Misteli, Nunnari Run for ASCB President

Eight Candidates Seek Council Seats

The two nominees for ASCB President-Elect are Tom Misteli of the U.S. National Cancer Institute, National Institutes of Health, and Jodi Nunnari of the University of California, Davis. The elected candidate will serve on the Society’s Executive Committee as President-Elect in 2017, ASCB President in 2018, and Past President in 2019.

Also on the ballot are eight candidates (see page 6) running for four Council seats. Those who are elected will start three-year terms on January 1, 2017.

The ballot also contains changes to the bylaws that have been approved by Council and now need to be approved by a majority of the ASCB membership. The proposed changes include giving graduate students the right to vote and adding a new category of membership for instructors at two-year institutions/community colleges and high school teachers.

ASCB will email a link to the Society’s electronic ballot to regular, postdoc, and emeritus members in mid-April. The election will close one month later, and results will be announced in the ASCB Newsletter and on the website.

Fetal Tissue Vital to Medical Research, ASCB Tells House Panel

Noted stem cell researcher and former chair of the ASCB Public Policy Committee Larry Goldstein told a politically charged congressional subcommittee hearing on March 3 that, “Fetal tissue and cells that would otherwise be discarded play a vital role in modern cutting-edge medical research. These fetal tissues and cells cannot be replaced by embryonic stem cells, reprogrammed stem cells, or adult stem cells.”

Goldstein, a professor at the University of California, San Diego (UCSD), was testifying before the House Selective Investigative Panel on Infant Lives at a hearing entitled “Bioethics and Fetal Tissue.” The subcommittee is a part of the House Energy & Commerce Committee and was formed in the wake of last summer’s Planned Parenthood videos controversy. The stated goal of the hearing was to focus on ethical issues of fetal tissue donation, transfer of fetal tissues, and the use...
Do you want to organize a One-Day Local Meeting?

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Accelerate Your Career

ASCB helps to fund and organize your local meeting. Such meetings will typically involve two or more local research institutions or colleges (within or outside of the USA). Topics may range from basic science to career development, with a clear relevance to the broadly defined field of cell biology.

For more information go to ascb.org/local-meetings or email hkyler@ascb.org.

Deadline for Applications: September 15, 2016

#ascblocal
On Reproducibility and Clocks

by Peter Walter

It is not easy to build a clock. When my daughter got married, I decided to build a clock as an heirloom wedding present. An accomplished designer, Clayton Boyer, offers a variety of plans for clocks that can be built almost entirely out of wood.1 His website and linked YouTube videos show ample examples of others who have built these delicate machines successfully and in several artistic iterations. Presented with the set of plans, which I considered akin to a validated methods section, I set out to build a wooden clock.

When dissected into its principal components, a clock is not that complicated. First, there is a train of gears. Its role is to transmit the force generated by the weights that power the clock. The last gear drives the escapement that, in a stop-and-go motion, synchronizes all movement to the pendulum. Swinging back and forth at its own leisurely pace, the pendulum sets the time. Finally, there is another train of gears with the sole purpose of running the hour and minute hands at the appropriate ratio. These fundamental principles that underlie Boyer’s plans are beautifully described in Ward Goodrich’s book The Modern Clock published in 1905 (not a typo),2 which I read cover-to-cover. A living cell is much more complicated.3

Over a few months’ period preceding the wedding, my evenings were filled with cutting each tooth of every wheel freehand on a scroll saw and filing the pieces to perfection—or so I thought. With a few weeks to spare, I finally put all of the pieces together, added the weights and pendulum, and there it finally was, a beautiful machine that did...nothing! The gears did not move; the escapement did not click, and the pendulum quickly came to an agonizing stop. I clearly had failed to reproduce prior work. It is not that complicated. First, to a more befitting shape, and redoing took weeks of error hunting, filing this and that needed to be hunted down and solved. Success required tenacity and diligence and, perhaps most importantly, the conviction (in this case based on a few hundred years of evidence) that it can be done. In the end, I developed the prerequisite expertise, a Fingerspitzengefühl (the delicate feelings we sense with the tips of our fingers) for the task at hand. Even then, when I built a second, different clock for my other daughter, it required a similar effort of fine-tuning.

Responding to the Issue

Reproducibility in scientific research has recently become a hot topic of immense importance to our community. Reports on the unreliability of published research have severely tarnished the image of our profession, as exemplified by an article entitled “How science goes wrong” published in the The Economist in 2013.4 Publishing bad science is bad for all of us.

As a community we need to realize the importance of this issue and the major efforts that are underway to respond. In 2014, the ASCB convened a task force that issued a white paper,5 which includes tangible and constructive recommendations on how to improve current publication methods and standards, to ensure the publication of high-quality data. This is an excellent, must-read document, and I urge every researcher and publisher to implement its recommendations.

There is universal agreement that every paper has to contain a meaningfully complete, detailed methods section that allows others to replicate the work. Yet papers continue to be published that do not, even in the very journals that
deeply engage in the dialog on reproducibility. A recent example from my area of research concerns the first report of a crystal structure of eIF2B, a huge protein complex that serves as a translation initiation factor. Published in *Nature*, this is a nicely written and exciting manuscript that conveys a major discovery in the field. But when read carefully, the reader discovers that the experimental conditions for crystal growth are missing, being referred to as “submitted.” Thus there is no access to the most basic information describing how this work was done, until (and if) a follow-up publication becomes publicly available. In this particular case, the situation was amicably resolved: My graduate students contacted the authors requesting the missing information and, after a brief back-and-forth, we promptly received a preprint of the submitted work including all of the missing information. But I am at a loss to explain how—in this time and age and in the midst of intense reproducibility discussions—the reviewers of this paper and the professional editorial team at *Nature* could have endorsed publication of this work with such a critical omission.

Another important and often overlooked aspect of introducing increased rigor is to remove the stigma and barriers associated with publishing negative data—i.e., data that fail to reproduce published results. Some prominent, reputable journals and publishing platforms, including *PLOS ONE* and *F1000Research*, already support and encourage such communication. Similarly, the “Reproducibility Project: Cancer”—in conjunction with the journal *eLife*—addresses the issue squarely. A team of scientists has selected a set of high-profile (i.e., highly cited) papers on cancer research with the aim of conducting an open reproducibility study. For this study, they will attempt to “conduct the experimental procedure as closely as possible to the original experiment using the same material and instrumentation, if available.” Importantly, “the replication protocol requires the core team to contact the original corresponding author to request materials and any available information that could improve the quality of the replication attempt.” This project will be conducted with complete transparency. By contrast, in 2012 Amgen researchers published that they had been unable to reproduce 47 of 53 landmark cancer papers,* but they kept the data that may—or may not—support these alarming conclusions tightly under wraps. Before we take statements of this sort at face value, we need to evaluate the data and understand what is meant by “non-reproducible.”

The Need for Rigor in Assessing Reproducibility

The committee that wrote the ASCB White Paper on Reproducibility adopted a very insightful, multi-tier definition of reproducibility*:

- **Analytical Replication** attempts to reproduce the results from the same original data via reanalysis.
- **Direct Replication** attempts to reproduce the same results using the same conditions, materials, and methods as the original experiments.
- **Systematic Replication** aims to obtain the same finding of a given publication, but under different conditions (e.g., a different cell line, mouse strain, etc.).
- **Conceptual Replication** aims to demonstrate the validity of a concept or a finding using a different paradigm (e.g., in a divergent species).

This differentiation is important. In particular we need to keep in mind that Systematic and Conceptual Replication do not address the question of whether the work being replicated accurately reported on the outcome of a specific set of experiments. Instead, the question being asked is how far the conclusions of the original finding can be generalized. A finding can be correct in neurons but not in fibroblasts; it may be correct in mice but not translate to human biology. In the most extreme positive case—the “holy grail of validation”—a finding will be universally true. For example, after many decades of work, there is little doubt that ribosomes make proteins. Here is my bottom line: *Any claim that a particular scientific finding is “not reproducible” must specify what is meant by this statement.* Otherwise such claims threaten to become dangerous sniping, feeding analyses such as one that concluded that $28 billion is wasted each

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**PRESIDENT’S Column**

[L]t is far more difficult to reproduce positive results than to declare failure.

*The Clock. (See the video at https://vimeo.com/159994154.*)
year in the United States on preclinical research that is not reproducible.9

Let me reiterate: It is much harder to replicate than to declare failure. What if I had used a different species of wood for making the clock than Boyer used? It might be more brittle, causing the teeth of the gears to break, or it might expand irregularly or warp as humidity changes. The clock would likely have failed. What if the antibody used for Western blotting is from a different bleed and no longer works as it used to? Or what if a company changed, unannounced to anyone, the composition of proprietary “Buffer A” in its experimental kit? There are literally thousands of variables that enter into every one of the complex experiments that characterize today’s biomedical research. It takes Fingerspitzengefühl and tenacity to work through these issues constructively. Resolving any replication issue requires active communication and open reagent exchange, as the authors of the Reproducibility Project: Cancer so appropriately state in their mission.7

Earlier this year, researchers at Amgen posted for open peer review on the F1000Research website an article that concludes that they “were unable to confirm a robust role for [the ubiquitin-specific protease] USP14 in Tau or TDP-43 degradation.”10 This submitted paper questions the results of a previous study by Dan Finley’s group at Harvard Medical School,11 which argued that inhibition of USP14 could enhance degradation of proteosomal substrates that are associated with neurodegenerative disease. Even though this was a preprint, not yet published, the message was quickly amplified in a Nature News section12 under the alarmist title “Biotech giant publishes failures to confirm high profile science.”

