ASCB Shares Concerns about Training and Sustainability with NIH

Deeply concerned about PhD and postdoctoral training and other biomedical workforce issues, the ASCB seized a recent opportunity to present members’ concerns. The ASCB regularly disseminates public policy statements. ASCB leaders and staff also regularly promote these positions in meetings and press releases, in coalitions and singly. “ASCB members look to the Society to represent their interests to the U.S. National Institutes of Health (NIH), the U.S. National Science Foundation (NSF), the U.S. Congress, the White House, and other policymakers,” noted ASCB President Sandra Schmid. In fact, “for many members, the Society’s ability to amplify members’ voices and effectively influence policy is a key member benefit,” added ASCB Executive Director Joan Goldberg.

Recently, the Advisory Committee to the NIH Director created a Working Group on the Future Biomedical Research Workforce. The Working Group’s goal: to “develop a model for a sustainable, diverse, and productive U.S. biomedical research workforce.” The model “will help inform decisions Discuss Science Policy and More

What science policy questions should ASCB tackle? How does ASCB speak on your behalf? The ASCB Business Meeting and Town Hall is the interactive forum where such questions are discussed. All ASCB members are invited to participate in the new format. This year attendees will also vote on bylaws changes. Join the conversation with ASCB Council members, Committee Chairs, members, and staff. ASCB President Sandra Schmid will preside before passing the gavel to President-Elect Ron Vale, December 6, at 12:00 Noon. The place: Room 702 of the Colorado Convention Center. Join us.

Sustainability, continued on page 11

Nobel Prize for ASCB Member Ralph Steinman

In a bittersweet tribute to his discovery of a new class of cells that trigger the adaptive immune system, Ralph M. Steinman, a Rockefeller University researcher and longtime ASCB member, was awarded the 2011 Nobel Prize in Physiology or Medicine. The announcement on October 3 was made by Sweden’s Karolinska Institute, unaware of Steinman’s death, at 68, from pancreatic cancer three days before.

Steinman, continued on page 14
What would you call a light microscope integrated with an electron microscope?

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Why Is Teaching Good for Research?

This President’s Column is written by guest columnist and ASCB Council member David Botstein.

It has become conventional wisdom in the scientific community that teaching, especially by younger faculty, is something to be avoided. Teaching, beyond a few token specialized lectures a year, is said to be a distraction that will impede, rather than enhance, the development of a scientific career. Faculty mentors, with the best of intentions, now advise junior faculty to minimize teaching and service, long understood to be normal, even essential, activities for someone with the title of “Professor.” Negative attitudes toward teaching have become enshrined in the recruitment and development practices of many institutions of higher learning. This is especially the case at institutions prominent in scientific research. Such institutions tout minimal (or zero) teaching as inducements to young faculty; they thereby have abandoned the expectation that their successful researchers will ever teach more than a handful of specialized lectures. Consequently, teaching in many of these institutions has descended to a low level, both in quantity and quality, to the point that the rubric “institution of higher learning” is becoming an oxymoron. Alarming, the major U.S. scientific research funding agencies (National Science Foundation [NSF] and National Institutes of Health [NIH]) have limited or even forbidden teaching, especially by predoctoral and postdoctoral trainees. This development no doubt makes a bad situation even worse, and, as I show below, denies the origins of the modern scientific community that thought exactly the opposite.

Teaching and the Origins of the Modern Academic Research Environment

The modern science funding and academic promotion systems originate from the period just after World War II. The scientific leaders of that era (notably Vannevar Bush, James Shannon, and James B. Conant) based their policies on their experience in leading the massive and remarkably successful research and development efforts that produced radar, sonar, atomic weapons, and modern computing machines. They found that the best outcomes were obtained with active scientists recruited from the universities. At that time, there were virtually no important research scientists who were not also important teachers.

For example, J. Robert Oppenheimer, who led the Manhattan Project at Los Alamos, had spent most of his career teaching physics. His reputation among physicists rested far more on his brilliant teaching than on his research. He was anything but single-minded about his personal research program in quantum mechanics. He was chosen, and he was successful, precisely because he had a polymath who knew and understood broadly and deeply what was known in all of the examples from my own career. However, I begin with a historical perspective, which many may find more convincing than any number of anecdotes. The pervasive dismissive attitude toward teaching is actually a new phenomenon. The visionaries who established the NSF, NIH, and the modern academic tenure system came from a scientific community that thought exactly the opposite.
physical sciences, and 2) could communicate this to virtually anybody at a sophisticated level. Many of his recruits were his seniors; most were experts in fields far removed from quantum mechanics per se—making the bomb was a deeply interdisciplinary endeavor. Oppenheimer was, in the full meaning of the word, a “professor”: both a teacher and a scholar. The same could be said about Bush, Conant, and Shannon.

In 1945 Vannevar Bush published an essay entitled “Science, the Endless Frontier” that historians credit with leading to the establishment of the NSF (and, more indirectly, the ultimate form of the NIH under Shannon). In it he wrote:

Publicly and privately supported colleges and universities and the endowed research institutes... are uniquely qualified by tradition and by their special characteristics to carry on basic research. They are charged with the responsibility of conserving the knowledge accumulated by the past, imparting that knowledge to students, and contributing new knowledge of all kinds. It is chiefly in these institutions that scientists may work in an atmosphere which is relatively free from the adverse pressure of convention, prejudice, or commercial necessity. At their best they provide the scientific worker with a strong sense of solidarity and security, as well as a substantial degree of personal intellectual freedom. All of these factors are of great importance in the development of new knowledge, since much of new knowledge is certain to arouse opposition because of its tendency to challenge current beliefs or practice.

