of Minnesota, we pulled off the first meeting. We have been running the meetings ever since. SABER is just what I imagined: two and half days jam-packed with investigators presenting their latest findings on how to improve learning in undergraduate biology courses.

What’s next for you?

Maybe build a coalition across STEM discipline-based education research faculty. Students in STEM share many of the same issues such as problem-solving, interpreting graphs, designing experiments, etc. Each discipline has unique issues, but we have so many more in common. We could learn from each other beyond just reading the literature.

Volunteer to Review CVs

Give back to your cell biology community by signing up to help younger ASCB members with online CV review. We are always looking for more volunteers, including ASCB members in academia and industry, to help review cover letters, CVs, and resumes of young ASCB scientists. We will match you, and will only ask you to review two or three times a year. If you can help, please contact Thea Clarke at tclarke@ascb.org.
Help Grow Your Professional Society’s Membership

Members of the ASCB are our greatest strength. What better way to bolster your Society than by growing its membership? From July 1 to September 30, ASCB will host our first-ever Member-Get-A-Member Program.

Here’s how it works: Tell your colleagues why ASCB—the preeminent international community for cell biologists—is your professional home. Discuss our phenomenal annual meetings where you can learn about the latest advances in the biology of the cell. Tell them how ASCB has helped advance your career through our exclusive professional development programs. Explain how ASCB works on your behalf to inform and guide science policy by meeting with members of Congress. Let them know about ASCB’s new members-only online community platform where you can connect and collaborate with peers around the corner or across the globe. Then invite them to apply for membership.

Membership Is Rewarding!
When your referral lists you on his or her membership application, both you and the new member will receive a $10 Amazon gift card. Any membership category qualifies, but the member must be NEW and not a RENEWAL. The new member must remember to list you on the membership form.

After you have invited five to nine new members who join, you will receive a one-year complimentary ASCB membership.

When you invite 10 or more members who join, you will receive a complimentary registration to the 2019 ASCBIEMBO Annual Meeting to be held in Washington, DC, December 7–11.

Other Key Member Benefits
As you talk with your colleagues about ASCB, other key member benefits you could mention include:

- Discounts on our annual and regional meeting registration fees
- Free subscription to our science research journal Molecular Biology of the Cell (MBoC) and discounts on MBoC publishing fees
- Qualification for member-only honorific awards and grants
- Training webinars and resources
- A printed copy of the bimonthly ASCB Newsletter
- Access to free resume, CV, and cover letter review services and to the ASCB job board

So don’t delay. Share your passion for cell biology and for the world’s largest cell science professional organization.

Follow this link to begin: www.ascb.org/membership.
Council Discusses Governance Recommendations, Strategic Plan Progress, More

By Mary Spiro

ASCB’s Council had a busy agenda this June when they met for two days at the Society’s headquarters in Bethesda, MD. Important topics discussed included Society governance, strategic plan progress, publishing, regional meetings, the budget and recent audit, membership goals, future white papers, and changes to the format of the 2020 annual meeting.

Governance, Publishing, Membership
On June 17, the Council heard and approved recommendations on ways to modernize and improve the Society’s bylaws and policies and procedures, based on the work of the Governance Task Force. Some of these recommendations included increasing the number of times Council meets per year, making the Council nomination process more inclusive and transparent, and developing and implementing leadership training for Council and committee members.

Council discussed the future of publishing and changes that may happen to the business model of the Society’s science research journal, Molecular Biology of the Cell (MBoC), in this rapidly changing scholarly publishing landscape. Council approved the 2020 library subscription rates and considered ways to make MBoC sustainable other than by charging for subscriptions. Ideas included partnering with a larger commercial publisher and participating in an independent peer review service. No single roadmap for the future of publishing was chosen.

The Council approved the financial and audit report; they approved a new white paper topic on career trajectories for senior scientists; and they agreed on changes to the governance structure to the Declaration on Research Assessment initiative. ASCB’s Director of Membership Brian Thiel gave a report from the Regional Small Unit Task Force, which is looking at ways to engage members at the regional and local level. The Council agreed that the task force’s idea to provide “logistical in-kind support to existing regional scientific meetings” could be a way to raise awareness of the Society and open a pipeline for new members. ASCB would offer services such as online registration and payment processing for established meetings that ASCB members are already organizing across the country.

The Council provided input on new scheduling for the 2020 annual meeting presented by ASCB Director of Meetings Alison Harris. They were also introduced to some of ASCB’s new digital properties, including the updated website and the member-only online community. Day one of the meeting concluded with a presentation from the director of the National Institutes of Health Center for Scientific Review, Noni Byers.
Strategic Plan
The Council met for a half day on June 18 to review progress made on the Society’s strategic plan, now in its second year. After ASCB CEO Erika Shugart discussed each of the six strategic priorities, the Council broke into small groups to edit, revise, and add to the plan. Some of the outcomes of the discussion included the following:

Centrality of Cell Biology. The Council agreed that developing new and expanding on existing collaborations with other organizations and scientific entities (such as the National Cancer Institute or the 4D Nucleosome Group) could help bring in new members and provide new opportunities for current members.

Promotion of Inclusiveness and Transparency. The Council will seek ways to expand membership engagement by offering leadership training, creating subcommittees to enable more members to volunteer, and obtaining feedback through membership surveys.

Leadership in Science Outreach. The Council noted strong progress in this area, including the new digital properties, online community, social media, and ASCB Newsbrief. A new goal will be to employ more evidence-based science communication tactics.

Career Development and Enhancement. ASCB accomplished much in this strategic priority over the last year, including adding online webinars, creating regional meetings, and expanding offerings at the annual meeting. The Society will focus now on improving cohesion within professional development opportunities and providing resources for members at every career stage.

Financial Stability. The focus here will be on identifying new membership pipelines, increasing marketing efforts, and working directly with university contacts to promote membership by advertising ASCB awards.

Organizational Support. There was a discussion on recasting the committee budgets and on involving the Council more in the budgeting process.

Many councilors stayed in the Washington, DC, area on June 19 to participate in a Hill Day, where they met with members of Congress and their staffers (see related article on page 32). Bob Goldstein (University of North Carolina at Chapel Hill) and Gary Gorbsky (Oklahoma Medical Research Foundation) also stayed another day to present demonstrations at the Council for the Life Sciences Science Fair held June 20 on Capitol Hill (see related article on page 33).

Risinger Becomes New Education Committee Co-Chair

George Risinger of Oklahoma City Community College assumed the role of co-chair of the ASCB Education Committee in May 2019. He will serve until May 2022. See the profile of Risinger on p. 42.

ASCB is grateful to outgoing co-chair Melanie Styers.
New MAC Co-Chairs Come on Board

By Mary Spiro

ASCB’s Minorities Affairs Committee (MAC) welcomed some new leadership this year. Mike Boyce, assistant professor of Biochemistry and member of the Duke Cancer Institute, Duke University School of Medicine, began his term as co-chair on January 1. He will remain in office until December 2021. Latanya Hammonds-Odie, associate professor of Biology at Georgia Gwinnett College, began her term as co-chair July 1, 2019, and will serve until June 30, 2022.