At first glance, this case appears to be another example where academic research produces unreliable and misleading conclusions. However, at least in this case, there seem to be problems with the negative data reported by Amgen. First, the Amgen researchers used different expression systems, yet protein expression levels were not compared with those in the original report. This is important as every assay has an intrinsic dynamic range and proteolytic systems can be saturated. Second, the siRNA knock-down experiments shown left 25% or more of USP14 behind, and nothing can be concluded from low efficiency knock-down experiments that yield negative results. Third, results from the original work are strongly supported in publications by others13,14 (as pointed out by Thomas Kodadek in the open review of the Amgen work) but not cited and discussed.

In this case it seems that conclusions drawn concerning irreproducibility are not convincing. This experience demonstrates the importance of submitting non-confirming results to peer review. Sasha Kamb, the head of research discovery at Amgen, states “we believe that interested scientists can look at our methods and results and draw their own conclusions.”12 Unfortunately, the Amgen researchers did not communicate with the Harvard group to resolve their discrepancies. Amgen also made it a condition that science journalists not contact the authors of the original work before the preprint was posted.15 The format at F1000Research now encourages the original authors to comment during its open review process of work disputing their conclusions, and we can hope a delayed dialog is still forthcoming.

Let’s Talk

What I am trying to emphasize is that substantial scrutiny and dialog are essential to assess the validity of irreproducibility claims. Yet most readers of the popular media, including the general public and our politicians who make funding decisions, hear that we have a rampant reproducibility crisis in academic research. They hear that scientists cannot be trusted and that research funds are being wasted. Generic claims that some work is “not reproducible” are harmful; they can be devastating to a project and funding, and even derail entire careers.

As a research community we have work to do—we need to continuously improve our ways of describing, standardizing, and sharing our methods and reagents, and we need to enable open discussion and responsible, rigorous publication of results, be they positive or negative. Engaging stakeholders in the assessment of results that refute prior findings is to me an essential ingredient in any recipe for success, but for this to work, scientists must be willing and supportive in helping others to reproduce their findings successfully. At best such dialogs may resolve the issue. At the least, I feel that journals publishing negative results must solicit and include comments and possible explanations by the authors of the original work.
And we must aspire to the same high standards for papers publishing negative results as we do for those publishing positive advances.

It takes hard work to make a clock, and it is much harder still to make it run.

Questions and comments are welcome and should be sent to president@ascb.org.

References


How does the cell organize its contents to achieve biological function? My answer to this question is strongly impacted by decisions I made as an impressionable 18-year-old. When I enrolled at Carnegie Mellon University (CMU) in 1996, I was (like most freshmen) all over the place. I almost majored in Biology, but after taking an introductory lab class where we crystallized lava-hot molten copper alloys, I was sold on Materials Science. I was still fascinated with Cell Biology (attending my first ASCB meeting in 1997), and started working in a biology lab, where I began thinking of the cell as a special kind of material. A number of great early mentors supported my anarchical interdisciplinarity, including Fred Lanni and Vivek Abraham at CMU and Kit Parker and Don Ingber at Harvard. I went on to do a PhD with Dave Weitz, looking at cells through the lens of a field called Soft Matter Physics, which deals with squishy materials like gels, polymeric solutions, and oil/water mixtures, i.e., the materials most akin to living cells. But what does this have to do with intracellular organization?

For most people, imagining the interior of the cell brings up the tidy picture we all learned in high school: vesicle-like organelles such as the endoplasmic reticulum, Golgi, and nucleus that float in a homogenous cytoplasm. But it has become increasingly clear that the cytoplasm is much more interesting and complex than that. Indeed, most intracellular compartments are not vesicle-like, but instead have no enclosing membranes. These structures nevertheless still concentrate specific molecules, often both RNA and protein, into distinct subcellular compartments. Examples include processing bodies, neuronal granules, and germ (P) granules in the cytoplasm and Cajal granules in the cytoplasm and nuclear bodies in the nucleus. Despite the importance of these membrane-less compartments for a wide array of biological processes, a mechanistic understanding of their assembly—i.e., the rules governing this whole other dimension of intracellular organization—has been lacking.

Over the last several years, my colleagues and I have shown that these structures represent condensed liquid phases of intracellular matter. We had a key breakthrough when I was a postdoc in Tony Hyman’s lab in Dresden, when I showed that P granules exhibit liquid-like behaviors—flowing, coalescing, dripping, and wetting. These liquid-like properties suggested that the dynamic assembly of P granules could represent a type of phase transition. From my undergrad and graduate work, I’d learned the formal mathematical framework of phase transitions, but they manifest in ways quite familiar from everyday experiences, e.g., dew drops condensing on blades of grass, or water
slowly transition from more liquid-like to more solid-like structures, which could underlie neurodegenerative protein aggregation diseases. The nucleolus directly interacts with the genome, and thus its assembly and biophysical properties can strongly impact transcription and RNA processing rates. Moreover, there are numerous other nuclear bodies, and the nucleolus is probably just one of many phase-separated droplets assembling throughout the nucleus. Over the next several years, I plan to continue pursuing my interest in phase transitions and the physics of living matter, while digging deeper into the link between RNA/protein droplets and gene regulation. Like regulatory dewdrops on a grassy field of DNA and RNA, these droplets are likely key players in the dynamic flow of biological information. Twenty years ago, I had only a vague notion of the relation between materials physics and biology. But through the alchemy of luck, hard work, and a driving curiosity, I’ve had the opportunity to help define this new field of intracellular phase transitions. Living matter has indeed turned out to be much cooler than any man-made alloys!

Born in the Soviet Union, educated in Moscow, I started my professional career as a postdoctoral fellow in Emil Reisler’s Laboratory at the University of California, Los Angeles, studying the biochemistry of the actin cytoskeleton. I will always remain grateful to Emil for his wise and gentle mentorship. Because I am open to opportunities and fascinated by the beauty and complexity of life in all its aspects, my research interests have drifted and encompassed studying the hate–love relationships (mostly their “hate” part) between humans and microbes. Destined to share the planet with microbes, we developed highly sophisticated relationships with their world. Co-evolution of human and microbial species is embedded in our flesh and blood as the immune system. Many of our tiny planet-mates are ultimate killers and the only reason we survive their attacks is because our countless distant relatives died learning how to protect themselves while the remaining learned to recognize the most conserved and essential elements of microorganisms in order to target them with our own efficient killers—immune cells and effector molecules. Among other things this implies that we have to take good care of our planet as there will be no other inhabitable one with microbes as gentle to us as our own (although it might not seem so when we are sick). Although due to natural limitations we

Dmitri Kudryashov

We’ve shown that the nucleolus assembles by a phase transition, which is directly linked to the size of the cell.

[W]e have to take good care of our planet as there will be no other inhabitable one with microbes as gentle to us as our own....
divide ourselves into physicists, chemists, microbiologists, and cell biologists, it is useful to remember that these professional “comfort zones” exist only in our heads. On several occasions, this awareness was a driving power behind our discoveries. Thus application of basic protein folding principles has facilitated understanding mechanisms of bacterial toxin neutralization by human immune peptides, while the realization that bacterial toxins are destined to be either highly potent or largely useless led to a deeper comprehension of their abilities to hijack the actin cytoskeleton.

As an essential component of both the innate and adaptive immunities, actin is a common target for bacterial proteinaceous toxins. Most toxins amplify their efficiency by acting on either signaling cascades or essential low-abundance elements (e.g., ribosomes). In contrast, toxins targeting monomeric actin—the most abundant cytoplasmic protein—seem to be doomed to inefficiency. We found that ACD family toxins produced by pathogenic and non-pathogenic Vibrio and Aeromonas species overcome this barrier by generating a novel toxicity amplification cascade. ACD toxins covalently crosslink actin into oligomers, which bind with very high affinity to formins, adversely affecting both nucleation and elongation abilities of these proteins. This discovery was unexpected as it was masked under beliefs that the pathogenicity mechanism of ACD (i.e., sequestering of bulk amounts of actin in polymerization-incompetent oligomers) had been fully understood.

Given the remarkable killing potency of bacterial toxins, having an immune mechanism for their prompt inactivation is a matter of life or death. For over a decade, mechanisms of inactivation of various unrelated groups of bacterial toxins by human immune peptides called defensins remained enigmatic. We found that defensins take advantage of marginal thermodynamic stability—an essential feature of many toxins. Defensins cause local unfolding of such toxins, uncovering new regions for proteolysis and potentiating their precipitation through the exposure of hydrophobic interfaces.

In five years we will have deciphered molecular mechanisms driving inactivation of deadly bacterial toxins and viral proteins by defensins. We will reproduce the desired effects of defensins using more stable and more manageable small molecules and evaluate their therapeutic potentials. At the other end of the spectrum, we will learn to use bacterial toxins as spatially and temporally controlled tools of high precision to dissect the function of actin in subcellular compartments such as the nucleus and mitochondria and pave the way to utilizing other toxins for similar purposes. The boldest dream of my group is to create a therapeutic platform by converting bacterial toxins into safe and potent tools selectively targeting cancer cells and not their healthy counterparts. But this may take a little longer than five years.

Hari Shroff

I’m an engineer who uses optical microscopes to study living cells and embryos. My time divides more or less equally between improving the technology (e.g., more speed and resolution, less phototoxicity) and collaborating with cell and developmental biologists to use the new tools we develop in attempting to answer fundamental questions in biology. I’m especially interested in imaging neurodevelopment in the Caenorhabditis elegans embryo—an area that has been somewhat unexplored due to technical difficulties, especially with optical microscopy. We’ve been able to make headway into this issue using the imaging methods developed in my lab.