Bush and his contemporaries believed in a fundamental synergy between research and teaching: academic science (which included serious teaching) offered the best hope for progress in basic research. The funding and academic system they put in place became the envy of the world: a professor’s dual mandate to teach the science and to do the research, simultaneously serving two masters (the university and the funders, respectively), was its central feature.

This belief persisted well into the early 1960s, when I was a student at Harvard, Massachusetts Institute of Technology, and the University of Michigan. Beginning with my very first undergraduate courses, my teachers were also leading researchers in physics, chemistry, and biology. They included several who ultimately received Nobel Prizes. They clearly valued their teaching, and they made clear to their students that they believed teaching and research should go hand in hand. I should add that their teaching loads were, by modern standards, very substantial. For example, Konrad Bloch taught the entire introductory biochemistry course personally, year after year. He had only a graduate student to help grade the exams. Further, my recollection is that it was not the only course he taught. Famously, Jim Watson, as an assistant professor, taught, solo, an introductory course for freshmen and a popular course on viruses every year. He clearly understood his dual role as a professor. He went on to write a textbook, *The Molecular Biology of the Gene*. Many believe the success of this book marks the true beginning of molecular biology as an academic subject.

When I was appointed assistant professor at MIT, it was not because of my research program (which focused on P22, an obscure bacteriophage even then). Rather it was because I had, as an instructor, helped devise a Project Laboratory course that the department believed had great promise. It is still taught at MIT, and I teach a version at Princeton. When it came time for me to be evaluated for tenure, the major emphasis, then as now, was on my research accomplishments, for which the bar was high, as opposed to teaching, for which the bar was lower. Yet nobody ever advised me (or anybody I know of) in that period that we should shirk teaching. We all taught, and by and large we profited from it out of proportion to the time we spent on it. I certainly did.

**What Researchers Gain from Teaching**

At this point the reader may well ask: What exactly is the nature of this profit or synergy? I see four major elements.

First, I think that teaching, especially at the introductory level, requires a level of thought and understanding of science not required to make incremental progress in a tiny specialized area. I have taught basic genetics for most of my career, and each year I find I understand the subject better and over a broader span. It’s painful now to remember how easily students could come up with questions I could not satisfactorily answer in my salad days. I was embarrassingly naïve about many things, not least how genetics connects to other sciences.
It was precisely these questions, in both lecture and laboratory courses, that made me study and read widely outside my immediate research specialty. This benefited my research even more than my teaching.

For example, it was a student question in the late 1970s that first led me to study Bayesian probability seriously. Gerry Fink (my partner in that course) and I devised problems that illustrate Bayesian reasoning largely because we became so impressed with its importance, which still has not penetrated deeply into the standard genetics curriculum. This subject is now at the core of my current research (it underlies all modern gene mapping and microarray analysis). It has also become a linchpin for our undergraduate and graduate curricula in quantitative biology at Princeton.

Second, through teaching and service at MIT, Stanford, and Princeton, I forged relationships with faculty in other disciplines. These relationships resulted in successful research collaborations that led, serendipitously, in directions I would never have undertaken on my own. Teaching with others is still the best and most reliable way to avoid the intellectual isolation that comes of thinking only about one’s own current research.

Third, I profited from my teaching by attracting able students, either undergraduate or graduate, to my laboratory early in their careers. Teaching the younger students provided intellectual contact with those who, if they became interested, were free to join my group. As I look back on my career, I’m persuaded that it was the large number of really outstanding students who chose my lab instead of the labs of more senior and more famous colleagues that made it possible for me to achieve as much as I did.

Fourth, it is quite easy, if one sets one’s mind to it, to organize courses around subjects that directly aid one’s research while teaching fundamentals to students. This is most obvious in laboratory courses. Screens of mutants have been organized around courses, with students providing hands as well as minds, since the earliest days of fly genetics. The number of truly groundbreaking experiments begun in courses at Cold Spring Harbor or Woods Hole is legion; examples from Woods Hole include the Meselson-Stahl experiment and the discovery of cyclins. At Cold Spring Harbor, Max Delbrück and Salvador Luria spent their summers teaching courses. They were rewarded doubly by the recruitment of outstanding new colleagues as well as with the design and outcome of new experiments that changed their field. On a less grand scale, university laboratory courses not infrequently result in research results of real value. At MIT results obtained by undergraduates resulted in publications nearly every time I taught my Project Laboratory course; this is happening again at Princeton.

I want to conclude with a slogan I use in my laboratory: “Science is not primarily a motor activity.” By this I mean that the execution of experiments, while important, is secondary to the mental efforts required to design them properly in the first place, and then to analyze and interpret the results intelligently afterward. Time spent teaching is time spent thinking about the most basic ideas of our science and how our science fits in with the rest of what is known about the real world. Time spent teaching is spent in intellectual activity both foundational and highly relevant to research. It is not “lost.”

To conclude, my advice is to aim for a good balance between intellectual and motor activities in research. Teaching is an outstanding way to achieve this balance. Achieving such a balance is good for the individual scientist, for the institutions, for students, and for the scientific endeavor as a whole. Treating the teaching of the intellectual foundations of science with disdain in the name of focus on research alone damages our profession and its future. Restoring the balance between teaching and research is the best way to guarantee steady progress in both realms.

—David Botstein, Princeton University

Comments are welcome and should be sent to president@ascb.org.
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So It’s Good for My Research, But How Do I Do It?

We are delighted that David Botstein chose to focus on why teaching is good for research in this month’s President’s Column. We are sure that there will be widespread agreement with his premises that research is prioritized over teaching at universities, and that many early-career scientists have been advised not to teach or, at least, not to dedicate time or energy to teaching. