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ALLEN INSTITUTE for CELL SCIENCE
The Newsletter Is New
by W. Mark Leader, Editor

What is this flashy new publication in your mailbox? A new incarnation of the ASCB Newsletter, bringing a new look, new features, and even a new schedule.

The old Newsletter design served us well since 2005, but it was becoming dated and was in need of a refresh. Such a dated and somewhat stuffy looking publication certainly did not reflect the dynamism of the ASCB and of the field of cell biology. The ASCB communications team is grateful to Leeann Kirchner, the ASCB Marketing and Design Manager, for creating the new look and to members of the ASCB Committee for Postdocs and Students for their input.

With the new design will come themed issues that will focus on topics important to ASCB members. The theme for this issue is Careers. The feature articles as well as many of the regular columns address aspects of this subject, which is of vital importance to modern scientists. Look for future issues focused on Education, Technology, and Advocacy, among other themes.

Some of the old features have new names, in recognition of their digital life beyond ASCB, where they may be read by scientists in other disciplines or by members of the public not versed in ASCB vocabulary. For example, those outside of ASCB may have no idea what WICB is or recognize the WICB Column as a source of valuable career advice. The new name, Career Navigator, better conveys the column’s focus.

The Newsletter will be published six times per year. While we recognize that many members value the printed Newsletter and enjoy sharing it with their colleagues, it is now only one of several avenues that ASCB uses to communicate with its members. In 2005, when the Newsletter was published 12 times per year, ASCB’s website was modest at best, and email communications were sporadic. Now we have the ASCB Post (www.ascb.org/ascb-post), a robust online source of news for and about ASCB members, and we share news with members monthly via the ASCB Pathways emails. In this new reality, the ASCB Newsletter, lovely to look at but slow to arrive and expensive to produce, is a better home for timeless material than for breaking news. (What could be more timeless than the advice dispensed by Labby, for instance?)

I hope you enjoy your new Newsletter. Please feel free to share your thoughts and suggestions by emailing me at mleader@ascb.org or calling me at 301-347-9317.
For each issue of the Newsletter, ASCB will post a question to our followers on social media. Follow @ASCBiology on Twitter or like the American Society for Cell Biology Facebook pages for posts with the hashtag #ASCBAsks and share your thoughts. Thanks to those below who responded to our first question:

**What is the best career advice you ever received?**

If you’re always succeeding, you’re not growing.

~ Jessica Chen, @bluntDrJChen

Two pieces of advice (both from female mentors, not sure if that matters but seems relevant to some of #WomenInScience issues): better to ask for forgiveness than permission & if you work at what you think is 70% people will still think you are at 110%. ... This second one came in handy with figuring out how to juggle career & motherhood - and in case you’re wondering it does work although hard to reign yourself in when your default modus operandi is to be super excited about doing all the new stuff all the time!

~ Milka Kostic, @MilkaKostic

Follow your passion and find something that gets you out of bed in the morning. Ask yourself what gets you excited, and if it’s not what you are currently doing, change it! You may be in the wrong career path.

~ Adriana Bankston, @AdrianaBankston

Don’t get discouraged if you don’t feel like you are a perfect match for any career fields you’ve researched--your dream job may not even exist yet!

~ Kate Bradford, @KateBradfordSci

Follow us on Twitter at @ascbiology to find out the next question.
members in the news

The American Academy of Arts and Sciences has inducted Anthony P. Bretscher to its 2018 class of members. Bretscher is a professor of cell biology at Cornell University in the Department of Molecular Biology and Genetics and a member of the Weill Institute for Cell and Molecular Biology.

Anthony P. Bretscher

The State University of New York Board of Trustees recently approved the appointment of Steven J. Fliesler to the rank of Distinguished Faculty. Fliesler is the Meyer H. Riwhun Endowed Chair Professor, Vice-Chair and Director of Research, Department of Ophthalmology; and Ira G. Ross Eye Institute Vision Research Center Professor, Department of Biochemistry, University at Buffalo/State University of New York.

Steven J. Fliesler

Lynne E. Maquat, the J. Lowell Orbison Endowed Chair and Professor in the Department of Biochemistry and Biophysics at the University of Rochester School of Medicine and Dentistry, was awarded the 2018 Wiley Prize in Biomedical Sciences. The award honors scientists who challenge accepted thinking and work to open new fields of research and understanding in biomedical sciences.

Lynne E. Maquat

ASCB’s New Privacy Policy

Your data privacy and security are important to the ASCB. We have updated our privacy policy to reflect recent changes in privacy and security regulations. You may review the new policy at www.ascb.org/privacy-policy to learn about what data we have, why we have it, and how we use it.

Important message to members in the European Union, Canada, and Australia: You must now opt in to receive information from ASCB about the Annual Meeting and other ASCB programs. If you have not opted in yet, please log into your online ASCB account and go to the Interests area (https://my.ascb.org/portal/#/interests).

Find a Job, Post a Job on the ASCB Job Board at jobs.ascb.org

Post your CV for free AND receive 50% off when posting jobs as an ascb member
Eight ASCB Members Added to National Academy of Sciences Ranks

The American Society for Cell Biology congratulates ASCB members elected to the National Academy of Sciences (NAS) on May 1, 2018. NAS added 84 new members and 21 foreign associates to its ranks in recognition of their distinguished and continuing achievements in original research. Recently added ASCB members include:

- Natalie G. Ahn, University of Colorado, Boulder
- Roger J. Davis, Howard Hughes Medical Institute and University of Massachusetts Medical School
- Sarah C. R. Elgin, Howard Hughes Medical Institute and Department of Biology, Washington University in St. Louis
- Michael M. Gottesman, National Institutes of Health
- Carol A. Mason, Vagelos College of Physicians and Surgeons, Columbia University
- Alejandro Sánchez Alvarado, Howard Hughes Medical Institute and Stowers Institute for Medical Research
- Clare M. Waterman, National Heart, Lung, and Blood Institute, National Institutes of Health
- Virginia A. Zakian, Princeton University

Toward a MIRAtocracy: An Interview with NIGMS Director Jon Lorsch

By Jodi Nunnari

Jon Lorsch is arguably one of the most influential scientific public leaders in the United States for the ASCB constituency. As Director of the National Institute of General Medical Sciences (NIGMS) since 2013, he guides a multibillion dollar enterprise that funds over 10% of National Institutes of Health (NIH) grants, many of which are held by ASCB members who devote themselves to the NIGMS mission to “support basic research that increases our understanding of biological processes and lay the foundation for advances in disease diagnosis, treatment, and prevention.”

When I first met Lorsch, we were both relatively new to jobs, he as NIGMS Director and me as an ASCB Councilor. Lorsch was visiting the ASCB Council to introduce himself and to inform us on some changes he was instituting at the NIH. Those who know me know that I tend to be inherently distrustful of administrators. So I was surprised to find myself thinking that Lorsch was just “one of us”—a scientist devoted to getting good science done. Indeed, before he became NIGMS Director, Lorsch ran a successful basic research program at Johns Hopkins focused on protein translation mechanisms, which he has continued at the NIH.

At this ASCB Council meeting he stated his intention to divert NIGMS funding away from big top-down, center-based initiatives toward investigator-driven awards (R01s). As history now shows, this single decision served to significantly improve the NIGMS R01 success rate and was met with great enthusiasm in the community. Since then it has become apparent that Lorsch deeply believes that science is best served by spreading the wealth to fund a greater number of investigators. Fueled by this belief, Lorsch has initiated programs and driven changes in NIH policy. Among these, he has created the Maximizing Investigators’ Research Award (MIRA) program, championed the controversial Grant Support Index (GSI), and is overseeing the current overhaul of the NIGMS T32 program for graduate student training. Perhaps his most impactful creation is the MIRA program, in which both junior and senior investigators...
are enticed to abandon the prospect of multiple R01 awards in exchange for a single MIRA award that for well-funded investigators pays less, but has a five- instead of a four-year funding period, a separate investigator-focused reviewing mechanism that emphasizes past accomplishments, more flexibility to follow new directions and ideas, and a goal of more stability and funding.

As is the case for many innovative leaders, Lorsch’s agenda to fund more investigators has been met with some controversy and skepticism among our scientific community, including the worry that it may promote a shift from meritocracy toward mediocrity. Controversy can and usually does breed misinformation. Thus, I took the opportunity that the ASCB presidency affords me and sat down with Lorsch to get the straight scoop on a range of issues that greatly influence the ASCB membership. What follows here are excerpts from the full interview found at ascb.org/Lorsch_Interview.

**Nunnari:**
I guess the first question is what inspires you to come in every day?

**Lorsch:**
The main thing is to get the most out of the taxpayer’s money in terms of high-quality science. That’s what we do here. And that’s what drives me. That’s pretty much it.

What I worry about is lost talent. I worry about all the tremendous researchers who are struggling to stay funded, are struggling to get funded, who could be the person that makes the next great discovery or 10 years from now contributes in some important way to a medical breakthrough down the road. We may lose those advances if we don’t find a way to get them funded.

[G]etting the most and best science for the taxpayers’ money and ensuring that we are funding all the great ideas and all the great scientists that we can…are closely related to each other because the way we’re going to get the best science done, the way we’re going to maximize chances for breakthroughs is to ensure that we have a broad and diverse portfolio of researchers.

**Nunnari:**
What evidence is there that a diverse portfolio really does produce the best science? The…criticism…that I’ve heard many times in the community is that if you take that strategy of distributing the wealth to more investigators, to more grants, maybe what will result is a shift toward mediocrity.

**Lorsch:**
History shows that’s not true, that the big discoveries come from all sorts of unexpected places. You couldn’t have predicted them in advance. You can come up with plenty of examples of great scientists struggling to be funded….I think the key for us, one of the driving principles, is this broad and diverse portfolio.

We think in terms of success rates. What is the number of grants funded divided by the number of submitted applications. Right now we’re around 30%. I think that’s good. Really good. There are still things left on the table with a 30% success rate, but we would be starting to get into a ballpark where we feel a little more comfortable. When you get down to the 20s or below, you’re really leaving a lot of tremendous science on the table.
In the current system, people can submit lots of grants. That underestimates the true nature of the problem because there are people who have multiple grants. What we started to do is to focus on how many investigators we are funding. That’s another metric that really drives us. We want to make sure that we’re funding enough meritorious investigators—not just enough good grants—because the investigators are the ones with the ideas, they’re the ones who are going to make the big contribution of breakthroughs.

Nunnari:
Was MIRA your baby?

Lorsch:
Certainly, I guess you could say that. Others here had been thinking along similar lines. Peter Preusch certainly was one. He was the initial program director for MIRA.... When I came here and started studying the problems, [it became apparent that] changing the paradigm from this project-based funding model to a program-based funding model—in other words, to a single PI to support a program of research rather than individual projects in a lab...could have really profound positive implications for the system. It was at a time where the Alberts et al. paper had come out and they were talking about similar problems, with some similar ideas for things that might be changed. It seemed like the time was right to try an experiment that was relatively radical and see if we could actually change the paradigm.

Nunnari:
As a corollary to the MIRA program, do you feel like your program officers have gotten tougher about multiple R01s?

Lorsch:
Yes. And we’re headed even more so in that direction.

Nunnari:
I understand the rationale for [limiting funds for] the senior investigators based on everything you’ve said....I don’t quite understand why you’d want to limit a junior investigator right out of the blocks.

Lorsch:
[O]ne of the things we did when we started the ESI [Early Stage Investigator] program was to split the review off for the early stage investigators from the established investigators so they were reviewed in separate study sections and the early stage investigators have their own review criteria.

Nunnari:
That’s wonderful.

Lorsch:
I think that is a great thing that we’re now comparing apples to apples, oranges to oranges. In terms of the funding, this is another kind of misinterpretation or myth. The maximum they can request as an early stage investigator is $250,000. Almost all of them that we funded got $250,000 in direct costs. That is almost $60,000 more than they would’ve gotten if they had gotten an R01 as an early stage investigator from NIGMS. They’re getting more money. Now when they come in for renewal, they’re not locked into $250,000 anymore. If they did spectacularly well, they can request an increase in the budget and we can give it to them.

The other thing I was going to mention is when we look at the people awarded MIRA, ESI MIRAs, they are
about a year and a half, almost two years younger than the people awarded ESI R01s from NIGMS. Somehow, we are funding people earlier, which I think is really neat. It’s only two years of data. Let’s see if the trend continues. We’ve got to study it, but I’m optimistic. I think that’s a pretty great thing because one of the things we’re concerned about that we didn’t discuss is how long people are taking before they get their first grant. Thirty-nine is the average age at NIGMS.

Nunnari:
Good unintended consequence perhaps. I understand that there are some pretty big changes coming down the pipeline for training grants.

Lorsch:
From NIGMS. We have a whole new training grant funding opportunity announcement.

Nunnari:
It’s causing a lot of anxiety in the community. It’s viewed like another hurdle to jump over. Is that related to the workforce issues?

Lorsch:
There are elements of it that certainly are. Things such as reporting outcomes of graduate training programs are something that Shirley Tilghman, for instance, has called for repeatedly and is now codified in the FOA [Funding Opportunity Announcement]. Programs are expected to report their outcomes on a publicly available website so that students—both applicants and current trainees—can make reasonable judgments on whether they should go to a certain program and what they can expect as an outcome. Similarly, training in a career development program or programs within training grants is another area of emphasis that we’ve put into this new FOA.

If someone [applying for a training grant] wants to teach skills instead of facts, don’t just put a skills course in. Get rid of your facts course and replace it with a skills course....”

[N]early all of our training grant FOAs have an emphasis on skills. We’re looking for transformation here, not just adding new bumps in the road. We are looking for a new road....We’re not asking programs to just tack new stuff on.... We want them to relook at everything they’re doing and rework it. If someone wants to teach skills instead of facts, don’t just put a skills course in. Get rid of your facts course and replace it with a skills course or get rid of most of the facts courses....These are the kinds of things we’re really hoping to see. Big changes.

We’re talking about how we can improve the distribution of training support so that we reach more outstanding potential researchers in the country and potentially outstanding institutions. We actually have a new area that institutions can apply for a training grant in Transdisciplinary Basic Biomedical Research. It’s only open to institutions that don’t have one of our basic science training grants already or institutions that have multiple ones and want to merge some of their programs.

This idea came from community input...[M]ultiple times deans or program directors asked if they could merge two or three of their programs. This is a
mechanism to allow them to do it and we’ll see if they take us up on it or not.

Nunnari:
What projects are you currently working on? Which one really excites you the most?

Lorsch:
Certainly I would have to mention data science. I’m the co-chair of the NIH Scientific Data Council, which is an NIH-wide body that’s responsible for overseeing, organizing, and making recommendations to NIH leadership on issues related to data science on behalf of the ICs [NIH Institutes and Centers] and the Office of the Director. We were charged with developing a data science strategic plan to help guide NIH’s efforts in enhancing the ability of the scientific community and other stakeholders to engage modern data science approaches in advancing biomedical discovery. We’ve been working on that for several months now…and we’re about to put out a draft version of the plan, which I’m actually pretty excited about, for public comment in the next couple of weeks. You should see an RFI [Request for Information] out—26 pages—soon. [The RFI was released on March 5. The draft plan is available at https://bit.ly/2LiWM7A.]

I think it really focuses NIH and hopefully the rest of the ecosystem, the rest of the community, on what we need to do to really make use of the opportunities that data science and big data are presenting us to overcome the challenges that we’re going to need to overcome. It’s something that’s overdue.

That’s one [thing]. Certainly another area that we’re working on internally at NIGMS has to do with diversity. If you look at the diversity of PhDs being produced in the biomedical sciences, the number of underrepresented minority students getting PhDs has actually increased about nine-fold in the last 25 years. It’s quite impressive. But if you look at the diversity of the professoriate, at least at academic medical schools, it hasn’t changed at all in the same period; it’s flat. That plus some other analyses that have come out recently have really indicated that a failure point is the transition from postdoc to faculty. People just aren’t making that transition for whatever reason.

We don’t know if they’re choosing not to or if they’re trying and not being successful or some combination. We’re working on interventions, a new program that would help bridge that gap and allow a more diverse population of postdocs to become successful academic faculty members running their own independent labs. That’s another thing we’re excited about.

References and Footnotes
2 https://datascience.nih.gov/bd2k/about/org/SDC.

About the Author
Jodi Nunnari is 2018 ASCB President. She is distinguished professor and chair in the Department of Molecular and Cellular Biology, University of California, Davis.
Diversifying the Talent Pool for Prospective Faculty: Demystifying the Academic Career Path

By Pamela A. Raymond and Anuj Kumar

Despite decades of national focus and attention, progress toward diversifying the faculty ranks in science, engineering, and mathematical disciplines has been disappointingly slow. Here we examine some of the obstacles to achieving greater faculty diversity and discuss the NextProf Science program at the University of Michigan, which has had some success in increasing interest in academic careers among women and underrepresented minorities.

A Shrinking Talent Pool
An especially troubling obstacle to achieving faculty diversity is that women and underrepresented minorities with graduate degrees in science, engineering, and mathematics disproportionately leave the academic career path. In the biomedical sciences, the negative framing of current challenges in the biomedical workforce limits the effectiveness of efforts to diversify the faculty. The tight job market, difficulty obtaining grant funding, and long postdoctoral training periods with low pay discourage interest in faculty careers, especially for students from underrepresented groups. Interest in pursuing a faculty career at a research-intensive institution decreases for all groups as graduate training progresses, but disturbingly, this analysis showed that the magnitude of change is greater for women and minorities. These differences were not explained by objective measures of performance, self-confidence, or effectiveness of mentoring by faculty advisors.

A recent Internet-based survey of PhDs in science, math, and engineering fields showed that faculty advisor influence was a positive factor in choice of a faculty career for students from well-represented groups (white and Asian/Asian American men), but not for underrepresented minorities. The authors of the study point out that encouragement to pursue an academic career through formal and informal support networks is relatively rare and is a missed opportunity to enhance faculty diversity. The analysis also showed that, for all groups, choice of a faculty career was positively correlated with a desire for autonomy but negatively associated with a desire for leadership, suggesting a misperception that leadership is not part of an academic career.

In their introduction to a recent special issue of CBE—Life Sciences Education, “Broadening Participation in the Life Sciences: Current Landscape and Future Directions,” Gibbs and Marsteller recommend discarding the leaky pipeline metaphor in favor of an emphasis on “career development pathways” or building a “talent pool.” Structured postdoctoral training...
programs that assist trainees with pedagogical skills and professional development, such as the research- and teaching-focused Institutional Research and Academic Career Development Award K12 programs of the National Institute of General Medical Sciences, have had demonstrable success. For example, scholars participating in the Seeding Postdoctoral Innovators in Research and Education program at the University of North Carolina, Chapel Hill, over the past 15 years attained faculty positions at three times the national average and with a greater proportion of women and underrepresented minorities.7

NextProf Science
Since 2012, the University of Michigan has hosted a series of annual career development workshops for prospective faculty—senior graduate students and postdoctoral trainees from across the country. These workshops were initially sponsored by the College of Engineering (NextProf Engineering) and, since 2015, have been expanded to include additional workshops sponsored by the Natural Science Division of the College of Literature, Science, and the Arts (NextProf Science). The four-day workshops have a demonstrated commitment to diversity and are designed to encourage talented engineers, scientists, and mathematicians to consider academia as an exciting and rewarding career with numerous advantages.8

The content of these highly interactive workshops is planned in part in response to pre-workshop surveys asking participants what questions they would like to have answered. The program includes faculty-led panels and workshops on topics such as life in academia, the faculty search process, developing a teaching philosophy, writing a research statement, building a research program, mentoring, and outreach. Other sessions include presentations by notable faculty speakers about their own challenges and successes and their advice about how to navigate the academic career path.

Participants also have an opportunity to visit the department that is hosting them to tour the facilities, to meet and interact individually with faculty in their
own discipline, to participate in roundtable discussions with junior and senior faculty, and to engage in informal conversations with other participants and faculty members. These activities, enhanced and sustained by social media tools (e.g., Twitter #nextprofscience and Facebook @umnnextprofscience), help to build informal support groups for scientists who may have limited opportunities for networking at their home institutions.