Four key events led me to my current research program: 1) I attended the Marine Biological Laboratory’s summer physiology course. There I learned how modern cell biology is done, and how valuable imaging is to this effort; 2) Although as a graduate student I was able to somewhat “self-educate” myself about microscopy, I credit much of my current knowledge to the postdoctoral training I received in Eric Betzig’s lab; 3) When I was interviewing for faculty jobs, I was lucky enough to meet a neurobiologist at Yale, Daniel Colón-Ramos, who impressed upon me the problems (and opportunities) in studying the developing worm embryo;
and 4) I was lucky to land a tenure-track job in the intramural National Institutes of Health (NIH) program, where I’m given the freedom to pursue optical tool development.

In Betzig’s lab, I worked for two years on the development of photoactivated localization microscopy (PALM). Since starting my own lab at the NIH, I’ve focused on developing and improving methods that are well suited to imaging live, dynamic phenomena (PALM is still almost exclusively a fixed cell technique). I see particular promise in structured illumination microscopy (SIM) and light-sheet microscopy (LSM).

SIM was invented by Mats Gustafsson ~20 years ago, and is renowned for its resolving power and relative gentleness (light intensities similar to widefield microscopy, which are much lower than those of other super-resolution techniques). My former postdoc Andy York and I improved the depth penetrance of SIM ~10-fold over other implementations, enabling super-resolution imaging in moderately thick samples (up to ~100 μm). We also developed an effectively instantaneous implementation of SIM that removes the need to acquire extra images or post-process the data; the raw images are already super-resolved and can be acquired at hundreds of frames per second. My lab is attempting to push the depth penetrance of instant SIM even further by combining it with adaptive optics.

A staff scientist in my lab, Yicong Wu, and I have collaborated with Applied Scientific Instrumentation to make LSM easily usable for samples that can be placed on a conventional glass coverslip, thus improving its accessibility to biologists. Equally significantly, we’ve developed an implementation of LSM that uses a second specimen view to improve axial resolution ~2-fold over a confocal microscope, without significantly compromising either speed or phototoxicity. This dual-view inverted selective plane illumination microscope (diSPIM) has been cloned in ~50 labs around the world.

I’m very excited about my current collaboration with Zhirong Bao (Sloan Kettering) and Colón-Ramos to construct a 4D atlas of neurodevelopment in C. elegans. The diSPIM’s resolution and speed make it possible to capture cellular dynamics throughout embryogenesis without detectable phototoxicity. Our vision is that in 5–10 years anyone with a computer will be able to navigate the events we’ve cataloged, thereby watching, with subcellular resolution, the processes that orchestrate brain formation.

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.

—Thea Clarke
This first-ever, full-day symposium, designed to familiarize the cell biology community with advances and opportunities in the cancer field, will be held on **Saturday, December 3, 2016**—on the first day of the Annual Meeting, in San Francisco, CA. Organized by Alan Ashworth, University of California, San Francisco, and Ira Mellman, Genentech, Inc., the small meeting will facilitate networking and discussion. **Other confirmed speakers include:**

- Valerie Weaver, University of California, San Francisco School of Medicine
- Shannon Turley, Genentech, Inc.
- Jeff Pollard, University of Edinburgh, UK
- Charles Roberts, Dana Farber Cancer Institute
- Joan Brugge, Harvard Medical School
- Melody Swartz, École Polytechnique Fédérale de Lausanne, France
- Aviv Regev, Broad Institute of MIT and Harvard/HHMI
- Sean Morrison, University of Texas Southwestern Medical Center/HHMI
- Michael Karin, University of California, San Diego

Applications (from ASCB members only) will open online in early May.

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Keynote

Richard P. Lifton
Yale School of Medicine/HHMI

What's New at Cell Biology 2016?
We will have even more Saturday subgroups this year, beginning at 8:30 am and ending at 5:30 pm
Organizers: Apply by June 7

Workshop Topics
super-resolution microscopy
CRISPR
cryo electron microscopy

Symposia

Mechanical Forces in Cell Biology
Matthieu Piel
Institut Curie, Paris, France
Jody Rosenblatt
Huntsman Cancer Institute, University of Utah
Valerie Weaver
University of California, San Francisco

Organelle Organization
Jodi Nunnari
University of California, Davis
Tobias Walther
Harvard/HHMI

Disease Informing Cell Biology
Joseph G. Gleeson
University of San Diego and The Rockefeller University/HHMI
Vamsi Mootha
Massachusetts General Hospital

Quality Control
Anne Bertolotti
MRC Laboratory of Molecular Biology, Cambridge, UK
Laurie Glimcher
Weill Cornell Medical College
Ramanujan “Manu” Hegde
MRC Laboratory of Molecular Biology, Cambridge, UK
Want to give a talk?

30% of 2015 attendees who submitted an abstract by the first deadline were selected to give a talk, and we are adding even more speaking slots this year! Submit an abstract by August 2 to be considered for a talk in a minisymposium or microsymposium.

Abstract Deadlines

**AUG 2**  Minisymposium talk, microsymposium talk, or poster consideration, ASCB members $80, non-members $110

**SEPT 1**  Poster consideration only, ASCB members $80, non-members $110

**OCT 13**  Final Poster consideration, ASCB members $100, non-members $130

Travel Awards Deadline: Sept 1

Hotel Registration Deadline: Nov 10

Early Registration Deadline: Sept 30

Minisymposia Topics

- Actin Dynamics
- Autophagy/ESCRT
- Cell Biology of the Nucleus, Cell Cycle, Cell Division, and Cell Death
- Cell Mechanics, Genome Replication, and Gene Regulation
- Intermediate Filaments
- Membrane Organization, Dynamics, Traffic, and Regulation (except Autophagy/ESCRT)
- Microtubule Dynamics
- Multicellular Interactions, Tissues, and Development
- Organelles and Spatial Organization of the Cell
- Post Transcriptional Gene Regulation
- Prokaryotic Cell Biology
- Signaling and Differentiation
- Synthetic and Systems Biology
- Evidence-Based Education: Evaluation of Cell Biology Innovations

Visit www.ascb.org/2016meeting in mid-April for more information
Scientific progress and breakthroughs are often facilitated by the development and application of new technologies and cutting-edge equipment, which is often expensive to acquire and maintain. This article is a primer for how you can bring these resources to your institution as shared instruments to advance discoveries by federally funded investigators there.

Here we focus on preparing a National Institutes of Health (NIH) Shared Instrumentation Grant (SIG) application, because this program is the most flexible of the three most common equipment programs and is applicable to most situations.

**Advance Work**

To dramatically increase your chances of success:

1. Plan your submission well in advance.
2. Assemble a solid user group with a demonstrated need for the requested instrument.
3. Demo the requested instrument to allow your user group to obtain preliminary data (this requires advance planning and teamwork).
4. Give your user group an early deadline to submit their project descriptions to you.
5. Recruit at least three NIH-funded investigators to form a user group. Of the major users at least 75% should be funded by the NIH or other federal agencies such as the National Science Foundation (NSF), the Department of Energy, or the Department of Defense.

**Preparing a SIG Application**

First, read the program announcement. Details of grant organization and specific requirements change yearly. Be sure to observe the page limits for each section. Note that your submission may be rejected for not following guidelines!

Pay attention to the Foreword/Summary. Your job is to communicate the need of the user group for the particular instrument to the study panel by highlighting the five or more major criteria utilized in scoring a shared instrumentation grant: 1) justification of need, 2) technical expertise, 3) research projects, 4) administration, 5) institutional commitment, and 6) overall benefit. Any of these criteria, if poorly addressed, is certain to sink your application. The rest of the application consists of eight parts:

**Introduction to Resubmission (three pages).** If an earlier grant application was scored but not funded, the Introduction to Resubmission section is a forum to address the major/minor criticisms of the previous submission and thus gives you an advantage. You can provide additional information to strengthen the justification of need and to further expand on the importance of the instrumentation to the research proposed and to the broader needs of the institution.

**Justification of Need (nine pages).** This section, more than any other, allows the PI to be creative in selling and communicating the need for the requested instrument. It includes:

1. A single brief paragraph summarizing the scope of the proposal in terms of the user group, instrument, cost, and instrument capabilities. It is essentially a brief synopsis of the Foreword/Summary.
2. A brief history of the core facility in which the instrument will be housed
3. In one paragraph, a detailed description of
Each research project should be organized as follows:

1. PI name and title, PI role, and project title
2. One to three specific aims
3. Background and significance
4. Preliminary results that validate the need, use, and application of the requested equipment. Ideally, the data will be gathered on the requested instrument.
5. Experimental procedures and protocols. (Provide sufficient detail to demonstrate your understanding of the use of the instrument and of difficulties that may be encountered.)
6. Use, application, and need for the requested instrument in fulfilling specific aims. This should also address specific accessories requested and the unique capabilities of the instrument.

Summary Tables (six pages).
Two tables should be included. The first table lists the users, their role in the project (major or minor user), title of the project, funding source including grant number, and percent use. Table two lists the users, use and applications, and accessories and features needed. At least three of the major users must need the requested options or accessories to justify their inclusion in the grant request.