ASCB extends thanks to outgoing co-chairs Franklin Carrero-Martinez, director of the program for Science and Technology for Sustainability at the National Academy of Sciences, whose term ended December 2018, and Veronica Segarra, assistant professor of biology at High Point University, whose term ended June 30, 2019.

Being Intentional about Your Career Journey

By Mary Spiro

As with any journey, it’s good to bring along a map. Your career journey is no different. ASCB’s professional development programs can help you become more intentional about what path you take. The scientific workforce has many options, and ASCB provides resources to bring awareness to those options.

“Being intentional about your career transitions is an important aspect of professional and career development,” said Ashanti Edwards, Director of Professional Development at the Society. “As a part of the strategic priorities of ASCB, career development and enhancement are vital to the success and support of our members.”

ASCB’s professional development programming comes in a variety of formats. It can be found online, in the form of free webinars, for example, at regional gatherings, such as the Teaching Tomorrow’s Scientists regional educator meeting in Athens, GA; and at the annual meeting each December. The Society also publishes many career development articles in the ASCB Post (at www.ascb.org) and ASCB Newsletter for people from graduate school through senior career levels.

Meetings

The largest selection of career enhancement programming, however, can be found at the annual meeting. The 2019 ASCB|EMBO Meeting will take place in Washington, DC, from December 7-11.

“Each year in December, the ASCB congregates with its members and the cell biology community to provide extensive professional and career development resources and opportunities to network, collaborate, and learn more about the scientific workforce,” Edwards said.

But she added, “A strategy for professional development for ASCB is to provide year-round resources and programming to support our members at each career stage. This year-round programming supplements the wealth of resources and opportunities available at the annual meeting.”
Regional meetings on various topics and the weeklong biotech courses will also continue to be learning opportunities for ASCB members and colleagues.

Webinars
ASCB’s free online webinars, launched last fall, have grown in popularity. The Society hosted two, one on obtaining a green card for research and one on science advocacy. Then ASCB’s education journal *CBE—Life Sciences Education (LSE)* created the webinar series LSE Online. These webinars serve as a kind of virtual journal club, where participants have a chance to discuss evidence-based life science education research papers.

COMPASS (the Society’s Committee for Postdocs and Graduate Students) also has started offering webinars specifically targeted to the interests of graduate students, postdocs, and early-career researchers. The first webinar was on “Finding The Right Career In Life Sciences.” Later this year, COMPASS will host webinars on “Developing leadership Skills,” and “Negotiating Your Academic Job Offer.”

Training and Mentoring
For those seeking a more intensive career enhancement experience, ASCB has created several training programs that feature a mentoring component.

The Faculty Research Education Development mentoring program, or FRED, is designed to promote grant funding success for junior faculty at minority-serving institutions (MSIs) and other institutions with a strong commitment to recruiting students from backgrounds underrepresented in STEM to the field of cell biology. FRED pairs junior faculty with those more experienced in obtaining funding to guide them over the course of a year. The program culminates with a weeklong workshop to further hone their grant writing best practices.

ASCB, in conjunction with other professional societies, also offers funding to support mentoring in teaching. The Promoting Active Learning Mentoring (PALM) network helps educators develop their abilities to teach lecture courses using active learning by working with an experienced member.

In addition, ASCB received a five-year renewal award totaling over $3 million from the National Institute of General Medical Sciences to support creative and innovative educational activities designed to complement and enhance the training of a workforce to meet the nation’s biomedical research needs. The Innovative Programs to Enhance Research Training, or IPERT initiative, is led by three PIs: Verónica Segarra, Jim Vigoreaux, and María Elena Zavala, all members of ASCB’s Minorities Affairs Committee (MAC), and ASCB CEO Erika Shugart. MAC members also provide critical input and ideas for the proposal.

A large part of the IPERT initiative is the Accomplishing Career Transitions, or ACT. This is a two-year, in-person and online, cohort-based professional development program for postdocs and assistant professors in the biological/biomedical sciences interested in transitioning into faculty and research roles. Participants must either be underrepresented minorities in science or from a primarily minority-serving institution. Participants receive travel funds for designated ACT activities.

Diversity and Inclusion
ASCB values the importance of diversity and inclusion in STEM. Recently, the Society launched two new initiatives that will be introduced at the 2019 ASCB|EMBO Meeting in Washington, DC. One is a new poster abstract submission category, “Scholarship of Diversity.” The second is a Scholarship of Diversity Talk, which will be presented by Marybeth Gasman, the Samuel DeWitt Proctor Professor of Education at Rutgers University. Her talk is entitled “Empowering People of Color in STEM.”

These are just a few of the newest additions to ASCB’s portfolio of professional development programs. Several programs will be available exclusively to ASCB members.

“In the future, ASCB plans to add more webinars and training experiences to address topics such as effective grant writing, implicit bias, unconscious bias (intent vs. impact), mentoring, setting up a lab, closing a lab, and working in industry, to name a few,” Edwards noted.
Biotech East Students Relish Insights into Business of Science

By David Clarke

When considering commercializing a scientific discovery, always ask, What’s possible? That was the advice from guest speaker Anjan Mehta, expert in innovative business and president of Trident Consulting Group. Mehta was speaking to the biological science graduate students and postdocs attending the first-ever Biotech East program held June 2–8, 2019, at the Manning School of Business, University of Massachusetts (UMass) Lowell. The ASCB-UMass Lowell program built on the well-established Biotech West course that’s been held at the Keck Graduate Institute in Claremont, CA, since 2014.

Exploring career possibilities open to PhD cell biology scientists kept the 36 attendees busy during an exciting week of learning. They came away not only with a new understanding of how scientists are turning their research into useful and sometimes extraordinarily lucrative products and companies, but also with expanded networks and friendships.

“I absolutely would recommend [the course] to my peers,” says University of Chicago postdoc Nan Xia, echoing the sentiment of other program attendees. Lacking any business background, Xia thought the weeklong series of lectures, guest speakers, and case studies “were like an MBA course.” “Also, the networking here is perfect,” she adds.

As students become increasingly aware of career possibilities other than academia, “What ASCB offers in this summer course is a really great jumpstart on seeing what the industry has to offer in a very in-depth manner,” says University of Georgia grad student Walter Woodside. For Woodside, a most valuable experience was interacting with the career panelists in one-on-one conversations about their career paths and the turns they wish they had made, where they’ve ended up, and other “inside scoops” about industry careers, whether in large organizations or small startup companies.

Exemplifying the one-on-one contacts provided by the course was an afternoon spent at the Massachusetts Medical Device Development Center (M2D2). The center offers inventors and startup executives access to world-class researchers and resources at the UMass Lowell and the UMass Medical School campuses. In informal discussions with panelists on funding startups, product-oriented
discovery, and careers and entrepreneurial paths, students were able to get highly personalized answers to their many questions about the industry options. Similarly, luncheon speaker Harvey Lodish, former ASCB president and founder of Genzyme, Inc., as well as other billion-dollar life science companies, gave an inspiring overview of how Kendall Square in Cambridge, MA, emerged as a world leader in innovation. He fielded dozens of questions about creating and working in the biotech ecosystem.