A Possible Strategy for Promoting Faculty Diversity
Following the workshops, participants were asked to evaluate their experience. Over the past three years (2015, 2016, 2017; a total of 141 attendees), participants rated the usefulness of the NextProf Science workshops from a mean of 4.90 to 4.97 (measured on a five-point scale from a low of “not at all useful” to a high of “very useful,” with response rates each year over 80%).

The most useful aspects of the workshop cited by participants included learning how academia works, receiving “insider” information and tips about how to successfully navigate the process from hire to tenure, gaining insights into the life and career arc of academics, having an opportunity to talk candidly with faculty, providing many valuable networking experiences, acquiring useful tools and strategies, building a feeling of empowerment, and boosting confidence. Although the selected participants all expressed a prior interest in pursuing a career in academia, importantly after attending NextProf Science, a substantial majority (68%) were more interested in academics, and of those who reported no change (26%), all but one rated themselves as very interested in an academic career.

The demographic distribution of the NextProf Science participants to date has been 70% women and 50% underrepresented minorities. The high percentage of attendees who became more interested in an academic career after attending the workshop suggests that this intervention strategy will be successful in promoting diversity in the faculty “talent pool.” It can be argued that the ultimate success of any such effort is best assessed after a number of years, providing sufficient time for these young researchers to enter into the faculty ranks. Nevertheless, this initial feedback is encouraging and speaks to the promise in expanding programs that offer support and practical guidance to what will hopefully be our next generation of faculty leaders.

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1Gibbs KD, Griffin K (2013). What do I want to be with my PhD? The roles of personal values and structural dynamics in shaping the career interests of recent biomedical science PhD graduates. CBE—Life Sciences Education, 12, 711–723.


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Beyond The Bench: Career Options for PhDs outside of Academia

By Mary Spiro

A career path can take you strange, new places. Not everyone who earns a PhD ends up working at a university, running a lab, or earning tenure. Nonacademic career options take many shapes. Few fit neatly into Department of Labor job descriptions. ASCB spoke with four former laboratory scientists whose career paths took them beyond the bench.

Jayatri Das is Chief Bioscientist at The Franklin Institute in Philadelphia and helps tens of thousands of visitors connect with science every year. While earning her PhD in ecology and evolutionary biology at Princeton she studied the evolution and physiological regulation of the cytochrome c oxidase (COX) enzyme.

Geoffrey Hunt is Director of LabX, a public engagement initiative of the National Academy of Sciences that promotes evidence-based decision making on community issues. At Princeton, his PhD research under ASCB member Jean Schwarzbauer focused on factors that impact the behavior of mouse embryonic stem cells, primarily looking at extracellular matrix proteins.

Sudip Parikh is Senior Vice President and Managing Director for the Americas at DIA (Drug Information Association) Global, a member-driven volunteer organization that strives to create a neutral environment where life science professionals can discuss drug development with their peers, patients, and regulators. As a PhD student at The Scripps Research Institute, Parikh spent four and a half years studying one protein molecule and its role in DNA and didn’t know the job he has now even existed.

Jennifer Shieh is Chief Scientist and Senior Technology Policy Advisor for the U.S. Small Business Administration. Currently, she’s on temporary assignment to the White House Office of Science and Technology Policy supporting the President’s Cross-Agency Priority goal to improve the transfer of federally funded technologies from lab to market. During her PhD studies in neuroscience at Stanford University, she used in vitro methods with 3D cultures of explants and time-lapse imaging to study how newly formed neurons migrate.

When Did You First Consider a Nonacademic Career?

I knew then that I wanted to look for a career...which would allow me to have a broader impact on society than the relatively narrow focus of my academic research.”

Jayatri Das

When Did You First Consider a Nonacademic Career?

I knew then that I wanted to look for a career...which would allow me to have a broader impact on society than the relatively narrow focus of my academic research.”

Jayatri Das
department,” she said. But in 2005 the Tammy Kitzmiller et al. v. Dover Area School District case, which dealt with the teaching of intelligent design in the Pennsylvania public schools, revealed a critical need.

“The trial generated a great deal of media coverage about science education in general and public views of evolution in particular,” Das said. “The statistics about the latter made me realize that I was working in a bubble of science, that many Americans had misconceptions about the fundamental basis of the science that I was passionate about and why it was relevant to their lives. I knew then that I wanted to look for a career, ideally in science communication, which would allow me to have a broader impact on society than the relatively narrow focus of my academic research.”

Hunt took a science environmental policy class on a whim and discovered life beyond the bench.

“Seeing how policy required a combination of both technical knowledge and communication ability, things that I possessed and longed to put to use in combination, opened my eyes to a viable career path beyond the lab,” Hunt said.

Shieh participated in educational outreach opportunities while in grad school, even teaching and co-authoring the textbook Guide to Research Techniques in Neuroscience. But the prospect of doing a postdoc brought tears to her eyes. Such a visceral reaction could not be ignored.

“It still took an agreement with myself that I was just going to test out the non-lab life for a short time, get some broader experiences, and then I could go back to doing a postdoc if I missed the bench too much,” Shieh said.

“Letting go of the comfortable, known path was scary, but doing a PhD is all about venturing into that great unknown.”

For Parikh, there was no single moment when he decided to follow a nonacademic career path; it resulted naturally from following the questions he was asking.

“In graduate school, I worked on a lot of grant applications. So when I got my PhD and I knew I was moving to Washington, DC, I decided to find out what was on that other end when I sent in that grant application,” said Parikh. He was accepted to a National Institutes of Health fellowship at the Center for Scientific Review that allowed him to read grant applications. There he led review of the first bioinformatics grants. This led to other opportunities where he was exposed to the funding mechanisms of science. Soon he was participating in the policymaking machinery on Capitol Hill as the science advisor and professional staff to the Senate Appropriations Committee.

**How Did You Make the Switch?**

Making the switch to a nonacademic career requires a good deal of on-the-job training, but there are fellowships and internships. For example, both Das and Shieh were accepted into the National Academy of Science’s Christine Mirzayan Science and Technology Policy Fellowship, and both also had internships at the Koshland Science Museum in Washington, DC.

“My fellowship at the Koshland Science Museum introduced me to museums as a professional career option that felt like a good fit for my strengths,” Das added. “I continued to find volunteer opportunities at
museums to prepare for an eventual job. All of these experiences…helped to establish my credibility as a serious candidate when I applied.”

Shieh learned about product development while working at a small startup company called Syapse and later made use of this experience as a AAAS Science and Technology Policy Fellow at the National Cancer Institute Small Business Innovation Research (NCI SBIR) Development Center. “I stayed on after my fellowship as a program director with the NCI SBIR Development Center, and eventually moved to the National Heart, Lung, and Blood Institute, coordinating their small business programs,” Shieh said.

For Parikh, mentors guided the way. In government, he was an outsider thrust among politicians and lawyers who relied on his expertise. “People are really open to telling you what they do and how they do it, especially if you are an outsider,” he said. “I knew more about science than those people on the Hill. I stood out. It’s an opportunity to bring your background to the situation and then learn from the mentors that are there.”

Challenges? Rewards? Advice?
Working outside of academia can be difficult for someone used to the culture of academia. “The main thing is the loss of the collaborative intellectual spirit that exists among lab mates, departmental colleagues, and others within the university,” Hunt said. “That kind of collective quest for knowledge is difficult to recreate outside of academia.” Das witnessed an appreciation for breadth of knowledge, rather than depth, and learned to navigate nonacademic organizational hierarchies.

The rewards of the nonacademic career, however, are many.

“As a public servant in science policy, I feel I have the potential for even greater positive impact because I can act as a force—empowering individuals who will have outsized impacts through their own research,” Shieh said.

Das values the variety of individuals she encounters and experiences she has. “I love the professional opportunities to meet and learn from so many creative people, both in the museum and in the community, every day. And of course there’s the sheer unpredictability of the job—I’ve ridden a street luge, managed trucking schedules, flown in microgravity, given tours to famous people at a moment’s notice, and more. No two days are the same.”

Both Hunt and Das offered actionable advice for those seeking careers beyond academia, such as talking to as many people as possible who are already in the career you seek. “Follow relevant Twitter hashtags, read trade publications, join professional online discussion groups, and track job banks to find out what kind of work is involved and what people in the field talk about, both formally and informally,” Das added.

Shieh and Parikh offered emotional guidance. “Know that you are not a failure or even a career outlier, and the experiences you’ve had in graduate school are valuable, regardless of your experimental results,” Shieh said. “Critical thinking and the ability to communicate clearly are skills that help you no matter where your career path takes you.”

With Parikh, it’s all about checking your motivations: “Don’t run away from things; run toward them.”

Regardless of your career journey, ASCB offers several ways to help and to provide chances for new opportunities (see p. 19).

Critical thinking and the ability to communicate clearly are skills that help you no matter where your career path takes you.”

About the Author
Mary Spiro is ASCB’s Science Writer and Social Media Manager.
How the ASCB Can Support You throughout Your Career

By Leeann Kirchner

We couldn’t have a Careers issue of the Newsletter without talking about the ways in which ASCB can support you throughout your career. From undergrads getting their feet wet in the exciting world of scientific research, to those working to become tenure-track academic scientists, to those seeking scientific careers outside of academia, ASCB strives to facilitate an environment that promotes YOU—personally, scientifically, and professionally.

In an effort to help you collaborate, be recognized, and stay informed, we offer benefits for members of all career stages. As a member, you will receive deep discounts on ASCB|EMBO Meeting registration fees and are granted access to ASCB programs, courses, grants, and honorific cash awards.

Useful Links: ASCB/EMBO Meeting (ascb-embo2018.ascb.org); ASCB Honorific Awards (ascb.org/ascb-awards)

While we have many benefits available to all members, the following are a few of the benefits ASCB provides for you at each career stage:

Undergrads
At the discounted rate for undergrads you can attend the annual ASCB|EMBO Meeting, network with scientists in your fields of interest, and gain visibility through the very popular Undergraduate Poster Competition. As an undergrad you have access to all ASCB career resources, including online CV review, as well as access to the members-only directory. If you have an idea of what field of research you want to go into, the directory can be invaluable in making the right connections.