Administration (six pages). The importance of this section cannot be overstated; it communicates the organization and management plan. The goal is to convince the study panel that the instrument will be well utilized and cared for during its useful service life. The administration section should include:

1. A description of the entity or core facility that will oversee the instrument
2. The specific location and space where the instrument will reside, including architectural and engineering drawings as needed and any necessary renovations
3. Discussion of the administration of the instrument including the oversight committee, instrument access, scheduling, and dispute resolution
4. Composition and role of your technical advisory committee
5. A financial plan should be presented in [The Justification of Need] section, more than any other, allows the PI to be creative in selling and communicating the need for the requested instrument.
A grant that is enjoyable to read makes for a happy reviewer…. 

detail including plans for income from charging for use (“recharge income”), instrument maintenance, and ongoing support of the service contract. Also discuss support for the core and technical staff. Provide an operating budget table covering the first four years that includes anticipated expenditures for staff, supplies, and the instrument, usage hours, and anticipated recharge income.

Institutional Commitment (three pages). Discuss the institutional support of the core, staff, and other common-use instruments. If applicable, it is extremely helpful (really, it is essential) to include a letter of support from your chair or dean that commits to support in perpetuity of the service contract for the requested instrument. This letter should also include a commitment to cover the cost of any renovations.

Overall Benefit (three pages). Succinctly convey in one or two paragraphs the broad benefit of the new instrument to the greater research community. It is fine to place the instrument in the context of the core facility and communicate the instrument’s broad benefit to the core facility and to the research infrastructure of the university.

In the end, probably 75% of the grant will be devoted to the NIH-mandated requirements. However, you can use the remaining 25% to reveal your creative side. A grant that is enjoyable to read makes for a happy reviewer, and a happy reviewer is more inclined to score well. Good luck and happy writing!

—J. Michael McCaffery and Beverly Wendland, Johns Hopkins University

Footnote

The three most common equipment grant programs are: 1) the SIG program at NIH; 2) the High End Instrumentation (HEI) program at NIH; and 3) the Major Research Instrumentation (MRI) program at the NSF. The HEI program is limited to instruments over $2 million; 10 grants are awarded annually. The MRI program has criteria that limit who may qualify. The SIG program (NIH activity code S10) provides between $100,000 and $600,000 per grant; when combined with institutional support, it can enable the purchase of very powerful equipment.
Goldstein, continued from p. 1

of fetal tissue in biomedical research. The panel was sharply divided between the Republican majority, who see the Planned Parenthood controversy as a call for further restrictions on the transfer of tissue and cells recovered from abortions, and the Democratic minority, who see such measures as potentially crippling to U.S. biomedical research.

The hearing started off with fireworks as the Democratic members accused the committee chair, Rep. Marsha Blackburn (R-TN), and her staff of trying to intimidate scientists by publishing the names of researchers and graduate students who work with fetal cells and tissues. The questioning of witnesses by representatives from both sides of the aisle was acerbic.

The Essential Role of Fetal Cells

Goldstein, who spoke on behalf of the ASCB, the International Society for Stem Cell Research, and the Coalition for the Life Sciences, was one of two witnesses called by the Democratic minority against four called by the Republican majority.

In his testimony, Goldstein cited three examples from his current research where fetal cells and tissues have been essential, including work on Alzheimer’s disease, spinal cord repair, and kidney regeneration. “In my own lab, we use Alzheimer’s disease cells to understand why brain cells with Alzheimer’s disease are abnormal and to try to develop drugs,” Goldstein explained. “We use fetal astrocytes, which are vital to these research investigations. These fetal astrocytes provide growth factors that keep nerve cells healthy and other factors that are not yet defined that help the neurons establish connections and maintain long-term growth and viability. Although we can make cells that are similar to astrocytes from stem cells, the fetal astrocytes are the ‘gold standard’ to which we compare astrocytes made from stem cells, which we cannot use yet to replace the fetal astrocytes because they are not identical in capacity to the best of our current knowledge.” (The complete text of Goldstein’s testimony can be found at http://bit.ly/1LXtNiv.)

Where Were the Scientists?

Goldstein appeared as one of the Democrats’ two witnesses, along with Professor Alta Charo, a lawyer and bioethicist at the University of
Wisconsin. Of the six witnesses, Goldstein was the only basic cellular and clinical researcher. In his opening statement, Goldstein highlighted his 40-year scientific career and his involvement in stem cell research into Alzheimer's disease, spinal cord injury, amyotrophic lateral sclerosis, and kidney and liver disease.

In her questioning, Rep. Diana DeGette (D-CO) underlined Goldstein's scientific experience. "Dr. Goldstein, you're an actual cell-based researcher and you run a lab, so I'm going to talk to you since of all the six witnesses we've had today you seem to be the only one with experience to be able to talk about fetal tissue research and other types of cell-based research."

Rep. Jackie Speier (D-CA) also pointed out that Goldstein was the only cell scientist testifying. "This hearing is about the use of fetal tissue in a scientific setting, so it's a little confusing to me as to why this panel, which should be comprised of scientists, doesn't have a whole panel of scientists."

**Fetal Tissue and Zika Virus**

Rep. Jan Schakowsky (D-IL) focused on the recent outbreak of Zika virus and its implications, asking Goldstein, “How are we expected to learn and understand the implications of the Zika virus without studying the fetal tissue?”

“I think if you want to understand the Zika virus, the most efficient place to start is with the fetal tissue that is infected.”

“Would not having fetal tissue as a resource in this study potentially delay finding a cure?” Schakowsky asked.

“It would absolutely delay it. I think you have to go to the source if you want to understand what's going wrong,” Goldstein said.

Responding to sharp questioning from the majority members, Goldstein reiterated his belief that eliminating fetal tissue research would have a “chilling effect” on the biomedical research community. In perhaps the most telling interaction of the day, Rep. Sean Duffy (R-WI) asked Goldstein if he thought Congress should continue its investigation into fetal tissue for research. “No, I don’t,” Goldstein replied, “I honestly think that Congress has better things to do with its time.”

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Tommy Mattocks, ASCB Public Policy Coordinator

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**Watching a Congressional Hearing Turn into a Witch Hunt**

Last week at a congressional hearing entitled “Bioethics and Fetal Tissue” before the Select Investigatory Panel on Infant Lives, I had a front-row view of a congressional hearing that quickly came off the rails. I should explain that as the Director of the Coalition for the Life Sciences, an umbrella organization of biomedical research societies and institutions of which ASCB is a leading member, I am a science policy veteran who has seen many hearings on Capitol Hill. Still, I was taken aback by how quickly the hearing dissolved from a fact-finding session on the use of fetal tissue in scientific research into a partisan brawl over reproductive politics. I know that everything on the Hill is partisan. I expected this hearing to be no exception. Yet I was still shocked at how quickly the pro-life Republican members on the panel dismissed out of hand the legal, ethical, and, yes, moral use of fetal tissue in research. Instead, they wanted only to use fetal tissue research as another target for anti-abortion rhetoric.

As mentioned in Tommy Mattocks’ article on the hearing (see p. 1), Larry Goldstein of the University of California, San Diego, was the only witness of the six who is an actual cell biologist. Goldstein is no stranger to testifying on divisive issues, having testified repeatedly...
during the congressional debates on embryonic stem cell research. Yet Goldstein faced some of the harshest questioning he’s ever received as an expert panelist. For example, Rep. Dian Black (R-TN), a member on the panel, asked all the witnesses if abortion clinics should be required to maintain a neonatal care unit in their facilities. Goldstein demurred, stating that he was not an expert on proper equipment for any clinical facility. It was clearly inappropriate for an expert witness to speculate outside his areas of expertise. Black would have none of it. She pushed on, badgering Goldstein to answer her question: “Do you think it is wrong to let a child die who is born in an abortion clinic and needs medical assistance?” Goldstein took a deep breath. “I think it is wrong to let a child die,” he said.

The Democratic members on the panel quickly came to Goldstein’s defense. As Rep. Jackie Speier (D-CA) put it, “I feel like I’m a time traveler to the Salem Witch Trials. Unfortunately, this time, those being burned at the stake are our scientists, who hold future medical breakthroughs in their hands. They are joined by brave women’s healthcare workers who are simply trying to care for their patients.” Rep. Jan Schakowsky (D-IL) said that the direction and the tone of the investigation reminded her of Senator Joe McCarthy’s abusive investigative tactics.

But as I listened to Goldstein’s testimony on the real scientific questions that could only be answered by close study of stem cells of all types, including fetal stem cells, it became clear to me that there was nothing to investigate here. Fetal tissue research has been legal and closely controlled in the United States for decades. Moreover, it has resulted in great medical breakthroughs. Banning fetal tissue research won’t have any impact at all on whether women choose to have abortions. Instead, all the Select Panel was doing was throwing up a fog of fear to intimidate the scientists who legally work with fetal tissue/cells within the scope of their research. The Republican committee members are requesting documents, some through subpoenas, that demand the names of researchers, grad students, technicians, and medical personnel involved in the handling of fetal tissue. It is unconscionable that this committee publicizes these names and thereby puts researchers at risk of harassment and threats.

I left the Select Panel hearing seriously concerned about the chilling effect on research from such a witch hunt. After this sad spectacle, it is unclear what the Republican majority will do next. Is their ultimate goal legislation to defund fetal tissue research or to make it illegal? Is it just more “ends justify the means” politics on Capitol Hill where intimidating legitimate scientists is a new blood sport? I found myself in full agreement with Goldstein’s statement that Congress has better things to do with its time.

—Lynn Marquis

President Obama’s Budget Is Released with a Bang but Received with a Whimper

President Obama’s final budget, for FY17, was expected to continue the funding growth for the National Institutes of Health (NIH) seen in the FY16 appropriations bill (which increased the NIH budget by 6.6%, or $2 billion). Surely, with a President so firmly committed to advancing science, his last budget would be easy for the life sciences community to champion on Capitol Hill, right? Well, on February 9, President Obama released his final budget, not to cheers from the research community but to a collective “huh?”