Having attended the course, Temple University postdoc Sonni-Ali Miller can now see himself in an entrepreneurial role as a scientist. “There’s a lot of misunderstanding of the business of science, particularly among scientists,” he says. “We’re very locked into the bench mindset,” but Miller says the cases studies broadened his perspective. Likewise, postdoc Hima Vangapandu of Baylor College of Medicine describes as awesome and eye-opening Steve Casper’s lecture “Commercialization in Biotech” and Deb Casey’s talk “Ethical Considerations and Presentation Fundamentals.”

Clearly, Biotech East helped graduates greatly expand their ideas about what’s possible in scientific business careers.

Biotech East was organized by Denise Dunlap, assistant professor, UMass Lowell, Manning School of Business and Thea Clarke, ASCB Director of Communications and Education.

ASCB is delighted to announce that Biogen will support scholarships for Biotech East and Biotech West participants in both 2020 and 2021!

Biology Educators Share Ideas and Inspiration in One-Day Regional ASCB Meeting

By Jayme Dyer

Monica Lewis, a postdoc at the University of Alabama at Birmingham, had never been to a teaching conference before. Attending ASCB’s “Teaching Tomorrow’s Scientists” regional meeting was an obvious choice for her: “It’s close, the registration is reasonable, and I was looking for a teaching meeting.”

ASCB’s first regional meeting, “Teaching Tomorrow’s Scientists,” was held on May 31, 2019, at the University of Georgia in Athens. The day-long conference was targeted for an audience from teaching-intensive institutions. It included education research and scientific plenaries, a poster session, a networking lunch, workshops, and a mixer.

The meeting attracted over 70 attendees, mostly from states in the Southeast. Attendees included faculty, postdocs, graduate students, and undergraduates, and the atmosphere was friendly and supportive. Melissa LaBonty, a faculty member at the University of Alabama at Birmingham noted, “Everybody’s here for the same goal: to increase learning and share the love of teaching.”

Opportunities to network occurred throughout the meeting, not just during the networking lunch and mixer. Since it was a meeting that emphasized evidence-based teaching, even the education research plenary engaged attendees in active learning. “Teaching
Tomorrow’s Scientists “was the first teaching meeting attended by Gunjan Gakhar, a faculty member at Washington State University, Vancouver. She was surprised by the degree of active engagement throughout the meeting, commenting, “It was unique to be asked to do things at the meeting. Everything I see I’m seeing from the point of view of my students.”

The poster session included work on a variety of topics, such as implementation of course-based research and unique active-learning strategies. Other posters reported results from education research on topics including students’ decision to withdraw from science gateway courses and student experiences with mentors in the research laboratory.

Workshops were offered over two sessions in the afternoon. Each session had four concurrent workshops, which aimed to build attendees’ skills in topics such as inclusion and student engagement, practical applications of education research, and development of science curricula at the department level. Heather Comstra-Desai, a postdoc at Emory University, attended the latter workshop and explained that, “It was really cool to see how people from a department develop a curriculum. It’s cool to see people from a science department be excited about teaching.”

Most attendees came from the Southeast.

The attendees called out several advantages of the regional meeting. It was only for one day and was within driving distance for many, which made it easy to participate. The low registration fee ($40 for ASCB members/$50 for nonmembers) also made it accessible. As Heather Tinsley, associate professor at University of Montevallo, summed up, “A regional meeting helps with networking because you can connect with other educators to team up on initiatives.” Then she added, “How can you not go to it?”

About the Author
Jayme Dyer teaches biology at Durham Technical Community College.

ASCB Member Benefit: One-on-One CV Review

Need some help with a cover letter, CV, resume, statement of teaching philosophy, or other document for the next step in your career? Members of the ASCB are willing to help. Just fill out a short form (www.ascb.org/cvreview), and we’ll put you in touch with a reviewer. Then the two of you can decide which digital collaboration tool to use (email, Google Docs, Skype, Wikispaces, etc.). You must be a current ASCB member to take advantage of this service.
Highlights from MBoc
Molecular Biology of the Cell
www.molbiolcell.org

Be sure to check out MBoc's Special Issue on Forces on and within Cells. (www.molbiolcell.org/toc/mbco/30/16)

Here are some important recent papers that the MBoc Editorial Board has selected for highlighting:

Mitochondrial carrier protein overloading and misfolding induce aggresomes and proteostatic adaptations in the cytosol
Yaxin Liu, Xiaowen Wang, Liam P. Coyne, Yuan Yang, Yue Qi, Frank A. Middleton, and Xin Jie Chen (May 15, 2019)

IRSp53 coordinates AMPK and 14-3-3 signaling to regulate filopodia dynamics and directed cell migration
David J. Kast and Roberto Dominguez (May 15, 2019)

A specialized condensin complex participates in somatic nuclear maturation in Tetrahymena thermophila
Rachel Howard-Till, Miao Tian, and Josef Loidl (May 15, 2019)

REEP3 and REEP4 determine the tubular morphology of the endoplasmic reticulum during mitosis
Darshan Kumar, Banafsheh Golchoubian, Ilya Belevich, Eija Jokitalo, and Anne-Lore Schlaitz (June 1, 2019)

Arf6, JIP3, and dynein shape and mediate macropinocytosis
Chad D. Williamson and Julie G. Donaldson (June 1, 2019)

Promiscuity of the catalytic Sec7 domain within the guanine nucleotide exchange factor GBF1 in ARF activation, Golgi homeostasis, and effector recruitment
Jay M. Bhatt, William Hancock, Justyna M. Meissner, Aneta Kaczmarczyk, Eunjoo Lee, Ekaterina Viktorova, Sasanka Ramanadham, George A. Belov, and Elizabeth Sztul (June 1, 2019)

Spindle–F-actin interactions in mitotic spindles in an intact vertebrate epithelium
Angela M. Kita, Zachary T. Swider, Ivan Erofeev, Mary C. Halloran, Andrew B. Goryachev, and William M. Bement (July 1, 2019)
About the Image
The stringlike Ebola virus emerging from an infected cell. Image by Heinz Feldmann, Peter Jahrling, Elizabeth Fischer, and Anita Mora, National Institute of Allergy and Infectious Diseases, National Institutes of Health.

How to Submit
Do you have an image you would like to see published here? Please contact Mark Leader at mleader@ascb.org.
The 2019 ASCB|EMBO Meeting will focus on cell biology as the fundamental basis of biology, with workshops and symposia on upcoming topics such as nontraditional model organisms, and the use of computational modeling and biophysics to “Build the Cell from the Ground Up.”