Graduate Students/Postdocs Develop Your Career
Graduate students and postdocs can benefit from ASCB’s professional development offerings. These include the Summer Biotech Course, held with Keck Graduate Institute to help members become more competitive for jobs in biotech and industry; the one-day Biotech Mini-Course in December; and funding to organize an Early Career Meeting. With an Early Career Meeting Grant from ASCB, a grad student or postdoc can receive up to $1,500 to organize a one-day local meeting and gain visibility as an organizer and a future leader.
In addition, career-related resources, such as online CV review by senior scientists or industry professionals and free posting of CVs on the ASCB job board, can help you get recognized by potential employers.

Apply for Awards
ASCB offers several awards specifically for graduate student and postdoc members. The new ASCB Porter Prizes for Research Excellence and the Merton Bernfield Award are aimed at graduate students and postdocs and offer cash prizes from $1,000–$4,000. ASCB also provides travel awards to the ASCB|EMBO meeting each year.

Get Involved and Give Back
Graduate students and postdocs have the right to vote in ASCB elections and to make award nominations. They can also promote the interests of the next generation of scientists by getting involved in ASCB’s standing Committee for Postdocs and Students (COMPASS). For young professionals interested in science outreach, ASCB also provides funding of up to $1,000 for new science outreach initiatives.

Useful Links: Biotech Summer Course (www.ascb.org/biotech-course); Early Career Meetings (ascb.org/earlycareermeetinggrants); COMPASS Outreach Grants (ascb.org/compass-outreach-grants); CV Review (ascb.org/cvreview); Job Board (jobs.ascb.org)

Regular Members Elevate Your Outreach
Your outreach work can inspire and develop the next generation of scientists. New this year, ASCB’s Public Engagement Grants offer up to $35,000 in funding to elevate your outreach by paying for materials and supplies, marketing, and salary for public engagement projects.

Make an Impact
The ASCB has eight different committees you can get involved with as a regular member to help influence the future of the Society and science as a whole. In no particular order, these are: Women in Cell Biology, Minorities Affairs, International Affairs, Public Policy/Advocacy, Education, Public Information, Finance & Audit, Membership, and LGBTQ+. Look out for your opportunity to join a committee this fall.

Get Access to Publications
Providing access to cutting-edge science, ASCB offers a free subscription to Molecular Biology of the Cell (MBoC) as well as member discounts on MBoC Article Publication Charges. In addition, members receive discounts of 20%–36% on journals such as Development, The Journal of Cell Science, The Journal of Experimental Biology, and more. The ASCB Newsletter, mailed to members six times a year, is a great way to stay up-to-date in policy and community

Useful Links: Public Engagement Grants (ascb.org/public-engagement-grants); ASCB Committees (ascb.org/community-committee); MBoC (molbiolcell.org)

Educators
Educators from two-year institutions and high schools receive free registration to the ASCB|EMBO meeting.

Want to improve your teaching (or help someone else improve theirs)? ASCB’s Promoting Active Learning and Mentoring Network (PALM) is a hands-on mentoring program available to educators that guides instructors to put into practice effective methods of active learning under the sustained mentorship of other instructors with experience in evidence-based active learning.

Useful Links: LSE (lifescied.org); PALM (palm.ascb.org); Education Resources (ascb.org/educationalresources)

About the Author
Leeann Kirchner is ASCB’s Marketing and Design Manager.
Eva Nogales was elected by ASCB members to serve as ASCB President in 2020. Nogales is a Senior Faculty Scientist at Lawrence Berkeley National Laboratory and a Howard Hughes Medical Institute Investigator and Professor of Biochemistry, Biophysics, and Structural Biology at the University of California, Berkeley. She will serve as President-Elect on the Executive Committee in 2019.

Others elected to Council include Anna Huttenlocher, University of Wisconsin, Madison; Karen Oegema, University of California, San Diego, and Ludwig Institute for Cancer Research; Omar Quintero, University of Richmond; and Alejandro Sánchez-Alvarado, Stowers Institute for Medical Research and Howard Hughes Medical Institute. Each member of Council will serve a three-year term beginning January 1, 2019.

The ASCB thanks the Nominating Committee members for their service: Chair Arshad Desai, Denise H. Montell, Max Nachury, Jody Rosenblatt, Gia Voeltz, Peter Walter, and Erika Shugart (ex officio).
GRADUATE STUDENTS AND POSTDOCS!
Want to attend the ASCB|EMBO Meeting—and give a talk—for FREE? Apply for these awards!

**ASCB Porter Prizes for Research Excellence**

**Who is eligible**
Graduate students and postdocs

**How to apply**
Applications should include a one- to two-page biosketch and a one-page essay describing your research and indicating how it exemplifies the spirit of Keith R. Porter’s contributions to cell biology. Two letters of support are required. One letter can come from a thesis or postdoctoral mentor, and the second from a faculty member who is neither an advisor nor collaborator, but is someone either within or outside of your home institution who can speak to your interactions with the broader scientific community.

**Awards**
An award of $2,000 for outstanding predoctoral research and an award of $4,000 for outstanding postdoctoral research will be given annually at the ASCB|EMBO Meeting. Recipients will receive a plaque and will be invited to dinner with the Porter lecturer. Travel costs of up to $1,000 will be provided to each recipient to attend the meeting to receive his or her award. Awardees will be invited to speak in a Minisymposium.

**Deadline**
July 15; apply online at my.ascb.org/initiatives/#/apply/137.

**The Merton Bernfield Memorial Award**

**Who is eligible**
An outstanding graduate student or postdoctoral fellow (at the time of nomination) who has excelled in research.

**How to apply**
Provide a one-page research statement, a CV (including a list of publications), a copy of the abstract submitted to the current year’s Annual Meeting, and an advisor’s letter of recommendation. Postdocs may submit the recommendation of their graduate student advisor. Candidates who applied in previous years may apply again.

**Awards**
The winner is presented a plaque and $1,000 and will speak at a Minisymposium at the ASCB|EMBO Meeting. Meeting registration, economy airfare, up to four nights hotel, and up to four days per diem to attend the meeting are paid.

**Deadline**
July 15; apply online at my.ascb.org/initiatives/#/apply/135.
NCI and ASCB Cohost Cancer Imaging Workshop

Attendees gather during the afternoon poster session at the April 5 workshop on Subcellular to Cellular Cancer Imaging sponsored by the National Cancer Institute (NCI) and ASCB. The two-day meeting, held on the Bethesda, MD, campus of the National Institutes of Health, was the first such collaboration between ASCB and a government agency. It drew participants and speakers from the United States and abroad to learn about advanced techniques in qualitative and quantitative imaging cancer cells in 2D and 3D, including live cell imaging methods.

2018 USA Science & Engineering Festival

Washington, DC, hosted the 2018 USA Science & Engineering Festival on April 7–8. Attendees were captivated by what they could see through microscopes attached to iPads generously loaned to ASCB by the Dan Fletcher lab at University of California, Berkeley. Thanks also to members of the ASCB Committee for Postdocs and Students for staffing the booth and sharing their enthusiasm for science with the public!

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. If you aren’t seeing the e-newsletter in your inbox, please check your spam filter, and/or contact your system administrator to whitelist *ascb.org.
SCIENCE AND TECHNOLOGY

Human Brain Organoid Allows Study of Wrinkling Forces

By Mary Spiro

ASCB member Orly Reiner and colleagues from the Department of Molecular Genetics at the Weizmann Institute of Science in Rehovot, Israel have created a brain organoid that allows them to study the mechanics of brain folding. They describe their work in the recently published article “Human brain organoids on a chip reveal the physics of folding” (https://go.nature.com/2okZ4IR). Lead author Eyal Karzbrun explained that unlike lab-on-a-chip devices, “an organoid is a miniaturized and simplified version of an organ produced in vitro in three dimensions enabling realistic micro-anatomy. Due to their size, organoids are challenging to study using live imaging.” In this work, however, Karzbrun said that by confining growth to one dimension, the team “opened up several new possibilities such as live imaging of the developmental process.”

Reiner says their organoid could be used to “model… brain malformations and to study genes that may play a role in brain folding and test them in the system.”

An interview with Reiner and Karzbrun can be found online in the ASCB Post at www.ascb.org/new-organoid-understanding-brain.

Brain organoid grown on a chip exhibits folding and serves as a new model system to study physical aspects of brain development as well as to understand neurodevelopmental disorders. Credit: Eyal Karzbrun in the lab of Orly Reiner, Weizmann Institute of Science, Israel.

ASCB’s Public Policy Committee has created an Organoid Taskforce, which recently conducted a survey on organoids. The survey results will be issued at the 2018 ASCB|EMBO Meeting in San Diego this December.

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.
Besides publishing first-rate research articles, Molecular Biology of the Cell (MBoC) publishes thoughtful Perspectives on many topics, including the diverse career opportunities available to scientists. Here are some examples. These and others can be found at https://bit.ly/2qba0KO.

From the microscope to the macroscopic: changing from the bench to portfolio management
Michael Sachs
A role in portfolio management is ideal for individuals who enjoy tackling challenges that have both technical and business components.

Pharma partnering: other people’s science
Christian Hofmann
Partnering, often also referred to as business or corporate development, identifies, acquires, and manages external scientific innovation.

Science communication: a career where PhDs can make a difference
Robert Irion
Among careers for biologists with PhDs, science communication is one of the most diverse and rewarding pathways. Myriad options exist, from traditional journalism to new media, from writing for specialists to working in public outreach.

Life as a professor at a small liberal arts college
Josh Sandquist, Laura Romberg, and Paul Yancey
The authors present a look at what it is like to be a professor at three small colleges.

From bench to bar: careers in patent law for molecular biologists
Nathan A. Machin
The molecular biologist wishing to retool herself or himself as a patent law professional has a number of specific career options to choose from.

So, what’s it really like to work in biotech?
Lisa Belmont
The basic scientific training in molecular biology required for the work is similar between academia and industry, but the way in which these skills are applied differs.

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.
About the Image

From the cover of the April 15, 2018, issue of *Molecular Biology of the Cell*: Sketch of a cell adhering to a gold-coated surface for dual-color Metal Induced Energy Transfer (dcMIET) measurements. This novel technique allows for axial nanometric localization to resolve structural details in cells at the molecular level by determining the fluorescence lifetime of respective dyes. The two insets show the color coded height of vinculin (left) and actin (right) at focal adhesions and reveal that the stress fibers have an inclination of only 0.2° and are therefore almost parallel to the surface. See the article by Chizhik, Wollnik, et al. (*Mol. Biol. Cell* 29, 773–880).