So what happened? The President requested $33.1 billion for the NIH, a $1.825 billion increase over what he proposed in his FY16 budget. Of that, $825 million would be targeted for his presidential initiatives, including the cancer moonshot initiative, the Precision Medicine Initiative (PMI), and the BRAIN Initiative. Then $1 billion of the increase would
be allocated across all the institutes and centers at the NIH.

This all sounds good until you look at the details.

The President proposes using mandatory money to fund the $1.825 billion increase. Typically, the NIH is funded with discretionary money. Congress has the authority to allocate discretionary money on a yearly basis to all departments and agencies under the federal government's umbrella through the appropriations process. Mandatory money for the NIH does not currently exist. To fund a program with mandatory money, legislation needs to pass that would create a funding stream and find ways to pay for it. Think of mandatory money as what you spend on necessities such as a mortgage/rent, utilities, and loans and discretionary money as what remains of your weekly paycheck. You wouldn't add an additional mandatory spending item to your household budget, such as a significantly more expensive house, without having a means to pay for it. This is the same principle applied to mandatory spending for programs funded by the federal government.

Furthermore, the President’s proposed mandatory funding of $1 billion to increase funding for all the institutes and centers at the NIH is based on what he recommended last year, not on what actually passed for FY16. Because what passed was $1 billion more than the President proposed, the so-called $1 billion increase he is recommending for FY17 really just maintains the FY16 level but with nonexistent mandatory money instead of discretionary money. Those who assumed there would be at least some actual increase in the NIH budget view this proposal as a cut.

All attention now turns to Congress, where the real work on the budget will be done. It is unclear what Congress will do given the tight financial boundaries it has to work within, but there is a level of optimism that the NIH will see some small increase in the FY17 budget. Francis Collins, Director of the NIH, stated, “It would be astounding if Congress approves a cut in NIH funding.”

—Lynn Marquis
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On behalf of the many beneficiaries of your 2015 donation, thank you. Your 2016 donation will directly support the advancement of cell biology in many ways.

To donate contact the ASCB Membership Department at 301-347-9324 or MChacon@ascb.org or visit www.ascb.org.
On February 16–17 at Howard Hughes Medical Institute headquarters outside of Washington, DC, 70 attendees (junior and senior scientists, representatives from funding agencies, publishers, editors, postdocs, and Nobel laureates) came together for ASAPBio (asapbio.org), a meeting to discuss the role of preprints in communicating research in biology. Because this topic concerns the whole scientific community, the meeting was video recorded and live streamed, and opportunities for feedback were available to both virtual and physical participants.

What Are Preprints?
Preprints are versions of research manuscripts posted online (to a server like bioRxiv or PeerJ Preprints) that have not yet undergone traditional peer review. Their use could dramatically speed up communication within the biology community, and they could be used as interim evidence of productivity on fellowship applications—something particularly important for early-career researchers, given how long it takes to get manuscripts published.

However, few biologists are using preprints right now, likely because they aren’t familiar with them and also because there are several barriers to their use. For example, some journals do not accept work that has previously appeared as a preprint (you can check this list of journal preprint policies on Wikipedia: http://bit.ly/1iBJW4L). Furthermore, some researchers are concerned that their colleagues would not read and cite preprints, leaving them vulnerable to being scooped. And finally, some funding agencies seem to allow only accepted or published manuscripts to be listed as research publications. However, most scientists who participated in an informal survey conducted on ASAPBio.org prior to the meeting would like to see these barriers removed.

The Goal of ASAPbio
Our Twitter hashtag, #ASAPbio, was heavily used by attendees with a certain progressive perspective, leading to some inadvertent confusion about the goals of the meeting. Therefore, to clarify, the goal of ASAPbio is NOT to mandate the use of preprints, to disrupt journals, or to eschew peer review. Rather, ASAPbio aims to remove barriers to the use of preprints in biology. We invited many parties interested in scholarly communication, running the gamut from traditional journals to vocal advocates for revamping the publishing system. Our task was to find some common ground among them. We can all agree that preprints can greatly speed the pace of scientific progress. Best of all, their adoption is immediately feasible because they’re compatible with our current system of disseminating science.

In fact, the physics community has been using preprints in harmony with journals for decades. No one could attest to this better than our keynote speaker, Paul Ginsparg, the founder of arXiv (arXiv.org). With his flight from Ithaca cancelled due to snow, Ginsparg joined us by video conference as a giant talking head that dispelled myths about arXiv. (For example, he explained that not all subfields of physics adopted it at the same time, over 80% of arXiv preprints eventually appear in a journal, and not all physicists work in 1,000-member consortia.) He also educated us with statistics on its operation and cracked innumerable burning jokes (it’s worth watching the keynote at asapbio.org/video-stream for those alone). The major takeaway from his talk was that preprints have worked effectively in the physics community, which is actually not so different from the biology community after all.

Reaching a Critical Mass
During the meeting, we asked participants (in person and online) for written feedback on three draft declarations. They covered: 1) how
we as scientists can disclose and acknowledge research with preprints; 2) a clarification of editorial policies about preprints, written by representatives from journals; and 3) how those responsible for hiring and promotion can use preprints to evaluate candidates. We asked participants whether they would endorse these documents, and to our surprise, over 90% of the respondents answered “yes” or “yes, but consider changes.” Most of the “no” responses came from those who are barred from making endorsements by their professional role.

Bolstered by this feedback (asapbio.org/drafts), we’re now using the comments suggested by the participants to move toward final versions of these declarations to be posted online for public endorsement.

**Journals Support Symbiosis with Preprints**

To borrow a term from a commentary by Bernd Pulverer from EMBO Press, preprints and journals can exist in symbiosis. Many attendees were in favor of the logic of separating the disclosure of an article (with a preprint) from its evaluation (with the traditional editorial process), a concept elucidated in a commentary by Ron Vale and Tony Hyman.

Therefore, in the words of Jamie Fraser, you don’t need to choose between preprints and journals. You can have both!

We were thrilled that all representatives from publishers were positive about adopting or maintaining policies that support preprints for biology journals, with the notable exception of Cell Press. Mike Eisen has a more detailed analysis of this discrepancy in his excellent blog post on the meeting.

Funding Agencies Favor Preprints

The topic of two of the morning’s breakout sessions was how funding agencies can benefit from preprints. In the reports of those

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**Survey results from ASAPbio.org (392 responses). Full survey results can be found at asapbio.org/survey.**
discussions, we heard that many funding agency representatives were excited about the potential for preprints to act as more accessible indicators of scientific progress. This is especially true for evaluating early-career researchers who have not had time to build a large body of published work. Several representatives discussed specific policy changes that they hoped to implement, especially changing language to explicitly encourage applicants to feel free to list preprints. For example, during his five-minute talk, Phil Bourne (NIH Associate Director for Data Science) reported that the NIH is ready to reexamine its policies on preprints, and during the closing discussion Maria Leptin (Director of EMBO) was enthusiastic about using preprints for fellowship applications.

What Next?

The ASAPBio team is now devising a one-year plan so that we can act strategically to achieve specific goals. First, we’ll continue working with journals and funding agencies toward statements clarifying their preprint policies. We’ll look to markers of changing attitudes in the community—for example, statistics on the usage of preprints, signatures on the declarations we’re drafting, and innumerable other actions that individual scientists can take.

If you’d like to help, please consider:
- Putting your work out as a preprint (and then adding a selfie of yourself and your coauthors at asapbio.org/submission-selfies)
- Post a review or comment on a preprint
- List your preprints on your CV
- Tweet preprints
- Cite preprints
- Arrange an event to talk about preprints at your institution (we’ll post materials to help with this at ASAPbio.org in the coming weeks—sign up at asapbio.org/asapbio-ambassadors to become an ASAPBio Ambassador)
- Sign up to get more involved at asapbio.org

Daniel Mietchen pointed out that February 29 is leap day, and suggested we use that opportunity to take a leap forward for preprints, concentrating efforts to take the actions above on that day. If you embraced preprints in any of these (or other!) ways, before, on, or after February 29, let us know by tweeting with #ASAPbio!

— Jessica Polka, Harvard Medical School

Note

The author was one of the organizers of the ASAPBio meeting, together with Daniel Colón Ramos (Yale), Ron Vale (University of California, San Francisco), and Harold Varmus (Weill Cornell Medical College). She thanks COMPASS members Pinar Gurel and Gary McDowell, who provided invaluable feedback both on this blog post and as attendees of ASAPBio.

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OFFICE HOURS with EdComm

Regardless of our current role in academe, education—for us and for our students—is central to our identity as scientists. With that in mind, the ASCB Education Committee (EdComm) is pleased to offer Office Hours with EdComm, a column addressing broad issues in education, ranging from career choice to curriculum development to incorporating technology into your lectures. EdComm Members and Associates look forward to answering your questions; please direct them to DearEdComm@ascb.org.

Biology Students Struggling with Math

Dear EdComm,

I recently completed teaching a course in cell biology and was devastated to see my students struggle with math. Probabilities, proportions, metric system, extracting meaning from graphs, you name it—everything math-related caused problems. Our campus has a math tutoring center, but many science students do not find it especially useful. Math literacy keeps coming up in discussions between Biology, Chemistry, and Mathematics faculty, but we frequently end up pointing fingers, assigning blame, and demanding that other courses “fix” the problems. Is this issue specific to our university? What can I do to help my students? Help!