**KEYNOTE LECTURE**

Bruce Stillman  
President and Chief Executive Officer, Cold Spring Harbor Laboratory

**SYMPOSIA**

**SUNDAY, DECEMBER 8**

**Beyond Figure 7: Integrating modeling and experiment in cell biology**  
Margaret Gardel, University of Chicago; Iva Tolic, Ruder Bošković Institute, Croatia; Petra Schwille, Max-Plank Institute of Biochemistry, Germany

**Attack of the Killer Bugs: The cell biology of infectious disease**  
Sebastian Lourido, Whitehead Institute and MIT; Emily R. Troemel, University of California, San Diego

**Decisions, Decisions: How cells choose their fates**  
Alex Schier, Harvard University; Andrea Brand, The Gurdon Institute, UK

**MONDAY, DECEMBER 9**

**21st Century Machinery: The Structure, function, and evolution of protein machines**  
Andrea Musacchio, Max-Plank Institute of Molecular Physiology, Germany; Pierre Gönczy, Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland; Tatsuya Hirano, Chromosome Dynamics Laboratory, RIKEN, Japan

**What Blueprints Tell Us: How genomics informs cell biology**  
Harmit S. Malik, Fred Hutchinson Cancer Research Center/HHMI; Brenda Andrews, University of Toronto, Canada

**TUESDAY, DECEMBER 10**

**Getting from Here to There: Individual and collective cell migrations**  
Ana-Maria Lennon-Duménil, Institut Curie, France; Rodrigo Fernandez-Gonzalez, University of Toronto, Canada; Carl-Philipp Heisenberg, Institute of Science and Technology, Austria

**Google Maps of the Cell: Controlling intracellular traffic flow and direction**  
Daniel Colón-Ramos, Yale University; Elina Ikonen, Sloan Kettering Institute/HHMI

**WEDNESDAY, DECEMBER 11**

**D’Arcy Thompson at 100: Controlling cell shape and function**  
Ethan Garner, Harvard University; Jennifer Zallen, Sloan-Kettering Institute/HHMI

**MINISYMPOTUM/MICROSYMPOTUM TOPICS**

**Controlling the Cell: The Nucleus, Chromosomes and Cell Division**  
(includes Regulation of Cell Division, Mitosis & Meiosis, Chromosome Structure, the Nucleus, and From DNA to RNA)

**Cytoskeleton, Motility & Cell Mechanics**  
(includes Microtubules & Motors, Cilia/Flagella, Actin and Myosin, Cell Shape and Polarity, and Cell Biology of the Neuron)

**Education Minisymposium**

Evidence-Based Education: Biology Competency for the Classroom and Beyond

**Intracellular Organization & Quality Control**  
(includes Trafficking, Organelles and Their Interactions, Lipid Trafficking and Membrane Recycling, Phase Transitions, Autophagy, Protein Turnover & Quality Control)

**Multicellular Cell Biology: From Tissues to Organisms**  
(includes Cell Migration, Morphogenesis and Developmental Dynamics, Stem Cell & Organoid Biology, Metabolism, Immunity and Cell Death)

**New Perspectives on Cell Biology: Evolution to Super-Resolution**  
(includes Biophysics and Quantitative Approaches to Cell Biology and Emerging Model Systems)

**IMPORTANT DATES AND DEADLINES**

**Sept. 3** Abstract Submission Deadline (Poster Only)/Travel Award Deadline

**Oct. 3** Early Registration Deadline (rates go up on October 4)

**Oct. 8** Final Abstract Submission (Poster Only)

**Nov. 12** Hotel Reservation Deadline

**JOIN THE CONVERSATION #ASCBEMBO19**

ascb.org/2019-ascbembo-meeting
2019 ASCB MEMBER-ORGANIZED SPECIAL INTEREST SUBGROUPS

Saturday, December 7, 8:30 am to 11:30 am
Biological Timing: Molecular Clocks and Timers, from Systems to Synthetic Biology
Building the Cell
Cell Biology Meets the Hippo Pathway
Cellular Symmetry Breaking
Kinesin Motors - What Is Conventional?
Machine Intelligence and Statistics in Cell Biology
New Frontiers in Multifactor Regulation of Cytoskeleton
Nucleoporin Roles in Tissue Architecture, Development and Genetic Disease
Organelle Membrane Contact Sites and Cell Plasticity Control
Visualizing Immune Cell Activation

Saturday, December 7, 12:30 pm to 3:30 pm
Bacterial Cell Organization
Bottom-Up Cell Biology
Building Complexity to Understand the Microtubule Cytoskeleton: From Regulation of Microtubule Dynamics to Coordination of Motor Ensembles

Epithelia and Their Stem Cells
Lipids and Proteins in the Secretory Pathway - Homeostasis and Stress
Mechanics of Large Cellular Machines
Signaling at the Primary Cilium
Tools and Devices for Cell Biology
Tunneling Nanotubes and Other Cell Protrusions: Structure, Composition and Role in Inter-cellular Communication and Disease
Using Advanced Imaging to Redefine the Cell and Tissue Biology

Sunday, December 8, 4:15 pm to 7:15 pm
The Cellular and Molecular Basis of Invasive Metastatic Cancer

Monday, December 9, 4:15 pm to 7:15 pm
Redrawing the Cellular Map: Cytoskeletal Forces, Organelles and the Crossroads

Tuesday, December 10, 4:15 pm to 7:15 pm
Maintenance of Genome Integrity in Health and Disease

Wednesday, December 11, 8:15 am to 11:15 am
Cell Dynamics and Matrix Interactions in Three-Dimensional Environments

PRESENTING A POSTER?

Thousands of posters are presented throughout the ASCB|EMBO 2019 Meeting. Find a home for your research in one of our poster topics: https://www.ascb.org/2019ascbembo/submissiontopics. Main topics include:

- Actin Cytoskeleton
- Microtubule Cytoskeleton
- Cilia & Flagella
- Molecular Motors
- Cell Structure, Mechanics, and Motility
- Cell-Matrix and Cell-Cell Interactions
- Membrane Trafficking
- Organelles and Membrane Biology
- Nuclear Structure and Function
- Regulation and Organization of the Genome
- Cell Division: Mitosis & Meiosis
- Signal Transduction and Signaling Networks
- Proteostasis, Cell Stress, and Aging
- Cell Polarity
- Development and Morphogenesis
- Cancer Cell Biology
- Normal and Diseased Organs and Therapeutics
- Cell Biology of the Neuron
- Cell Biology of Microbes and Parasites
- Physical, Chemical & Systems Cell Biology
- New Technologies and Frontiers
- Science Education
- NEW THIS YEAR!—Scholarship of Diversity

NEW THIS YEAR! MEMBER-LED ROUNDTABLE DISCUSSIONS

Want to lead a discussion on an important issues, trend, or topic?

Apply to lead a conversation among your peers on an emerging topic in the cell biology community. Facilitators will pose a topic or question and provide a brief description of the conversation to be published in the mobile app and in an on-site handout. Application opens late August. You can indicate your interest in leading a topic during the meeting registration process.
DOORSTEP MEETING
Cancer: From Genome Instability to Therapy

Date: Saturday, December 7
Location: East Salon, Walter E. Washington Convention Center, Washington, DC

Registration and abstract submission are now open.
Abstract deadline is Tuesday, October 8.
You must be registered to attend to present an abstract.
*Discounted registration will be available to those who also register for the 2019 ASCB|EMBO Meeting.
What does it take to schedule a meeting with a member of Congress? Or his or her staffers? Do you need a lofty title or prestigious law degree? I imagined scheduling meetings with my members of Congress would require credentials higher than “graduate student.” But I recently met with staffers of my members of Congress on Capitol Hill, and the process was simpler than I thought.