How to Submit

Do you have an image you would like to see published here? Please contact Mark Leader at mleader@ascb.org.
FOLLOW THE ARC OF SCIENTIFIC DISCOVERY....
Join us for the 2018 ASCB|EMBO Meeting, focusing on cell biology as the fundamental basis of biology and exploring more specialized fields, such as neurobiology and stem cell biology.

KEYNOTE LECTURE
Sean J. Morrison
Director, Children’s Medical Center Research Institute, University of Texas Southwestern Medical Center/HHMI

MINISYMPOSIUM/MICROSYMPOSIUM TOPICS
Autophagy and Proteostasis
Biology of Stem Cells
Cell Cycle, Cell Division, Cell Death
Cellular Stress Responses
Centrosomes, Cilia, and Flagella
Cytoskeletal, Motility, and Cell Mechanics
Evidence-Based Education
Membrane Organization and Trafficking
Metabolism
Morphogenesis and Multicellular Interactions
Neurobiology/Neurodegeneration
Neuronal Cell Biology
Nucleus
Pathogens
Phase Transitions
Stem Cells and Organoids

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Morphogenesis and Multicellular Interactions
Neurobiology/Neurodegeneration
Neuronal Cell Biology
Nucleus
Pathogens
Phase Transitions
Stem Cells and Organoids

SYMPOSIA
SUNDAY, DECEMBER 9
Nuclear Organization 8:00–9:30 am
Ibrahim I. Cissé, Massachusetts Institute of Technology
Ana Pombo, Berlin Institute for Medical Systems Biology
Arjun Raj, University of Pennsylvania
Cell Migration 9:45–10:45 am
Anna Huttenlocher, University of Wisconsin, Madison
Michael Sixt, IST Austria
Neuronal Cell Biology 9:45–10:45 am
Erika L.F. Holzbaur, University of Pennsylvania
J. Paul Taylor, St. Jude Children’s Research Hospital/HHMI

MONDAY, DECEMBER 10
Cytoskeletal Dynamics 8:00–9:30 am
Anna Akhmanova, Utrecht University, The Netherlands
Andrew Carter, MRC Laboratory of Molecular Biology, UK
Bruce Goode, Brandeis University
Metabolism 9:45–10:45 am
Heather Christofk, David Geffen School of Medicine at UCLA
Robert Farese, Jr., Harvard School of Public Health and Harvard Medical School
Regeneration and Morphogenesis 9:45–10:45 am
Hans Clevers, Hubrecht Institute, The Netherlands
Magdelena Zernicka-Goetz, University of Cambridge, UK

TUESDAY, DECEMBER 11
Organelle Communication 8:00–9:30 am
Heidi McBride, McGill University
William Prinz, National Institute of Diabetes and Digestive and Kidney Diseases, NIH
David M. Sabatini, Whitehead Institute for Biomedical Research and Massachusetts Institute of Technology

WEDNESDAY, DECEMBER 12
Quality Control 11:20 am–12:20 pm
Rachel Green, Johns Hopkins University School of Medicine
Peter Walter, University of California, San Francisco/HHMI

WANT TO GIVE A TALK?
On average 30% of first-deadline abstracts are selected for a Minisymposium or Microsymposium talk.

IMPORTANT DATES AND DEADLINES
August 1 Abstract Submission Deadline (Minisymposium/Microsymposium talk and/or poster consideration)
September 4 Abstract Submission Deadline (Poster Only)
September 4 Travel Award Deadline
October 4 Early Registration Deadline (rates go up on October 5)
October 10 Final Abstract Submission (Poster Only)
November 16 Hotel Reservation Deadline. ASCB and EMBO’s Official Housing Partner is onPeak. Be sure to book through onPeak and book early for the best rates!

JOIN THE CONVERSATION #ASCBEEMBO18
https://ascb-embo2018.ascb.org
Ballroom 6AB, San Diego Convention Center, San Diego, CA

Registration and abstract submission are now open at ascb-embo2018.ascb.org.

Abstract deadline is Wednesday, October 12. You must be registered to attend to submit an abstract.

* You must be an ASCB member to attend the doorstep meeting. Discounted registration is available to those who also register for the 2018 ASCB|EMBO Meeting. The doorstep meeting is limited to the first 225 registrants.
Emerging Voices

The Stranger in the Lab: Staff Scientists—Who They Are, What They Do, and How They Improve Academia

By Bruno da Rocha-Azevedo

When you think of lab personnel, you probably think of the PI, postdocs, graduate students, and even some undergrads. However, there is often another person in the lab who plays an important role that isn’t always clearly understood: the staff scientist.

The scientific workforce needs to make better use of staff scientist positions, which are neither trainee nor faculty appointments, as noted in the now classic 2014 paper “Rescuing U.S. biomedical research from its systemic flaws” by Bruce Alberts, Mark Kirschner, Shirley Tilghman, and Harold Varmus. In a 2015 poll by Nature with 19,850 respondents, 15,265 believed that creating staff scientist positions would make the post-postdoc career transition better and help ease the problem of the lack of faculty positions available in comparison with the number of postdocs interested in academic positions. Many postdocs have embraced the idea of being a staff scientist, and some institutions have promoted the hiring of staff personnel. While many students and postdocs are interested in these positions, such positions are still difficult to find and job descriptions are hard to find. The answer to the question, “What are staff scientists and what do they do?” still needs clarification. Here I will discuss academic staff scientist positions, which usually require a PhD or even postdoctoral experience. The staff positions discussed here differ from industry-type staff positions.

Finding and Accepting a Staff Scientist Job: The Importance of Talking!

Staff scientists have different titles in different institutions, including “research scientists,” “investigators,” and “specialists.” Staff scientists can be responsible for managing labs (lab manager, lab director), facilities, or specific equipment (such as microscopes, flow cytometers, crystallography equipment, etc.). The diversity of names and duties makes it complex to search for these types of jobs on job search websites. Of course, word of mouth can be helpful, as can paying special attention to job openings with titles such as lab manager, which don’t necessarily require PhD/postdoc-level training if they are solely administrative.

After you find a staff scientist job opening, focus on
having an honest conversation with your prospective PI regarding both of your expectations. Is it a long-term position or are you planning to leave after a specific project is done? What are the duties of this job: research, managing the lab, training students/postdocs, or all of the above? You’ll need to discuss salary, benefits, work schedules, and how promotion is handled. Some institutions offer gradual salary increases based on years of experience (titles can vary based on that), or even a chance at a faculty appointment (if you have your own grant). However, most of the time staff scientist appointments are paid for with the PI’s research money, which is why the hiring conversation before accepting a job offer is critical. There is no official maximum length for a staff scientist position, unlike time-limited graduate school and postdoc appointments.

**What the Job Entails**

Some staff scientist jobs are similar to a postdoctoral research position: doing research, writing papers, going to conferences, and acquiring new knowledge for your own research portfolio. This is a perfect scenario for people who “don’t want to be a PI” but “love to be at the bench doing experiments.” Sometimes a postdoc gets upgraded to a staff scientist job as a way to keep a valuable person in the lab after the postdoctoral fellowship officially ends. Other staff scientists are commonly hired as experts in some special capability, such as microscopy, cell culture, computational programming, or animal work. Staff scientists may also be responsible for lab orders, general organization, and recruitment, which provides administrative experience to research-focused postdocs. For small labs these extra duties are minor, but in bigger labs, they can be time consuming. Facility staff positions can be more oriented toward using specific equipment for other people’s research objectives, training people, and/or equipment troubleshooting. These management and facility-oriented positions do not necessarily guarantee your name on publications. Once again, a conversation between you and your potential boss is critical to define how much of your job involves managing, and how publication policies are dealt with.

Many staff scientists have their own grants. For instance, 36% of the grants awarded to the Broad Institute since 2011 were given to staff scientists. Yet places like the Broad Institute, one of the pioneers in using staff scientists as a valuable part of the scientific workforce, are not the general rule. Once again, the possibility of writing and submitting grants should be discussed between the staff scientist and PI. Some institutions will grant faculty status (as instructors) to staff scientists with awarded grants. However, most staff grants are connected to the PI’s research topic.

**Staff Scientists Transition to….?**

Where a staff scientist position leads is a tricky question. There are examples of lifetime staff scientists, or staff scientists who move on to different labs as staff, or staff scientists transitioning to faculty (or other) positions. One situation that makes staff scientists move to another lab is the lack of funding from his or her PI. As mentioned, most staff stipends are paid by grants awarded to their PI, and therefore the stability of the position is dependent on continued funding. Long-term staff scientists also sometimes need to find new jobs because their PI retires. For facility staff positions, that’s usually not a problem since universities/institutions will cover salary and as long as the job is going great, the
It is common to observe staff scientists transitioning to industry jobs or faculty positions in the same or other institutions. In these situations, the staff scientists work extra time to make their CVs competitive for the academic job market and/or to gain some specific expertise. Due to the vital importance of staff positions, it is important to keep your PI in the loop regarding your plans, since an ill-timed staff departure can hurt the lab and its scientific agenda.

The Workforce Needs More Staff Scientists

Highly qualified personnel enable research advancement. PIs, especially young faculty, spend precious time writing and submitting grants yet labs are in need of personnel with experience to move the research forward (both the research itself as well as the training of students and postdocs). Facilities with advanced technology and equipment also need personnel with expertise to be able to operate, train, and troubleshoot.

Postdocs and students should think about what they like to do. Faculty positions include writing, submitting grants, and teaching—often with significantly reduced time at the bench. If you like the “doing” part of science and not the writing /funding part of it, a staff scientist position may be a great fit for you. Furthermore, staff positions can be a great example of transitional careers—a place to learn new things and make you a better scientist for future endeavors. Academia should have space for people aiming to enter both paths.

If you choose the staff scientist path, either permanently or temporarily, make sure you enjoy the science you are doing and the way you are doing it. The pressure and the stress of the academic setting are still there, but all the fun, cool parts of scientific discovery are there as well.