—Tired and Desperate

Dear Tired and Desperate,

Your students are not unique in their lack of math skills. Many adults with different levels of education in the United States lack the quantitative skills they need. Based on the data from the National Center for Education Statistics (e.g., https://nces.ed.gov/pubs2014/2014008.pdf), U.S. adults fall behind citizens of many developed countries in quantitative and problem-solving skills. Many students select biology as their major thinking (wrongly) that they will be able to avoid math on their career path. Biology students lack mathematical and computational skills necessary for data analysis and perceive math as irrelevant to their field.¹ This problem is well recognized by the biology education community, and a concerted effort to infuse computational and mathematical training into biology courses will likely help in developing more opportunities for students to improve these skills.²,³

One of the approaches to help your students is to include quantitative reasoning in all science courses, starting with introductory chemistry and biology. National Numeracy Network, “an organization that offers its members a network of individuals, institutions, and corporations united by the common goal of quantitative literacy for all citizens,” has developed a variety of pedagogical resources and approaches that you could integrate into your courses (http://serc.carleton.edu/nnn/index.html). The journal Numeracy is dedicated to publishing examples of successful implementation of quantitative reasoning resources across programs and courses (http://scholarcommons.usf.edu/numeracy). The data show that consistent and deliberate integration of biology and quantitative reasoning changes students’ perception of math and leads to an increase in mathematics and numeracy skills (e.g., reference 4).

You are not alone in this endeavor. Your students’ struggles with math concepts are not unique. Start small, think about the ways you can modify your course to infuse it with consistent and deliberate exercises that can help students relate math and biology, and you will be happy to see your students do better. Your success may be a great point to make in your discussions with other faculty, maybe even changing your conversations from pointing fingers to constructive dialogues leading to larger cultural changes in your university.

—Irina Makarevitch (EdComm member), Hamline University

References

Cell biology is a powerful way of approaching biomedical problems, particularly those caused by infectious diseases. The former Department of Biochemistry at the University of Ghana in Legon (a suburb of the capital city, Accra) has undertaken a major reorganization by adding courses, broadening its research interests, and changing its name to the Department of Biochemistry, Cell, and Molecular Biology. Under the leadership of Gordon Awandare, the faculty of this department has also applied for a grant from the World Bank to establish a “Center of Excellence” in the cell biology of important infectious diseases. This effort has brought in a grant of $8 million over four years to establish the West African Center for Cell Biology of Infectious Pathogens (WACCBIP) with a mandate to develop a graduate program in that subject. But Awandare and colleagues have reached even farther, applying to the Wellcome Trust for a similar sum to enhance the development of this program for teaching and research and to include human genetics as a basis for disease. The result is an influx of about $16 million, budgeted over five years to train young African scientists through master’s, doctoral, and postdoctoral programs.

Some members of ASCB are quite familiar with this department because it was one of the first to host the short courses in the cell biology of diseases, sponsored by the International Affairs Committee of the ASCB and funded by a four-year grant from the Carnegie Corporation of New York. The first such course was hosted by Jonathan Adjimani and Sammy Sackey of the University of Ghana and organized by Dick McIntosh, PI on the Carnegie grant. The faculty for this course came from Oxford (UK), Paris, and several universities in the United States. This two-week effort provided 25 students from several West African countries with lectures on basic cell biology and laboratory exercises on a variety of techniques, including fluorescence microscopy, FACS, and protein and DNA electrophoresis, plus instruction in using the Internet to mine information from pathogen-oriented databases. There were also journal clubs for training in the close reading of complex papers from the literature and sessions to help students organize and present a short talk on their own research interests. The evenings were devoted to familiarizing students with educational resources on the Web, such as iBioSeminars, and to discussing important professional issues, such as the ethics of research and teaching and effective ways to apply for grants. This ~12 hours/day, 6 days/week schedule provided a “scientific boot camp” experience that most students found very stimulating and rewarding, if hard work. Student feedback was very encouraging, but one always wonders with such an effort what its long-term effects will actually be.

With support from the Carnegie grant and then one year of support from the Howard Hughes Medical Institute, plus supplementary funds from the Keith R. Porter Endowment for Cell Biology, members of the ASCB presented a total of eight such courses in East and West Africa, hosted by five different institutions where the faculty were interested in working with outside teachers to provide this intense educational experience for their students. The courses returned to Legon a total of three times because of the warm and energetic responses.
provided by that Biochemistry Department. Both the faculty and the students at Legon showed significant and sustained interest in the approaches to science taught in those courses, as demonstrated by their adopting several of these approaches as new ways to educate their students. These three courses were, in a sense, a catalyst for a reaction that was waiting to happen, given the talent and energy of the faculty at Legon. The remarkable result, whatever its cause, is WACCBIP, an institution that is poised to develop a world-class program in the biology of infectious diseases in one of the most stable and forward-looking countries of West Africa.

To celebrate the success in funding and to jump-start the graduate program, Awandare used some of his recently acquired resources to invite four scientists who had been “regulars” in the previous courses at Legon to return and help his staff put on another two-week course for all the newly enrolled graduate students at WACCBIP. Kirk Deitsch from Weill Cornell Medical College in New York, Martha Cyert from Stanford University, and Joy Power and Dick McIntosh from the University of Colorado convened at Legon for a course that ran from January 18–30, 2016. In addition to Awandare, the Ghanaian faculty of the course included several relatively recent additions to the department, including Patrick Arthur and Lydia Mosi, as well as Dorothy Yeboah-Manu and other researchers from the Noguchi Memorial Institute for Medical Research (NMIMR), situated on the Legon campus.

Deitsch worked with Awandare to organize the course along the lines of the previous ASCB-sponsored events, though this one was for 36 students who were starting either a master’s or a PhD program in the department. The first week was built around the study of Mycobacteria with a focus on *M. tuberculosis*. The second week addressed the cell biology of apicomplexans in general and *Plasmodium falciparum* in particular. The visiting faculty gave lectures on basic cell and molecular biology, while the faculty from Legon lectured on numerous practical issues relating to each of these pathogens, including diagnosis, pathogen identification, treatment, and the problems of emerging drug resistance. Teachers from both groups contributed “tool talks” and laboratory exercises that gave students experience with fluorescence imaging and FACS, pathogen typing by PCR, protein gel electrophoresis, and immunoblotting. These methods were used to let the students see how one can follow the process of pathogen invasion of host cells with laboratory methods.

The graduate program at WACCBIP is now underway. Talented students from Ghana and several other West African countries will be exposed not only to courses in cell and molecular biology but to laboratory and field work that will train them to become significant scholars of infectious diseases. This work will be possible not only because of the facilities and faculties at the University of Ghana’s departments but also those at the NMIMR. Facilities there complement the ones that Awandare and colleagues are developing, so researchers on this campus should be able to pursue their research questions with most of the tools of modern biology. This atmosphere is one that should attract visitors from all over the world, given that Africa is a place where many pathogens are all too prevalent. From a human perspective that prevalence has terrible costs, but it does mean that disease organisms and their affected hosts are available for study. Members of the ASCB are encouraged to visit the websites for these institutions (e.g., www.waccbip.org) and think about ways in which their own work might complement and interact constructively with the problems and possibilities now available in Ghana.

—Dick McIntosh, University of Colorado, Boulder
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Announcing the PALM Network Spring 2016 Fellows

Inaugural class sets high standards for a growing program

ASCB, the Genetics Society of America (GSA), and the American Society of Plant Biologists (ASPB) are collaborating in the Promoting Active Learning & Mentoring (PALM) Network. PALM funds one-on-one, long-term mentorships for faculty or postdocs new to the effective biology education approaches outlined in the Vision and Change (http://visionandchange.org/chronicling-change) recommendations. PALM Fellows work with mentors to develop, use, and evaluate evidence-based active learning strategies in their own classrooms. Fellows also will disseminate their new resources in their own professional networks. The longer-term goal is for Fellows to catalyze enduring change that will positively influence the teaching culture at their institution.

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Position: Postdoctoral Fellow, The Jackson Laboratory
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Mentor: Michelle K. Smith
Position: Assistant Professor, University of Maine
PALM Partner
Affiliation: GSA

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Fellow: Teresa W. Lee
Position: Postdoctoral IRACDA Fellow, Emory University School of Medicine
PALM Partner
Affiliation: GSA

Mentor: Karen L. Schmeichel
Position: Associate Professor, Oglethorpe University
PALM Partner
Affiliation: ASCB
Using the Online Macromolecular Museum, case studies, and a new assessment tool to engage students in hands-on learning about the biology of sickle cell anemia

To learn more about the PALM Network and how to become a PALM Fellow, Mentor, or Network Partner, please see www.ascb.org/PALM. The next application deadline is June 15, 2016.

—Elizabeth Ruedi, GSA; Katie Engen, ASPB; and Thea Clarke, ASCB

Fellow: Stephanie Levi
Position: Adjunct Professor, Oakton Community College and Northeastern Illinois University
PALM Partner Affiliation: ASCB

Mentor: David J. Marcey
Position: Fletcher Jones Professor of Developmental Biology, California Lutheran University
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- Report on their activities to colleagues at the year-end gathering of the PALM Network, as well as at a national, regional, or sectional meeting of their respective scientific societies
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Questions? Please e-mail Sue Wick at swick@umn.edu
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How Making a Celldance Video Made This Researcher a Better Communicator

Edison Leung, an MD/PhD student at the Albert Einstein College of Medicine in New York, made a 2015 Celldance video (See Spying on Cancer Cell Invasion on ASCB Vimeo, https://vimeo.com/148137121.) Here are Leung’s five top tips for thinking in video terms about your research and for telling a broad audience about what you do. Leung’s boyhood idol was Bill Nye, the Science Guy. “He simplified complex science concepts so well that even an 8-year-old, English-as-a-second-language learner could understand them,” says Leung. “It was awe-inspiring.” His explanation of how to make a Celldance video will inspire you.