I started by making a quick phone call to the Washington, DC, office of each of my members of Congress to get the contact information for their staffers whose portfolios include biomedical research funding. I then reached out to those staffers directly by email to schedule the meetings. Some staffers sent immediate responses, others required several follow-up emails, but eventually all of them were receptive to meet with me and hear my requests as a graduate researcher. It turns out I didn’t need a lofty title. I already had all of the qualifications I needed to have a meeting on Capitol Hill—I am a constituent, I am persistent, and I care about scientific research.

Do you care about scientific research? Are you persistent? Then you’ve already got what it takes to engage with members of Congress, too. Ultimately, I found engaging with policymakers is less intimidating than it might seem. The best advice I can offer is to have a specific request when meeting with a member of Congress or staffer. Since most of us rely on stable and predictable funding of the National Institutes of Health (NIH), requesting an increase in NIH funding is a good place to start.

A Quick Lesson on the Congressional Budget

To be an effective advocate for research funding, you need to know some basics about the federal budget process. Government spending can be broken down into two main types: mandatory and discretionary spending. Mandatory spending, as the name implies, is required government spending that funds programs such as Social Security, Medicaid, and Medicare. Discretionary spending funds essentially all other federal programs and agencies that aren’t included in mandatory spending. Discretionary spending levels are voted on each year by a matching set of appropriations subcommittees in the House of Representatives and the Senate.

Funding levels for the NIH are determined by the Labor-Health and Human Services (HHS)-Education Appropriations Subcommittees. In recent years, NIH funding increases have had strong bipartisan support in the House and Senate. Given bipartisan support, it would seem that an NIH funding increase is a done deal for FY20. But even if the Labor-HHS-Education
Appropriations Subcommittees in the House and Senate agree upon funding increases, another barrier stands in the way—budget caps.

The Budget Control Act of 2011 imposes limits on discretionary spending, preventing any increases in funding without a bipartisan agreement to raise these limits. Lack of a budget resolution to raise the caps can lead to sequestration or a partial or total government shutdown, disrupting the predictability of research funding. Currently, appropriations subcommittees have been working on their bills to determine the funding levels for FY20, and the House Labor-HHS-Education subcommittee has produced a funding bill that increases NIH funding by $2 billion.1

**Ready, Set, Engage!**

Now that you have a better idea of how the budget process works, let’s take a moment to practice some policy engagement. First, find the information for your members of Congress.2 From here, it’s a bit of a “choose your own adventure.”

Do you love using your social media platform? Then tweet at the official accounts of your members of Congress.

**SAMPLE TWEET:**

@([Rep.] or [Sen.]) Please vote to enable increases to NIH funding, so researchers like me in (state/district) can continue to (briefly describe research).

Do you prefer making phone calls? Give your congressperson’s DC office a call to voice your opinion. Phone calls are an especially effective form of advocacy because the office of your member of Congress can confirm you are actually her or his constituent. If you want a little more guidance, ASCB provides step-by-step instructions for calling your members of Congress.3

**SAMPLE SCRIPT:**

Hi, my name is (name), and I’m a constituent of Senator/Representative ([senator or representative’s name]). I am calling to talk about the importance of raising the budget caps for non-defense discretionary funding. As a researcher, I am strongly in support of increased funding for the NIH and NSF, which is crucial to advancements in biomedical research. Thank you for your time.

Feeling extra enthusiastic? Schedule in-person meetings with your members of Congress (or one of their staff members). This is the most effective way to communicate your request to your members of Congress. If you want to meet at a local office instead of traveling all the way to DC, locate the office nearest you on the official website for your member of Congress. Give that office a call and request contact information to schedule a meeting with the legislative assistant whose portfolio includes biomedical research. Reach out to that individual to schedule a specific date and time. If you don’t hear back within three to five days, follow up. Persistence is key to getting your meeting on the calendar. ASCB also has a great guide for this entire process.4

In recent years, NIH funding increases have had strong bipartisan support in the House and Senate.

In recent years, NIH funding increases have had strong bipartisan support in the House and Senate.
Emerging Voices

you could direct me to the appropriate person to contact with this request.

Thank you,

(name)

The fun doesn’t have to stop here. ASCB’s Advocacy Toolkit provides all the resources you need to write an op-ed, attend a town hall, invite your congressperson for a lab visit, or even start your own student policy and advocacy group on campus.5

However you choose to engage with your members of Congress, it’s not hard to make your voice heard.

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Footnotes


About the Author

Jami Conley Calderon is a PhD student in Biomedical Sciences at the University of Central Florida.

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Are You Getting ASCB Pathways?

You should be regularly receiving our monthly email update, ASCB Pathways—alerting you to the latest ASCB happenings and Annual Meeting updates, as well as the ASCB Newsbrief. If you aren’t seeing the e-newsletters in your inbox, please check your spam filter, and/or contact your system administrator to whitelist *ascb.org.

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ASCB Member Benefit: One-on-One CV Review

Need some help with a cover letter, CV, resume, statement of teaching philosophy, or other document for the next step in your career? Members of the ASCB are willing to help. Just fill out a short form (www.ascb.org/cvreview), and we’ll put you in touch with a reviewer. Then the two of you can decide which digital collaboration tool to use (email, Google Docs, Skype, Wikispaces, etc.). You must be a current ASCB member to take advantage of this service.
White House Bans Fetal Tissue Research

By Kevin Wilson

President Trump has decided to ban future federal funding of research using human fetal tissue. The U.S. Department of Health and Human Services (HHS) announced the decision in early June after months of meetings and audits.

Last fall, ASCB members and public policy staff participated in discussions with HHS officials who were interested in learning how human fetal tissue was used in research and if, in fact, there were alternative models available to the scientific community. The decision by the Trump White House is contrary to the scientific advice they received from the ASCB and other scientific organizations.

The decision bans future use of human fetal tissue in all research within the National Institutes of Health (NIH) intramural community. New or renewal grant applications from the NIH extramural community will now be reviewed by an ethics panel after the NIH scientific review process has determined them to be scientifically meritorious and eligible for funding. The ethics committee will determine if the application will be funded. Finally, the White House will devote $20 million to find alternative models to human fetal tissue research.

Days after the announcement of the new Trump Administration policy, the U.S. House of Representatives voted in favor of an amendment to prohibit the implementation of the policy. The amendment, sponsored by Representative Mark Pocan (D-WI), passed the House 225 to 193. As the appropriations process continues on Capitol Hill, the ASCB will work with other organizations to do all we can to prohibit scientifically meritorious research from being stopped for ideological reasons.

ASCB Council and Committee Members on the Hill

By Kevin Wilson

In June members of the ASCB Council were joined by members of various ASCB committees for a series of meetings on Capitol Hill. The group met with senators, representatives, and congressional staff.