References


About the Author

Bruno da Rocha-Azevedo is a senior research scientist in the Department of Biophysics at the University of Texas Southwestern Medical Center.

Got Questions?

Labby has answers. ASCB’s popular columnist will select career-related questions for publication and thoughtful response in the ASCB Newsletter. Confidentiality guaranteed if requested. Write us at labby@ascb.org.
Three pillars of faculty development at most institutions are teaching, scholarship, and service. Though much attention has been given to recruiting and retaining a diverse pool of scientists (including cell biologists) from graduate school through the postdoc years to junior faculty and finally tenure, one area that has received less attention is the important milestone of achieving the status of full professor. Additionally, many mid-career scientists must juggle their time between their professional responsibilities and caring for children, for aging parents, or both. Thus, work–life balance continues to be a challenge even after tenure. Sadly, women and underrepresented minorities often exit the academic pipeline prior to achieving the status of full professor despite some gains at other critical career transitions.

As with other career transitions, moving from associate professor to full professor requires careful planning, mentoring, and support to enable continued progress along the career continuum. However, unlike for other critical career transitions, more often than not mentoring, institutional support, and even financial support are not as readily available. A 2013 report by Canale, Herdklotz, and Wild evaluating mid-career faculty support found that while 39 institutions surveyed had some form of institutional support for faculty development, few offered support targeted to post-tenure, mid-career faculty. Furthermore, teaching institutions with high teaching loads typically have fewer resources and fewer opportunities for continued faculty development. This, in turn, leads to dissatisfaction and perceived reduced productivity in the area of scholarship even for faculty being recognized for excellence in the areas of teaching and mentoring.

**IDPs: Not Just for Students**

One way to ensure that you are making progress toward your long-term goal is to write a detailed three-year or five-year development plan with a timeline for achieving the outcomes. Individual development plans (IDPs) are often used for mentoring students, but they are also valuable at other career stages. The development of post-tenure IDPs can help establish goals that can ensure a seamless transition from a mid-career associate professor to an active and engaged full professor who will positively impact your institution and your community. A critical part of the successful IDP is to actively seek out a supportive peer mentor (or mentors) who can help you to critically assess whether you are making progress toward your professional goals; and if you are not, they can provide constructive feedback to help you redirect your efforts so that you reach your goals. Finally, after achieving your goal remember to pay it forward; help to mentor others by establishing a support network in your institution to help address issues with the career transitions.

**Seek Out Opportunities That Enhance Your Professional Development**

Though limited, there are indeed professional development opportunities for mid-career faculty. Look for opportunities to enhance your leadership
experience by attending programs that specifically promote leadership such as the Linton-Poodry SACNAS Leadership Institute or the Project Kaleidoscope STEM Leadership Institute. Some professional development opportunities are specifically designed to provide support for faculty members at minority-serving institutions to advance their research and teaching effectiveness through visiting scholar sabbatical programs. Another option is to attend conferences outside of your immediate field that may lead to new research directions or collaborations. The new ASCB Public Engagement Grants provide funding, mentoring, and project assessment to ASCB members in community engagement and in gaining experience in public outreach. Indeed, societies like ASCB should continue to develop and promote specific programming to help mid- and late-career faculty to continue their development as professionals, educators, and community leaders.

Finally, one benefit of tenure is that it allows faculty to “rock the boat” at their home institutions and to push for change. Try to lead efforts to push for institutional support of innovative ideas that promote and support the mission of your institution but that may not be supported by traditional grant funding mechanisms. Some of these initiatives may even provide preliminary evidence that may lead to novel funding opportunities.

Moreover, you will establish lasting relationships with other professionals who work within the Society or who support the efforts of ASCB in achieving its aims by working with funding agencies, advocacy groups, and other societies and organizations that are committed to the goals of promoting and supporting science and increasing diversity in science. The ASCB needs your leadership and service to make it a richer and more vibrant society, and you will benefit through your active participation as you continue through your career. I know that I am glad that I did.

Footnotes and References


4 www.ascb.org/professional-development-workshops-and-opportunities.


About the Author

Leticia Vega is an associate professor at Barry University. She is an ex officio member of the ASCB Minorities Affairs Committee.
Science and Society

After a Long Wait, a Federal Budget That’s Good for U.S. Science

By Kevin Wilson

The FY18 budget for the U.S. government was supposed to be signed into law by October 1, 2017, the start of the fiscal year. On March 23, 2018, five months late, the president signed the budget into law, two days after Congress finally reached agreement. Congress began working on the budget in the spring of 2017.

Much of the delay in passing a budget was because Congress wanted to pass the tax reform bill. It was necessary to determine the “cost” of the tax cuts to know how much was left to spend on government operations.

In many ways, the delay was worth the wait for federally funded science agencies. Most important to ASCB members, the budget for the U.S. National Institutes of Health (NIH) was increased by $3 billion over the previous year, the third increase in a row. In press releases detailing the budget, Republican leaders in Congress rightfully pointed out that the Republican-led Congress has increased the NIH budget by $7 billion, 23%, since FY16, when the Senate returned to Republican control.

Most NIH institutes saw budget increases around 5%. While the National Cancer Institute (NCI) received only a 4.8% increase, the National Institute on Drug Abuse saw a budget increase of 26.8%, the budget for the National Institute on Aging was raised by 25.7%, and the National Institute of Neurological Disorders and Stroke had its budget raised by 22.7%. It’s important to keep in mind that when the Trump administration submitted its FY18 budget proposal, it called for a 21.5% cut to the overall NIH budget.

Even the National Science Foundation, which has been maligned for a number of years by the House Science, Space, and Technology Committee, saw its budget increased by 3.9%. The Trump administration budget proposal cut the NSF budget by 11%.

Mixed News on International Funding for Science

By Kevin Wilson

At the same time that the U.S. National Institutes of Health is benefiting from increases in its budget, the news in other nations is mixed. Researchers in Canada continue to see support from the Trudeau administration. Scientists at government labs in India are not as lucky.

In his administration’s 2018 budget proposal, Canadian Prime Minister Justin Trudeau plans to increase research funding over the next five years by USD 3.1 billion. About USD 750 million of that money will be dedicated to Canada’s three major councils that provide research grants. In announcing the funding, the Canadian government said that the funding for the Granting Councils will increase funding and training for 21,000 investigators, students, and other scientific personnel in Canada.

The news for Indian scientists is not so bright. In 2017,
Thinking about your career? LSE, ASCB’s education journal, is a valuable resource. Here are some of the many articles you may find interesting.

**A Guide for Graduate Students Interested in Postdoctoral Positions in Biology Education Research**
Intended as a resource for life science graduate students, this essay discusses the diversity of postdoctoral positions in biology education and the careers to which they lead. The authors also provide advice to help graduate students develop the skills necessary to obtain a biology education research postdoctoral position.

www.lifescied.org/doi/10.1187/cbe.16-03-0130

**The Teaching Demonstration: What Faculty Expect and How to Prepare for This Aspect of the Job Interview**
Michelle K. Smith, Mary Pat Wenderoth, and Mary Tyler
To help job candidates understand faculty expectations of the teaching demonstration portion of a tenure-track interview, we canvased biology faculty from a variety of institutions. We asked faculty to identify the elements of an effective teaching demonstration and give advice on how candidates can best prepare for this aspect of the interview.

www.lifescied.org/doi/10.1187/cbe.12-09-0161

**On Hiring Science Faculty with Education Specialties for Your Science (Not Education) Department**
In this column, we highlight an issue in science education facing many university and college science departments: hiring faculty who can bring to the department specialized expertise in science education.

www.lifescied.org/doi/10.1187/cbe.06-09-0189

**Career Development among American Biomedical Postdocs**
Kenneth D. Gibbs, Jr., John McGready, and Kimberly Griffin
This study reports results from a national survey examining the career development of biomedical postdocs. Findings point to the need for enhanced career development programs earlier in the training process, and interventions that are sensitive to distinctive patterns of interest development across social identity groups.

www.lifescied.org/doi/10.1187/cbe.15-03-0075

**Internship Experiences Contribute to Confident Career Decision Making for Doctoral Students in the Life Sciences**
An internship program model for life sciences doctoral students to pursue a broad range of careers is described. Evaluation of the program model at two institutions finds participation increases students’ confidence in career decision-making without extending time to degree and may help some trainees avoid “default postdocs.”

www.lifescied.org/doi/10.1187/cbe.17-08-0164

the Indian government made major changes to the salaries and benefits received by Indian government employees and retirees. While the changes increased pay and benefits for government employees, they significantly reduced funding available for government agency operations. The Council of Scientific & Industrial Research (CSIR), India’s largest research and development organization, was left with only 5% of its overall budget available for equipment, utilities, travel, and regular maintenance.

The proposed budget for CSIR for 2018–2019 is slightly below the previous year’s budget. Another change has been the annualizing of budgets for Indian scientific departments and councils. Previously, research agencies were funded in five-year increments.
Dear Poised,

It is great that you are asking these questions! Many trainees are in your position: questioning best next steps to take and what career path to choose. In fact, research on postdocs and their career paths suggest that most students entering graduate school do not have a clear idea of what career options exist. An infographic compiled by ASCB and COMPASS, the Committee for Postdocs and Students within ASCB, shows career paths that biology graduate students choose based on data from the 2012 National Institutes of Health Workforce Data Report. The career positions include tenure-track and non–tenure track academic positions, industry or government research positions, and non-research science related jobs. Similarly, a recent publication in *Nature Biotechnology* visualizes postdoctoral employment trends around the world.

Because you mention that you want to pursue something education-related, an assumption many people make is that education-related careers exist only in academia. While this column will focus primarily on the academic environment, please think broadly about what an education-related career might look like—in the private sector, a nonprofit, a business, or even a consulting firm. Your experience teaching, designing learning experiences, and communicating with a broad range of people will serve you well in “teaching” people about a service provided by an industry or new product development or strategy in business. Please also reflect on the idea that many of the skills you have developed will be broadly transferable to many careers. Sinche and colleagues identified skills that PhDs in various careers reported using in both research-intensive and non-research-intensive careers. These skills include being able to innovate, work independently, collaborate, manage projects, learn quickly, and manage time.