Darwin Day and the Birth Certificate of Cell Biology

February 12th was Charles Darwin’s birthday. At ASCB, we are inordinately fond of Charles Darwin but we took advantage of the occasion to celebrate the “birth certificate of cell biology.” Didn’t know that cell biology had a birth certificate? Read on.

Phages Patrol the Front Lines of Our Mucosal Innate Immune System

Once tolerated as harmless inhabitants in the jungle of microorganisms that thrive in human mucous, bacteriophages are emerging in new research as the first responders of a healthy immune system. Forest Rohwer, professor of biology at San Diego State University, told a Symposium at ASCB 2015 that bacteriophages help humans and many other organisms fight off invading bacteria by using mucosal surfaces as viral stalking grounds. Bacteriophages, Rohwer said, are terrific hunters of bacteria.

MBoC Offers New Brief Report Format

Molecular Biology of the Cell (MBoC) has introduced a new Brief Report format to give authors another option in how they present their research. Brief Reports are short articles on findings that represent a conceptual advance for the field or that enable or stimulate progress in the field. “This is a format for publishing work that represents an important advance that can be communicated in a pithy piece,” explained MBoC Editor-in-Chief David Drubin.

Brief Reports will be limited to 20,000 characters (exclusive of Materials and Methods and References), five display items (tables or figures) in the text, and four display items in supplementary material. The new format will also require a combined Results and Discussion section.

Visit www.mbcpapers.org to submit a Brief Report or Article to MBoC.
Didinium ingests Paramecium. Note that the Paramecium is folded in half as it is compressed and enters the waiting food vacuole. This micrograph also shows a few discharged Paramecium trichocysts as well as the metachronous waves of cilia in the two characteristic ciliary girdles of Didinium nasutum. This micrograph (www.cellimagelibrary.org/images/21995) was taken in 1968 by Gregory Antipa. It is in the public domain and thus free of any copyright restrictions. However, as is the norm in scientific publishing and as a matter of courtesy, any user should credit the content provider for any public or private use of this image whenever possible.

The Cell Image Library has now been accessed from 220 different countries, with Norfolk Island and the Cook Islands being the latest to join us. We have also had over 700,000 unique sessions.

Looking to find cell images on the go? Don’t forget to download the free Cell Image Library mobile app for iPhone and iPad. Just visit the App Store and search for “Cell Library.”

Don’t forget, if you are applying for a grant soon and need a Data Management Plan (DMP) be sure to contact us before submitting your application so we can help with your cellular images’ DMP.

The Cell Image Library (www.cellimagelibrary.org) is a freely accessible, easy-to-search, public repository of reviewed and annotated images, videos, and animations of cells. Portions of the Cell Image Library were developed by ASCB under a Grand Opportunities grant from the National Institute of General Medical Sciences and are now managed by the National Center for Microscopy and Imaging Research under a perpetual license from ASCB.

—David Orloff
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APC binds the Miro/Milton motor complex to stimulate transport of mitochondria to the plasma membrane
Kate M. Mills, Mariana G. Brocardo, and Beric R. Henderson
The role of adenomatous polyposis coli (APC) tumor suppressor at mitochondria is unclear. We show that APC associates with the Miro/Milton/kinesin complex to stimulate anterograde transport of mitochondria. This identifies the first regulatory role of APC in organelle transport. APC cancer mutations block this activity.
Mol. Biol. Cell 27 (3), 466–482

The alternate AP-1 adaptor subunit Apm2 interacts with the Mil1 regulatory protein and confers differential cargo sorting
Shawn T. Whitfield, Helen E. Burston, Björn D. M. Bean, Nandini Raghuram, Lymarie Maldonado-Báez, Michael Davey, Beverly Wendland, and Elizabeth Conibear
Adaptor complexes are important for cargo sorting in clathrin-coated vesicles. The μ adaptor subunits Apm1 and Apm2 create functionally distinct versions of the yeast AP-1 complex. A novel regulatory protein is identified that selectively binds Apm2-containing complexes and contributes to their membrane recruitment.
Mol. Biol. Cell 27 (3), 588–598
The casein kinases Yck1p and Yck2p act in the secretory pathway, in part, by regulating the Rab exchange factor Sec2p
Danièle Stalder and Peter J. Novick
Sec2p is phosphorylated by the redundant casein kinases Yck1p and Yck2p. This promotes the interaction of Sec2p with the downstream effector, Sec15p, and contributes to Sec2p localization and function. Phosphorylation requires prior association of Sec2p with vesicles and reduction of the inhibitory Golgi lipid P(4)P from the vesicle membrane.

Functional analysis of the interface between the tandem C2 domains of synaptotagmin-1
Chantell S. Evans, Zixuan He, Hua Bai, Xiaochu Lou, Pia Jeggle, R. Bryan Sutton, J. Michael Edwardson, and Edwin R. Chapman
Synaptotagmin (syt)-1 is a Ca$^{2+}$ sensor that triggers rapid synaptic vesicle exocytosis. Mutations that disrupt physical interactions between the tandem Ca$^{2+}$-sensing modules (C2 domains) of syt-1 disrupt regulated membrane fusion in reconstituted fusion reactions and in neurons. Hence contacts between these domains are important for function.
Mol. Biol. Cell 27 (6), 979–989

Small G-proteins are molecular switches that signal to the actin cytoskeleton to control the shape and movement of cells and their organelles. In the article in the March 15, 2016, issue (Mol. Biol. Cell 27, 967–978), Russo et al. report that the small G-protein Rab1 binds to the actin nucleation factor WHAMM to stimulate the tubulation of endomembranes. Rab1 is able to recruit WHAMM to membranes in cells, but unexpectedly limits its actin nucleation activity in vitro. This image depicts numerous tubular membranes radiating from the center of a cell co-expressing fluorescently tagged versions of Rab1 (red) and WHAMM (green). Actin filaments are shown in in magenta and nuclear DNA in blue. (Image: Ken Campellone, University of Connecticut)
Recent Local Meetings

Bay Area Meeting on Lymphocyte Cell Biology
San Francisco, CA. October 12, 2015

Third Annual Cell Biology of Eukaryotic Pathogens Meeting
Clemson, SC. October 22–23, 2015

BioImaging of Living Systems—Single Cells to Whole Organisms
St. Lucia, Queensland, Australia. November 10, 2015

On November 10, 2015, the Institute for Molecular Bioscience and Queensland University of Technology in Brisbane, Australia, hosted an ASCB-supported symposium entitled Bioimaging of Living Systems—Single Cells to Whole Organisms. Around 170 registrants enjoyed presentations on cutting-edge imaging and science by local early-career researchers. Highlights included exquisite confocal imaging of brain and skin development and presentations on dissection of membrane microdomains by means of super-resolution microscopy and in utero electroporation for whole animal imaging. Punctuating the talks by early-career researchers was a keynote presentation by Wolfgang Weninger from Centenary Institute, Sydney, who captivated the audience with his intravital multiphoton imaging of immune cells in transgenic mice. A poster session for early-career researchers, with prizes awarded, ended this successful day, which everyone agreed should become a regular event.

New York Symposium on Quantitative Biology of the Cell

Braving the freezing temperature, 180 local scientists from 24 institutions in the Greater New York City Area convened at Columbia University Medical Center for a whole day of great science, focusing on quantitative biology of cellular and multicellular systems. The New York Symposium on Quantitative Biology of the Cell (NYQBoC) created an otherwise rare opportunity for interaction among scientists at various career levels with differing but complementary backgrounds. There were conversations throughout the day between theoreticians and experimentalists, and between researchers working at different scales, with different model systems, or with different approaches. Fourteen wonderful talks over the spectrum of quantitative imaging, modulating, and mathematical modeling included a keynote presentation from Jonathon Howard of the Yale University School of Medicine. Graduate students and postdocs showcased their exciting work either by giving short talks (accounting for half the talks presented) or by presenting posters. The highly interactive poster session stimulated fruitful discussions between trainees and senior scientists, whose votes recognized

Meeting organizers Samantha Stehbens, Markus Kerr, and Adam Wall, keynote speaker Wolfgang Weninger, and meeting organizer Guillermo Gomez at the symposium Bioimaging—Single Cells to Whole Organisms
two outstanding posters with awards. Thanks to the generous support from ASCB, Columbia University, and Rockefeller University, NYQBoC 2016 was able to break the barrier between disciplines and to ignite a regional dialogue on the emergent topic of quantitative biology of the cell.

**Toronto Organelle Function and Dynamics Conference**

**Toronto, ON, Canada. February 18, 2016**

The aim of the one-day Toronto Organelle Function and Dynamics (TOOFAD) conference was to bring together organelle researchers from the Greater Toronto Area to discuss the ongoing trends, findings, and techniques in organelle research. The intended audience of this conference was researchers who study organelle identities, dynamics, and function at Ryerson University, the University of Toronto, and McMaster University. Researchers located at associated research centers, including SickKids Hospital and The Li Ka Shing Knowledge Institute at St. Michael’s Hospital, were also invited. The conference was geared towards principal investigators from these institutions, as well as all members of their labs, including postdoctoral fellows, graduate students, and undergraduates.

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**Upcoming Local Meetings**

ASCB is pleased to provide funds for graduate students, postdocs, and community college instructors to organize one-day local 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 **September 15, 2016**. Applicants must be or become members of the ASCB. For more information visit www.ascb.org and click on “Meetings.”

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ASCB 2016 Call for Nominations

SELF-NOMINATIONS ARE NOW PERMITTED FOR ALL AWARDS.