The Council members included ASCB President Andrew Murray, President-Elect Eva Nogales, Treasurer Gary Gorbsky, Secretary Kerry Bloom, Omar Quintero, Bob Goldstein, George Langford, and CEO Erika Shugart. They were joined by WICB member Diane Barber; Public Policy Committee members Holly Goodson, Adriana Bankston, and Doug Cyr; Public Information Committee member Soni Lacefield; Membership Committee member Sadie Wignall; and International Affairs Committee member Celia Garcia.

The ASCB members had 24 meetings with congressional offices representing eight states. During their meetings the Council and committee members thanked the representatives for their strong support for funding for both the U.S. National Institutes of
Science and Society

Health (NIH) and the National Science Foundation (NSF). They made the point that dependable and sustainable funding for both the NIH and NSF is important for the U.S. biomedical research community.

The importance of immigration to American science was also a topic in each meeting. Surprisingly, many members of Congress do not make the connection between an open immigration policy and continued success of basic life science research in the United States.

Congress Does Science, Hands On

By Lynn Marquis

Where can members of Congress, congressional staff, and members of the public go to videotape live water bears, get pictures of their own cheek cells, and test the latest in robotic limbs? The second annual Capitol Hill Life Science Fair and Reception, hosted on June 20, 2019, by the Coalition for the Life Sciences and the Federation of American Societies for Experimental Biology! There 13 participating life science organizations, universities, and societies offered more than 200 attendees the opportunity to engage with researchers, perform small experiments, experience eye disease through interactive goggles, learn about model organisms with exhibits of zebrafish and tardigrades, understand the importance and safety of vaccinating children, and much more. Plus attendees could leave with a necklace made of their own DNA.

The Capitol Hill Life Science Fair and Reception is a unique opportunity not only to showcase fun and interactive science but to make a strong case for federally funded research. The majority of the exhibitors are funded by the National Institutes of Health and the National Science Foundation. The event showcased the broad range of research taking place because of this funding.

Organizations That Participated in the Science Fair

Association of American Medical Colleges
American Association for Cancer Research
American Association of Immunologists
American Physiological Society
Association for Research in Vision and Ophthalmology
American Society for Cell Biology
Department of Embryology at Carnegie Science
The Jackson Laboratory
Oklahoma Medical Research Foundation
Society for Neuroscience
Society for Toxicology
University of California, San Francisco
University of Chicago
Office Hours
with the Education Committee

Learning about Your Students’ Learning

Dear Education Committee,

I teach an intro course and an upper division developmental biology course, so my student populations are very different. I’m interested in figuring out what works best for my students to learn. I’m not a biology education researcher and I don’t have the time or interest to become one. That said, I’m curious about what my students are learning and how I can be effective in my teaching. Where should I start?

—Science Educator (not education researcher)

Dear Science Educator (not education researcher),

Members of the ASCB Education Committee understand your perspective: Training as a bench researcher does not necessarily prepare you to do biology education research (BER), and teaching biology does not necessarily mean you want to study teaching and learning. That said, you are clearly dedicated to improving student learning in your classroom, so the committee hopes it can help you find a happy medium to determine what works best for students to learn in your classes, without diving deeply into BER, the science of teaching and learning, or any other area of education research. Even if you don’t do this work, however, the call to be “scientific” about our teaching has been endorsed by many for some time.¹

To get started, you need a clear goal. What specifically do you want to know about your students’ learning? Perhaps there is a particular module you have developed and you want to assess it. If you would like some quick assessment ideas to see what your students learned, you can find evidence-based strategies in our May 2017 column, “How to know what your students know before it’s too late.”² This will help you think about methods for checking in with your students. If you want to dig a little deeper, you might consider the resources on teaching as research available through the Center for Integration of Research, Teaching, and Learning, which offers a list of steps to help you in the process of defining your learning goal, assessing students, and reflecting.³

Perhaps this all seems overwhelming, and you don’t have time to do this work yourself. Don’t worry, there are people who may be willing to partner with you. Does your institution have a Center for Teaching & Learning or STEM Education Center? If so, the staff there may be able to provide guidance and/or resources. Sometimes centers offer grants that you might apply for, which may include support from center staff for an academic year. Do you have colleagues in the Department or School of Education? They may be able to connect you with a student (graduate or undergraduate) who would be interested and motivated in helping you collect and analyze data about your student learning.

¹. (2019, August). ASCB newsletter.
student learning for a thesis or class project. Finally, consider science students you have currently or have worked with in the past. Many science students are interested in research and in developing their skills in data analysis and interpretation. A former student in your class may be particularly interested in how the class can be improved for future students.

Now that you’ve put the work into better understanding how your students learn, consider sharing what you learned with the broader community. Perhaps you can share your results with peers who teach the same or similar courses as you. If you have a Center for Teaching & Learning on your campus, there may be opportunities to share a poster or give a talk through the center. You could even write something up for a regional conference. Before getting started, it is good practice to contact your Institutional Review Board if you have any interest in presenting or publishing your work. They can let you know if your analysis will require any sort of approvals.

—The Education Committee

References
3www.cirtl.net/about/core_ideas/teaching_as_research.

CONGRESSIONAL BIOMEDICAL RESEARCH CAUCUS
2019 Briefing Series

Each year the Coalition for the Life Sciences (CLS) plans a series of caucuses on Capitol Hill for congressional members and staff that are designed to foster an appreciation for and understanding of biomedical research. (ASCB is a founding member of the CLS.) ASCB members are invited to attend. To see any past briefing, please visit www.coalitionforlifesciences.org. All presentations take place on Capitol Hill in Washington, DC, and start promptly at 12:00 pm. Here are the remaining 2019 topics and speakers:

**WEDNESDAY, SEPTEMBER 11**
The Future of Cancer Immunotherapy
James Allison, The University of Texas MD Anderson Cancer Center
Room: 2043 Rayburn House Office Building

**WEDNESDAY, SEPTEMBER 25**
The BRAIN Initiative: Is This Grand Challenge Living Up to Expectations?
Eve Marder, Brandeis University
Room: 2043 Rayburn House Office Building
How Undergraduate Research Experiences Work to Keep Students in STEM

By Mary Spiro

Undergraduate research experiences (UREs) are designed to help students discover if laboratory life is for them. Anecdotally they seem to encourage students to persevere in STEM degrees and careers. But West Virginia University researchers wanted to gather hard evidence to discover how and why UREs seem to work.

A team led by Paul R. Hernandez, assistant professor of Educational Psychology, surveyed more than 200 students participating in six different STEM UREs at his university over two summers. The undergrads were queried at the start, midpoint, and conclusion of their 8- to 10-week research programs. The students ranked their responses to survey questions on a numerical scale. Their responses provided an indication of how well participating in a URE helped to socialize students into the values and expectations of the scientific community.