One of the first questions you might ask yourself is to what extent you want to continue doing research as part of your professional life, and whether you want the setting to be at an academic institution. Biology Education Research (BER) is a burgeoning field that falls under the umbrella of Discipline Based Education Research (DBER), with the research focus on classrooms and how students learn biology. There are many possibilities for careers after training in BER in academia, including tenure-track biology faculty conducting DBER, professor of practice/lecturer, faculty.
developer in a campus Center for Teaching and Learning, director or coordinator of a STEM education program, or science education research analyst. A recent essay in *CBE—Life Sciences Education* describes these careers in more detail, along with how training in BER can contribute to these careers, although research is not necessarily a part of each of the career paths. If you are interested in conducting education research and the college or university setting is not a requirement for you, nonprofit education research organizations may be a good fit for you. In some cases, these organizations are evaluating education programs that are implemented at various sites (including K–12 schools).

If you are interested in positions that do not involve education research, teaching at other institution types, such as at a community college or in a science museum, may be of interest. Do some homework by exploring your favorite job posting website for keywords that encompass your interests. For instance, there are biotech companies that develop products for education purposes (one example is kits for K–12 teachers), so you might find curriculum development or educational partnership jobs.

Another element to consider when you are identifying next steps is how to get the experience you need to land the job. A recent study of an internship program for graduate students in biomedical sciences showed that participants had an increase in their confidence to pursue a career track. Look into possibilities for internships or part-time positions that will give a preview of what that particular career path might be like. Perhaps with the successful implementation of programs at the University of California, San Francisco, and the University of California, Davis, by Schnoes and colleagues, other institutions will make internship programs available to graduate students and postdocs. Another option you might consider is a postdoctoral opportunity like an Institutional Research and Academic Career Development Award. A number of institutions around the country have support to increase postdoctoral training in pedagogy as well as research and balancing the two. Take advantage of the resources available at your current institution to best prepare yourself for the next step, and good luck with whatever direction you choose for your next step!

—The Education Committee

### References


Conflict is a normal part of working with other people. If it is identified early and resolved effectively, it can be an engine for productivity and improvement. If it is left unresolved, the damage it can cause—both professional and personal—can be significant.

When we think about conflict in the lab setting, we tend to apply the label to anything unpleasant that gets in the way of doing research. However, simple disagreements in the lab do not qualify as “true” conflicts, although they can be challenging to resolve. Rather, conflict requires an ingredient that the Austrian economist and conflict researcher Friedrich Glasl defines this way: At least one of the parties involved has to be experiencing an emotion that is unpleasant for them. Scientists, like many professionals, tend to work in environments where the display or mention of emotion is considered unprofessional. But Glasl and others found that to resolve a conflict, the emotions need to be addressed. A solution that only solves the issue analytically will mean the conflict bubbles up again at some point—as we’ve all experienced, even if only in the form of sharp exchanges during lab meetings.

Conflict in the Lab—It’s Not All Bad News

In our EMBO Laboratory Leadership workshops, when we first invite participants to think about conflict, most people associate it with stress, anxiety, a toxic atmosphere, or reduced productivity. Only when they scratch beneath the surface do they also realize that conflict forces people to think, be creative, clarify values, and use resources better. Even top-performing teams experience conflict...
from time to time, but their secret to success is in resolving it quickly and redirecting the energy generated to the group’s benefit.

Many people, scientists included, have a natural tendency to wait for conflict to go away. It’s a strategy that can work, although it’s not terribly effective for creating a productive research environment. In labs, this strategy can play out naturally, as two- and three-year research contracts mean that the people involved will likely move on. Waiting for a conflict to go away doesn’t make us bad people, although handling it well would make us better leaders. The truth is that conflict is a difficult thing to deal with, even with appropriate training, and many scientists don’t get that training until they’re already suffering in a challenging situation.

**Identify Conflict Early**

The good news is that we can develop our skills to notice and resolve conflict. So watch out for early signs! For example, these can include silence, palpable tension, aggressiveness, changes in habits, or ignoring social events. These signs are typical during the first three stages of a conflict’s development (see figure). Here, the group leader can still intervene to resolve the conflict. By the time people are clustering into different “sides” for lunch or coffee, we’ve reached stage 4 and outside intervention is needed, either from a respected colleague or a trained professional. By the time an article appears in a campus or local paper denigrating “the enemy,” or a hostile comment is dropped on PubPeer, or an embarrassing or impossible question is asked at a lab meeting or seminar, it’s too late for an external mediation. Now, someone with sufficient authority needs to intervene and arbitrate or impose a solution. For one of our workshop participants, the resolution was to split up the two warring parties, who had been sharing an office. To avoid the appearance of winners or losers, both had to move to new offices—just about manageable in a three-office group.

**Assess the Nature of the Conflict**

When managing a conflict, it’s helpful to identify its type and how it developed. Both will guide you to an appropriate intervention or resolution. You need to answer the questions, Who’s involved? What’s it about? Where and when does it appear? For example, are just two people involved, or have groups formed? Is it about shared resources or a difference of opinion? Have people stopped talking to each other, or are they shouting at each other? These questions are usually easily answered. But in our experience, you need to go much further back in the timeline than you might think to see how the conflict developed.

We usually start the timeline from the point the second party joined the lab. When developing the timeline we’re looking for major events, inside or outside the lab, that impacted the parties’ working relationship and their emotional states. With this more complete picture, the group leader often notices the current conflict has its roots in something several months or even years old—and when these roots are addressed, the current conflict resolves itself. One example of this was a case we worked on some years ago with a research group that had already reached conflict stage 4 and had divided into sides. When we started developing the conflict timeline in a facilitated meeting with the whole group, it turned out that the conflict and other poor behavior stemmed
Careers

Career Navigator

from how a secretary had been bullied by the group until she left, three years previously. Once this was acknowledged and openly discussed—including on the emotional level—the current conflict was easily resolved.

Deal with It!
Whatever approach you take to conflict resolution—there are many models and methods—identifying and working to resolve conflict will be crucial to your research group’s success. How you specifically address a conflict will depend on who is involved, what the conflict is about, and what emotions are in play. It is not possible to offer a single recipe for success, but two good rules of thumb are: If the emotions are hot (i.e., people are angry and shouting), you will need to “cool” down those involved by controlling their interaction. If the emotions are cold (i.e., the conflict has gone on a long time and people have given up hope and thus feel depressed), you will need to “warm” up each party before getting them to engage each other in dialog.

One simple approach to cooling down hot conflicts is to bring the two people in conflict together in a controlled space and engage them in circular listening. This technique means that the first person speaks for as long as they need to and then, before the second person may reply, the second person must repeat back what he or she has heard the first person say. Once the first person is satisfied that he or she has been heard, then the second person may speak while the first person listens and repeats, and so on.

Conversely, to warm up people in a cold conflict, you will need to meet them one-on-one, listen to their perspectives, needs and feelings, and reassure them that you can help resolve the conflict. Once they are optimistic that engaging with the other party will be constructive and worthwhile, then you can bring them together, as described above for hot conflicts. Of course, these approaches are for conflicts at fairly early stages of Glasl’s model and you must be seen as a totally neutral party to mediate in this way. More serious, challenging conflicts, or conflicts where you are seen to be “on a side,” will require professional training or even professional intervention to resolve.

We will leave you with a cautionary tale from our experience of a postdoc who started skipping his regular one-on-one meetings with the group leader, who let it slide. Several months later, the postdoc, in desperate need of a publication, attempted to publish without the group leader’s permission, leading to a serious conflict. If the group leader had noticed the early signs—avoidance—and addressed them immediately, the wasted energy of the publication drama could have been circumvented.

Be reassured that conflict is normal in all working environments, but know that the teams who succeed are those that deal with conflict properly. To do otherwise invites an unpleasant atmosphere, unhappy staff—including you—and, you might think worst of all, getting less research done.

Note
The information in this article is drawn from the EMBO Laboratory Leadership course. If you are interested in the course and how it can help you get the best from yourself, your team, and your research, visit http://lab-management.embo.org. The authors are grateful to Henriette Blatz (Leadership Sculptor) for her illustration of Glasl’s conflict model.

About the Authors
C.J. Fitzsimons is CEO of Leadership Sculptor, a leadership development company that focuses on serving scientists and is based in Europe. Samuel Krahl works for the Gesellschaft zur Förderung der Lebenswissenschaften Heidelberg GmbH and is responsible for EMBO’s Laboratory Leadership courses.
DEAR LABBY:

I am a fifth-year cell biology graduate student doing basic research at a major research university. I am ambitious, worked hard during my rotations, and was rewarded by being accepted into the best-known lab in our department. It has been a lot of work, but so much fun, and I have just had a major breakthrough that will be my first paper in a major journal. I have always had my heart set on doing basic research and teaching in a university setting like the one I am in. However, I just took a course in my graduate program designed to help students find the best possible fit for their careers. In it they discussed appropriate training and how to apply for positions in industry, teaching, government, the legal profession, scientific writing, advocacy, etc., but the one career they didn’t discuss is academia! Why would the faculty in my department not advocate for the job they have? Should I change my plans and think of another career?

—Need Guidance

DEAR NEED GUIDANCE: Stick to your plan! Unfortunately, it is quite common for a careers course not to discuss academia under the incorrect assumption that you must know all about it. Of greater concern is the frequent perception that an academic career is too difficult to consider. Graduate students hear stories about the difficulty in obtaining an academic position, and then the stresses of writing grants, publishing, teaching, getting tenure—who would want such a life? Once considered the only worthy career choice for PhDs, it is academia that is now regarded as the “alternative” career, and, as you note, it is sometimes not even mentioned!

Labby has had a very rewarding life in academia, so let’s turn it around and think honestly and positively. Of course, an academic career is hard work as it requires the passion and devotion that you already have. Let’s consider all the pros and cons.

The first con is the shortage of academic positions. Yes, there are far fewer positions than people seeking them, but this shouldn’t deter you from setting your sights high. A lot of basic biology departments have elderly faculty who will likely retire over the next decade, so the situation may ease a little.