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: The student or postdoc or his or her advisor should submit a one-page research statement, a CV, a list of publications, a copy of the abstract submitted to the current year’s Annual Meeting, and the advisor’s letter of recommendation. Postdocs may also submit the recommendation of their graduate student advisor. Duplicate applications from graduate students may be submitted for the Gilula and Bernfield Memorial Awards. Nominators or self-nominators must be ASCB members.

Awards: The winner is presented a plaque, is given financial support, and will speak at a Minisymposium at the Annual Meeting. Expenses to attend the Annual Meeting are paid.

Deadline: July 15 (electronic submission to Christina Szalinski at cszalinski@ascb.org)

Norton B. Gilula Memorial Award

Who is Eligible: An outstanding graduate or undergraduate student (at the time of nomination) who has excelled in research or first-year postdocs whose work was performed while a PhD or MD/PhD student.

How to Apply: The student or advisor should submit a one-page research statement, a CV, a list of publications, if any, the abstract submitted to the current year’s Annual Meeting, and the advisor’s letter of recommendation. Duplicate applications from graduate students may be submitted for the Gilula and Bernfield Memorial Awards. Nominators or self-nominators must be ASCB members.

Awards: The winner is presented a plaque and a ribbon for his/her poster board. Expenses to attend the Annual Meeting are paid. Funded by an annual grant from Rockefeller University Press.

Deadline: July 15 (electronic submission to Christina Szalinski at cszalinski@ascb.org)

For names of prior awardees or more information, visit www.ascb.org and click on “Awards” or contact the ASCB at 301-347-9300 or ascbinfo@ascb.org.

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MEETINGS Calendar
A complete list of upcoming meetings can be found at ascb.org/global-meetings-calendar.

March 30–April 2, 2016. Lake Tahoe, CA
Cryo-EM 3D Image Analysis Symposium. http://ncmi.bcm.edu/ncmi/

June 6–10, 2016. Pittsburgh, PA
Rehabilitative and Regenerative Medicine for Minority Health and Health Disparities (organized by the Magee-Womens Research Institute). www.pdc.magee.edu

June 8–28, 2016. Cold Spring Harbor, NY

June 19-24, 2016. Ponce, PR
Frontiers in Stem Cells in Cancer (organized by the Magee-Womens Research Institute). www.pdc.magee.edu

June 20–23, 2016. Cambridge, UK

Sept 19–23, 2016. Yallingup/Western Australia

ASCB Annual Meetings
December 3–7, 2016. San Francisco
December 2–6, 2017. Philadelphia
December 8–12, 2018. San Diego

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MEMBERS in the News

Cheng-Ming Chuong, an ASCB member since 1999, will give the Albert M. Kligman/Philip Frost Leadership Lecture at the Society for Investigative Dermatology's meeting in May.

Kristen Johansen, an ASCB member since 1992, has been named Chair of the Department of Biochemistry, Biophysics, and Molecular Biology at Iowa State University.

Erin O'Shea, an ASCB member since 1999, is the first woman to be named President of the Howard Hughes Medical Institute.

Physicist Hadiyah-Nicole Green, an ASCB member since 2015, recently won a $1.1 million grant to further develop her patent-pending technology for using laser-activated nanoparticles to treat cancer.

Tom Misteli, an ASCB member since 1995 who presently serves on the ASCB Council, is the 2016 recipient of the Herman Beerman Award of the Society for Investigative Dermatology.

Shigeki Watanabe, an ASCB member since 2015, was named the 2015 Grand Prize Winner of the Eppendorf & Science Prize for Neurobiology.
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**ASCB Member Comments**

We welcome your comments and suggestions at ascbinfo@ascb.org
ASCN Members

In Memoriam: Howard Green, Alfred Gilman, and Jeff Schatz

ASCN notes the deaths late last year of three cell biology pioneers—Howard Green, Alfred Gilman, and Gottfried “Jeff” Schatz. All three were longtime ASCN members.

Howard Green, who died October 31, 2015, age 90, was an early and influential investigator of epidermal stem cells. Although Green trained (reluctantly, he said) as an MD, he always regarded himself as a research cell biologist. Ironically, his basic research culturing skin precursor cells in mice led him directly in 1983 to participate in the first successful clinical treatment of burns using skin grafts from a patient’s own cells.

Green was born in Toronto, Canada, in 1925 and, under family pressure, enrolled at the University of Toronto Medical School, graduating with his MD in 1947. After residency and an Army tour, Green began his research career at New York University School of Medicine in 1956, where he rose to chair of Cell Biology before moving to the Massachusetts Institute of Technology (MIT) in 1970, and then to Harvard Medical School (HMS) in 1980. Green chaired Cell Biology at HMS until 1993 but kept his lab going until 2013.

Green joined ASCN in 1979, moving to emeritus status only in 2008. Among his MIT mentees was former ASCN President Elaine Fuchs, with whom he split in 2012 the $250,000 March of Dimes Prize in Developmental Biology. In his characteristic down-to-earth style, Green told the New York Times, “I’m 86. I plan to spend it as quickly as possible.”

Alfred Gilman, who died December 23 at age 74, won the 1994 Nobel Prize in Medicine or Physiology with Martin Rodbell for his discovery of G-proteins and their role in signal transduction. G-proteins were “the missing piece” in the transduction pathway laid out by Rodbell, but it was Gilman, working independently, who identified the binding protein for guanosine triphosphate. G-proteins are now known to make up a large family of molecular switches active in a variety of cell processes and defective in many diseases.

The son of a renowned Yale pharmacologist, Gilman was born in New Haven in 1941. He took his BS in biochemistry from Yale in 1962 and his MD-PhD from Case Western University in 1969 before joining the National Institutes of Health laboratory of Nobel winner Marshall Nirenberg that year. He moved to the University of Virginia Medical School in 1971 and the University of Texas Southwestern Medical Center in 1981. Before the Nobel, Gilman won the Canada Gairdner International Award in 1984 and the Albert Lasker Basic Medical Research Award in 1989.

Asked by a reporter how he had reacted to the news of winning a Nobel, Gilman recalled, “First I activated my receptor, then my G-protein. I was obviously extremely excited. I think I secreted all the adrenaline I had.”

Gottfried “Jeff” Schatz, a co-discoverer of mitochondrial DNA (mtDNA) and one of the first to identify a mitochondrial-related disease, died October 1, age 79. Schatz was a leader in the modern renaissance of European research biology as a founding member of the Biozentrum at the University of Basel in 1968 and as Secretary General of the European Molecular Biology Organization from 1984–1989.

Born in Austria in 1936, Schatz studied at the University of Graz, receiving his PhD in 1961. He did research at the University of Vienna and emigrated to the United States in 1968. He spent six years at Cornell University in Ithaca before returning to Europe for the Biozentrum start-up.

Schatz joined the ASCN in 1971 and was awarded the ASCN’s highest scientific honor, the E.B. Wilson Medal, in 2000. In 1998, Schatz won the Canada Gairdner International Award.

—John Fleischman

Footnotes and References

1 Roberts S (Nov, 5, 2015). Howard Green, who found a way to grow skin and saved lives, dies at 90. New York Times: http://nyti.ms/1MOoIiw.
6 Biozentrum press release: http://bit.ly/1mK8E4M.
ASCB 2015–2016 Member Gifts

The ASCB is grateful to the following donors whose contributions between January 1, 2015, and February 29, 2016, support Society activities.

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DEAR Labby

**Resisting Intimidation**

Dear Labby,

I’m a graduate student in the second year of my PhD in Virology. My research is going great, and I’m really happy with my choice of project and mentor. In fact, our lab just published a paper including work from my rotation project, and I was really pleased that my advisor included me as a co-author. But now I’m worried and concerned. You see, the work reported in the paper included experiments on cells derived from human fetal tissue. Of course, as we documented in the paper, the cells were from a source that had all the necessary consents and regulatory approvals. Shortly after the paper appeared on PubMed, I received an anonymous letter at home saying I shouldn’t be using human fetal tissue for research. The letter also included some pretty graphic literature. Several of my co-authors received similar letters, and we’re all a bit freaked out right now. I think the research we’re doing is really important and has amazing potential to help people, so I have no intention of giving up, but I could really use some advice on how to handle this situation.

—Poisoned by Pen

Dear Poisoned,

First, Labby hopes you have already spoken to your mentor and that you and the mentor have been in touch with the security and legal officials at your university. They will take steps to keep an eye on the lab and make sure there is no risk to you and your co-workers, or to your experiments.

Second, you should understand that such letterwriting campaigns are actually not uncommon. PubMed is publicly accessible, and it’s relatively easy for campaigners to search for papers describing work using human fetal tissue and then look up contact information for the authors—home addresses are not hard to find on the Internet. Campaigners may not bother sending letters to the senior author, choosing instead to target those, like yourself, who are early in their careers, in the hope that they can cut off the pipeline of talented students and postdocs. So, although this is very upsetting, the likelihood of it going any further is minimal.

Labby truly admires your determination to follow through with your research. Science often touches on areas that some people find morally difficult, and it’s essential that scientists are mindful of the ethical issues surrounding our work. But we should also stand up to those who try to bully us into giving up on important work with real potential benefits.

—Labby

**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.
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ASCB and *Molecular Biology of the Cell* (MBoC) recognize the profound influence that concepts and technologies from the physical and computational sciences are having on cell biology. The 2014 and 2015 MBoC Special Issues on Quantitative Cell Biology were hugely successful with leading researchers in the field contributing a total of 37 research articles and 22 Perspectives.

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**Questions?** Please contact Editor-in-Chief David Drubin at mboc@ascb.org. Submit your paper at **www.mbcpapers.org.**
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