The work of Hernandez and his colleagues provides critical information to agencies and universities that invest time and money in UREs, which tend to be costly endeavors. “Funding agencies are betting on UREs to promote STEM degrees and careers,” Hernandez explained. “Even though we have been studying them for at least 20–25 years, we are still trying to figure out where these research experiences are situated among the other clarifying experiences that a young person has in their professional development and in their decision of where they plan to spend the rest of their lives. We wanted to find out what social influencing agents set the norm and expectations.”

Project ownership turned out to be one of the significant factors in determining if a student planned to remain in a science major or pursue a scientific career. Questions such as, “To what extent did you formulate the hypothesis for your research question?” revealed the degree of the student’s ownership.

But the factor that was even more important than project ownership was how well the student was able to relate with his or her faculty mentor. “The degree to which they saw their PI as a role model in terms of adopting and internalizing scientific community values was important to those who were most likely to persist in scientific endeavors,” Hernandez said. “They had to be able to see similarity and attainability in their mentor’s lifestyle.”

These two factors—mentorship and project ownership—are elements that can be supported by educators, Hernandez said. To make UREs even better, he suggests prospective students and mentors seek out training, such as the free Entering Mentoring resource available on the Howard Hughes Medical Institute website (hhmi.org).

Going forward Hernandez will be conducting a longer study that begins in a student’s first year of college and follows him or her to graduation. Hernandez’s findings can be found in the article “Student Integration into STEM Careers and Culture: A Longitudinal Examination of Summer Faculty Mentors and Project Ownership,” which was published online in the September 1, 2018, issue of ASCB’s education journal, CBE—Life Sciences Education (LSE). You can also watch a recorded webinar featuring an in-depth discussion of this work, “Drawing Students into Scientific Careers through Research Role Modeling,” which can be found on ASCB’s YouTube channel.
How can we help cell biology students follow career paths that are right for them? When I ask students what they want to do with their PhD, I get a range of answers including industry, academia, science communication, government/policy, and others. Regardless of the answer, it’s possible, or even likely, this will change over the course of a graduate career. To help my own students navigate this terrain and ensure that I’m putting my efforts toward their current professional goals, my lab has a biannual career development meeting to reassess where each student thinks he or she currently stands. After identifying firm goals, our next step is to further explore those career options to see if a student’s goals are really aligned with his or her interests and develop skills to help the student be competitive for those career options.

**Career Development Week**

One of the most effective ways I’ve found for this exploration is to have one week set aside each year for all lab members to focus on career development. During our career development week, I typically provide a long list of career development opportunities and activities. To encourage all lab members to participate, I assign points for these activities and give away prizes for students who score the highest.

What kinds of activities are on this list? Some are baseline activities that are generally good for visibility regardless of career path. I encourage lab members to be in control of their own narrative by putting up what they want potential employers to see in an online search. This might include creating a website, joining Twitter, getting an ORCID, or making a Google Scholar profile. Other activities might focus on written communication (e.g., form a peer writing group), oral communication (e.g., prepare an elevator pitch to be used at conferences and at visiting speaker lunches), time management (e.g., block off a fixed amount of time for daily writing/thinking or try the Pomodoro Technique for focused progress), or career exploration (e.g., conduct informational interviews or use Interactive Simulation Exercises for Career Transitions). During the week, students decide which activities to participate in, complete their chosen tasks, and record their progress along with their thoughts about the utility of the exercise. At the end of the week, we have a lab meeting where points are assigned for each activity, scores tallied, and prizes awarded. The point values of the various tasks are not announced beforehand so that the resourceful lab member can’t game the system by participating only in high-scoring activities. I tend to assign higher points to tasks that have disproportionate value or require students to step outside their comfort zones.

**Career Development Activities Directly Benefit Research**

For both students and their advisors, it’s easy to put career development efforts on the back burner. Time spent on these things can feel like time lost from...
Career Navigator

research. But those concerns are shortsighted. First, it’s advisors’ responsibility to help students identify and explore career options right for them so they can align their skillsets and be competitive for those jobs. Also, many activities directly benefit one’s research efforts. For example, any development of communication skills (whether written or oral) can help students effectively convey their science. This can improve manuscript writing, fellowship applications, oral presentations, and beyond. Also, improvements in these skills are often accompanied by a boost in confidence and willingness to engage others in scientific discussion.

Second, by articulating the goal, the actions of the advisor and the student can be better aligned with less friction. Further, it’s easier to make progress toward defined goals that are more concrete than the nebulous quest to eventually finish a PhD.

Lastly, career anxiety is a reality for most people. Reducing the stress of that uncertainty can improve a person’s wellbeing so he or she is not preoccupied with existential dread. Indeed, at the end of our career development week, all of our lab members seem refreshed and have a renewed commitment to their research.

I think we should want to pursue activities that empower students even if we didn’t see these side benefits. However, clearly seeing a net gain in enthusiasm and productivity might persuade the reluctant to set aside research time for career development.

Students Devise Their Own Career Development Strategies

After several years of doing this activity, I particularly appreciate the ideas students come up with on their own beyond the offered list. Some students have talents that have been under-utilized or have their own contacts they may be inspired to finally connect with. Some of my students signed up to be pen pals with kids in a middle school science class. Communication skills developed from this activity might be exactly what is needed for the lab to effectively engage broad audiences at large meetings. This activity could also help lab members explain the significance of their work in fellowship applications.

Importantly, career development week stimulated out-of-the-box strategies. One student decided not to shave until a draft of his manuscript was finished, which he said truly motivated him to keep pushing. I’ve written about the experience of our career development weeks to date. In addition to career exploration, several students participated in outreach and advocacy activities such as overhauling the STEM week activities at their child’s school and joining the Coalition for the Life Sciences to advocate government policies supporting the biomedical sciences.

My graduate students Brittany Jack and Brae Bigge summed up one career development week this way:

By focusing on career development this week, I was alerted to what I was already doing to advance my career and how much more I could be doing to advance my career. The most valuable part of taking the time to focus on career development is that we are reminded what our goals are and why we are doing everything we are doing. Sometimes, the overall goal gets lost in the day-to-day activities and I am refreshed when I take the time to think about 10 years down the road. What does that look like? How can I make an impact now on what happens 10 years from now?

—Brittany Jack

While everything we do in graduate school
is supposed to help prepare us for our future career goals, many times we get so caught up in the little things that we forget the bigger goal that we’re working toward. This week gave me the opportunity to step back and remember why I’m doing all of this. I got to work on my website and CV, explore potential career options that I hadn’t previously thought of, and start some reading/writing/idea generating habits that I hope stick!

—Brae Bigge

So if you want to help your students find their own path to success toward their chosen career goals, all while lighting the fire of purpose, I highly recommend starting your own career development week!

**Footnotes**


4 www.avasthilab.org/2016/08/06/career-development-week-part-ii.