When you get your desired position, you will be amazed by the generous set-up allowance—usually in the range of $1 million—that will provide funds to buy equipment and...
recruit students. This means that you will have time to get exciting preliminary data before submitting your first major grant application. And the joy of training and sharing your expertise with new graduate students is so thrilling and rewarding, as you teach them how to approach and solve fundamental questions. And don’t forget the continuing thrill of new discoveries like the one you have just made! And then classroom teaching looms on the horizon—perhaps you will teach a course that is only peripheral to your expertise. Yes, it is a lot of work, but you learn the subject in so much depth that it is almost certainly going to help you in your research.

And what about writing grants and papers? Clarifying your research goals and plans can be a very gratifying activity as it leads you to think carefully of what really matters and also place your work in perspective. The same can be said of writing papers—but here you get to put your work in context and show the world what you have discovered!

Labby has seen many new faculty share their excitement in getting established and succeeding. Those with these positive attitudes generally do great research, inspire their students, are excellent teachers, and sail through tenure. What other position has the possibility of providing a life-long job doing what you have a passion for? Of course, it is hard work, and there will be ups-and-downs, but that is true of any worthwhile endeavor.

To summarize, as Walt Disney is famously reputed to have said, “If you can dream it, you can do it!” Good luck!

—Labby
Derek Applewhite, an assistant professor of biology at Reed College, a primarily undergraduate institution (PUI) in Portland, OR, studies the mechanisms of cytoskeleton regulation critical for cell shape change and cell movements.

He employs *Drosophila* and *Drosophila* cells (S2 cells and other migratory cell lines) as a model system to understand how different parts of the cytoskeleton are regulated, how they interact with one another, and how they are deployed in vivo. Using reverse genetics, exogenous protein expression, and pharmacological inhibitors to manipulate cytoskeletal regulators, Applewhite hopes to elucidate how cell shape changes impact the development of complex tissues.

Applewhite sees rewards of doing research at a PUI. “I do think that people coming from an exclusively R1 training background do not realize, or underestimate, the quality of the research that can be accomplished with undergraduates. While the pace is much slower, and it may take a bit of creativity, the results will speak for themselves,” he said.

Additionally, he remarked, that teaching undergrads made him a more-well-rounded cell biologist. “[A]s graduate students and postdocs we get hyper focused on a small part of cell biology, but having to teach means that we have to read and understand things outside of our particular field,” he added.

*This profile first appeared Aug 25, 2017, as part of the series “How Cell Biologists Work” by Jennifer Heppert on the ASCB Post.*

**upcoming early career meetings**

**Toronto RNA Enthusiasts’ Day 2018 (TREnD2018)**
Toronto, Ontario
July 31, 2018

**Rocky Mountain Membrane Trafficking Meeting**
Aurora, CO
August 17, 2018

**The Northeast Nuclear Envelope Meeting**
New Haven, CT
September 14, 2018

**Florida Translational Cell Biology**
Gainesville, FL
September 21, 2018

ASCB is pleased to provide Early Career Meeting Grants to graduate students and postdocs to organize one-day meetings. Such meetings usually involve two or more institutions (within the United States or international), and topics can range from basic science to career development as long as there is clear relevance to the broadly defined field of cell biology.

The next deadline to apply for funds is June 14, 2018. Applicants must be or become members of the ASCB.

For more information visit www.ascb.org and click on “Meetings.”
Does Your Institution Pay for Your ASCB Membership?

It may be possible to bill ASCB membership dues as direct or indirect costs under a National Institutes of Health (NIH) grant. NIH guidelines state that subscriptions are allowable as direct costs and memberships as indirect costs (see section 200.454 of the U.S. Federal Government Uniform Guidelines). Your ASCB membership includes an annual subscription to Molecular Biology of the Cell valued at $626 per year.

Some universities allow membership fees as a direct cost to a project if it reduces the overall cost of attending a conference by more than the fee. The difference in price between a nonmember and member ASCB Annual Meeting registration far exceeds the cost of an ASCB membership. Savings range from $50 for undergraduate students, $130 for graduate students, $210 for postdocs, and $230 for regular members.

Check with your university, granting agency, or professor to find out if either of these circumstances applies to you.

If you have questions, contact Membership Manager Melinda Widlake at mwidlake@ascb.org.
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ASCB Launches New Partnership Initiative

ASCB is proud to announce a formal development effort launching in 2018, entitled the ASCB Partnership Initiative—the purpose of which is to bring together ASCB members, as well as external stakeholders such as companies and other organizations, in order to support priority programs of the organization that meet the needs not just of ASCB, but the field of cell biology. The newly formed ASCB Development Committee, chaired by Dr. Thoru Pederson, will drive this effort.

Currently in the first stage of the initiative, ASCB has set a goal to secure $300,000 in commitments from individuals, companies, and other organizations before the end of the 2018 calendar year. Already, many leaders within ASCB have joined in this effort with generous contributions to the Partnership Initiative.

We hope that you will join us in this effort as we together work to grow our field through the important work of ASCB! To learn more about the Partnership Initiative, or to get involved, contact Erika Shugart at eshugart@ascb.org.
Morris J. Karnovsky, Pathology Pioneer and ASCB Past President

By Elazer R. Edelman and John Castellot

Morris J. Karnovsky, Shattuck Professor of Pathological Anatomy at Harvard Medical School, 1984 ASCB president, and a member of ASCB since 1964, passed away on January 21, 2018, at the age of 91. Few scientists have had as great an impact on medicine as he did. His discoveries span the breadth of medical science and his inventions have changed medical research and diagnostics. The chemical reactions he intuited made it possible to stain tissue biopsies not simply on the basis of dye uptake but on the basis of binding of stains to specific proteins. His contributions to immunohistochemistry forever changed science.

Karnovsky was born in Johannesburg, South Africa. His father became one of the first pharmacists in South Africa. His mother was an opera singer and their family hosted world leaders in arts and music. Indeed, Karnovsky learned to play the piano on the lap of Sergei Rachmaninoff. Trained in classics at the King Edward VII school in Johannesburg and medicine at the University of the Witswatersrand, he became a life-long devotee of art, music, and especially poetry as well as science.

Karnovsky was unique in that he served as president of both a basic science organization (ASCB) and a clinical organization (the American Association of Pathologists). He served on the editorial boards of The Journal of Cell Biology and The American Journal of Pathology, among others. He had drawers full of awards, including the Benditt, Rous-Whipple, and Gold-Headed Cane, as well as ASCB’s most prestigious prize, the E.B. Wilson Medal. He was the Maude Abbott Lecturer of the United States and Canadian Academy of Pathology, a member of the National Academy of Medicine and

been referenced almost 8,000 times. He was the person who defined the gap junction, the endothelial nature of the blood–brain barrier and vascular permeability, and the essence of glomerular permeability, and he made major contributions to our understanding of the biochemistry of reactive oxygen species, immunoglobulin and lymphocyte biology, and how lipid domains arise to generate the phenotypic dynamism of endothelial cells.

Though one of the most acknowledged scientists in history, Karnovsky did not seek fame or fortune—he refused to patent ideas that he felt should be in the public domain. The HRP-diaminobenzidine method and Karnovsky fixative are worth billions, yet Karnovsky felt they belonged to the public and went to great lengths to ensure unfettered access to them. He never wrote a paper on his fixative because he preferred to give away the recipe.

Karnovsky was above all a towering intellect of prodigious productivity—he is the most quoted author in pathology and the sixth most widely quoted author in all of medicine. Six of his papers are “citation classics,” having been cited more than 1,000 times, and his horseradish peroxidase (HRP) reaction paper has
the American Academy of Arts and Sciences, a Fellow of the Royal Microscopy Society, an ASCB Fellow, and on and on. While he was grateful for what these awards represented, these accolades remained in his drawer.

Karnovsky was most proud of the dozens of students and trainees he mentored. They have gone on to have a major impact on research and medicine in their own right, and this gave Karnovsky more satisfaction than any of his own discoveries and achievements. During the last few months of his life, he cherished the many visits and calls from his students, when he asked about their latest research discoveries and caught up on their personal lives as well.

Karnovsky was a giant in the dual realms of experimental pathology and cell biology, a dedicated mentor, and a true renaissance man. He leaves a legacy of scholarship, mentoring, and service that is rarely achieved and may never be surpassed.

About the Authors
Elazer R. Edelman is the Director of the Institute for Medical Engineering and Science and Thomas D. and Virginia W. Cabot Professor of Health Sciences and Technology at the Massachusetts Institute of Technology and Professor of Medicine at Harvard Medical School. John Castellot is Professor of Medical Education and Professor of Immunology at Tufts University School of Medicine.

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James L. Maller, Leading Researcher in Cell Cycle and Signal Transduction

By Robert A. Sclafani

Long-time ASCB member James L. Maller passed away on January 18, 2018, in a tragic auto accident. Jim was a professor at the University of Colorado Medical School for over 30 years. He was a leading researcher in *Xenopus* and human cell cycle and signal transduction. Jim graduated from Cornell University in 1969, obtained his PhD with John Gerhart at the University of California, Berkeley, in 1974, and did postdoctoral work with Edwin Krebs at the University of California, Davis, and the University of Washington in Seattle from 1975–1978. He was an HHMI Investigator for 20 years at Colorado and published over 180 papers. He was on the editorial boards of *The Journal of Biological Chemistry* and *Current Opinion in Cell Biology* and on the organizing committee of the International *Xenopus* Conferences for over 20 years.

Jim was the first person to purify *Xenopus* maturation promotion complex and to show it was a cyclin-dependent kinase (CDK). Together with Nobel laureate Paul Nurse, he demonstrated that *Xenopus*, mammalian, and yeast CDKs are functional homologues. His lab developed a *Xenopus* cell-free system that is still widely used. In the signaling field, he showed that insulin signaling involves sequential activation by phosphorylation of at least two serine/threonine protein kinases, MAPK and RSK.

Jim retired in 2012, became an emeritus professor, and continued to attend meetings and travel to exciting faraway places and enjoy himself. His wife Penny always went with him, and they were great resources on travel, food, and wine. He could always be persuaded to talk about a new restaurant in town. If you told him about one, chances are that he had already been there! I am sad that he is gone, and he will be greatly missed by all. You can read about Jim’s long scientific career in his own words in his memoir.1

Reference


About the Author

Robert A. Sclafani is a professor of Biochemistry and Molecular Genetics at the University of Colorado School of Medicine.
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