**About the Author**

Prachee Avasthi is assistant professor of Anatomy and Cell Biology at the University of Kansas Medical Center.
DEAR LABBY: I am a third-year assistant professor at a research 1 university who has just been assigned to teach our very large introductory biochemistry class for undergraduates. My teaching experiences and my workshops on teaching have encouraged me to “flip the classroom,” no longer a novel approach, but one that will take me significant time to do effectively. However, it would be completely new to my department. Several of my senior colleagues are highly skeptical about adopting a non-lecture format; they have expressed concern that such approaches are a lazy way to avoid “teaching” for real. I want to use an effective, interactive approach with the students, but I also now worry that those evaluating me for promotion will wonder if I am a slacker in my teaching. How do I convince them, and my chair, that some of the “newer” approaches to educating in the science classroom are solidly grounded in research and also reflect my interest in giving students the best education? I do not expect that they will respond to a request to “read the literature.”

—Worried Assistant Professor

DEAR WORRIED ASSISTANT PROFESSOR: Teaching approaches that differ from those used for decades can intimidate many faculty members. Indeed, Labby was initially resistant to innovations such as the flipped classroom but has now come to appreciate their value. You are right to try to be encouraging and convincing to your colleagues rather than provide them a sheaf of references.

First, discuss a carefully constructed and detailed outline of your course with your faculty mentors and chair. If you can convince your chair of the value of your approach, enlist him or her to remind your colleagues that introductory biochemistry is a very large class with many students of different interest levels, and the more interactive nature of a “flipped classroom” has been shown to engage students to a greater extent than traditional lecture-only classes.

Next, the best convincing evidence is YOUR convincing evidence, so be sure to conduct careful assessments before and after the course. If your campus has a Teaching and Learning Center, invite experienced staff members there to help with the evaluation and provide you with input. It will take more than one term of teaching the course to collect enough evidence to convince skeptical colleagues. Make sure your colleagues hear about your teaching evaluations, not just the first term you do this, but in subsequent terms.
Finally, provide all your colleagues with your teaching plan/syllabus and invite them to your classroom sometime during the term. Then encourage other faculty—both natural allies as well as the skeptics—to help you evaluate how you are doing.

Shifting a paradigm is very difficult, whether it is in your own science or in your teaching program. However, you are very likely to find that other assistant professors are curious how to do this type of teaching, and they may take on your approaches. Not all classes need to be flipped to provide excellent education in the sciences (or any other discipline). But as you know, the research indicates that you are on solid ground in implementing the interactive class activities that will help your students really “know” their biochemistry. Be brave and enjoy the class. Research also shows this approach is much more fun for the professor and the teaching assistants.

—Labby
George Risinger tells his community college students that research experiences are not just something students attending four-year institutions can have.

Many students attending community colleges focus on completing a specific training certificate program. They’re seeking employment quickly after graduation. Risinger, a biology professor at Oklahoma City Community College (OCCC), thinks community college students can reap huge benefits from undergraduate research experiences.

“I think it can open their eyes to a whole new world that they might not have known existed,” he says.

A few years ago, Risinger took a group of students from OCCC’s former biotechnology program to ASCB’s annual meeting.

“[The biotech students] had a much better idea than most of their peers regarding science and research,” Risinger says. “They were all pretty amazed at how big the scientific community really is and excited about the different possibilities of career paths that they’d not considered before.”

While not impossible, finding outlets where community college students can engage in undergraduate research experiences presents challenges. Luckily for Risinger, his flexible community college teaching job allows him to retain ties with the University of Oklahoma Health Sciences Center, where he earned his PhD and completed a postdoc. Because of these ongoing connections, Risinger steers students to possible undergraduate research experiences there and elsewhere.

“I have used those connections to place students in volunteer or sometimes even for-pay situations at nearby institutions,” Risinger says. “I realize that not all community college students will necessarily be near a research institution or have a professor with those types of ties. In those instances, the student may want to approach one of their professors about working together at their community college to scrape together the resources to try to do some research on campus. Logistics might be hard to figure out, but if the student and professor are passionate enough, they can get some sort of project off the ground.”

Risinger, the new co-chair of ASCB’s Education Committee, appreciates that the Society promotes evidence-based life science teaching methods, such as active learning. “I am grateful to have been able to join the committee and hope that my less-experienced perspective might help speak for those who are newer or are still considering taking these more active approaches into the classroom,” he says.

Risinger noted that ASCB strongly supports community college students and their faculty in attending the annual meetings. ASCB offers discounted memberships and free national meeting registration for educators. He says that getting more faculty members aware of these ASCB membership perks will, in turn, work toward getting more students aware of the Society.
upcoming early career meetings

2nd Annual Rocky Mountain Membrane Trafficking Meeting (RMMT)  
August 16, 2019  
Denver, CO

Postdoctoral Teaching Toolkit: Scientific Teaching for Diverse Leaders  
August 24, 2019  
San Francisco, CA

Montreal-Area Phase Separation  
August 24, 2019  
San Francisco, CA

Building Bridges between Academia and Industry  
September 2019  
Philadelphia, PA

Florida Translational Cell Biology Symposium  
September 13, 2019  
Gainesville, FL

The Northeast Nuclear Envelope Meeting  
September 20, 2019  
New Haven, CT

Toledo CelluART  
September 27, 2019  
Toledo, OH
Thank you to our recent donors to the ASCB Partnership Initiative. Their generous donations help to support ASCB’s programs and services.

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Your Support Helps ASCB Do More for You!

I hope you have seen some of the exciting new programs that are being launched by ASCB this year. In the professional development area we have expanded our successful Biotech Management Course to include both West and East Coast sessions. Additionally, we have a number of new webinars on a variety of topics in the works to help scientists at all career stages succeed! In July, we launched new online communities that help you network with your colleagues year round. We are also expanding our work with policy makers to focus on local advocacy. In addition to all of this we continue the important work we do to help you share your science and to make science a more inclusive place.

It takes money to pilot new programs. Member donations are essential for supporting our expansion of services. I hope that you will consider donating above and beyond your membership fees. When you donate you choose what programs your gift will support. Choose from

- Public outreach
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- LGBTQ taskforce
- Minority Affairs
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If you are ready to take the step and donate to ASCB you can make your donation at www.ascb.org/donate.

Thank you for your support!

Erika Shugart
CEO

The Newsletter Welcomes Letters to the Editor

Have thoughts you’d like to share with your colleagues? We’d be happy to consider your Letter to the Editor for publication in the ASCB Newsletter. Write to the Editor at mleader@ascb.org.
About the issue:
ASCB and Molecular Biology of the Cell (MBoC) recognize the profound influence that concepts and technologies from the physical and computational sciences are having on cell biology. This issue will build on the great success of the first five issues published since 2014 and will again provide an opportunity for researchers whose work crosses disciplines to reach a wide audience.

MBoC invites you to submit your best research articles, including methods papers, in the following areas:
• Quantitative imaging  • Superresolution imaging techniques and their applications  • Single-molecule biology  • Biophysical properties of cells and cell structures  • Computational and mathematical modeling  • Systems studies of cell signaling and complex physiological processes  • Innovative physical or computational approaches to cell biological problems  • Big data methods and applications

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Join Us...

ASCB | EMBO 2019 meeting
Washington, DC • December 7-11

A forum across the life sciences

Co-Program Chairs: Sue Jaspersen and Elly Tanaka

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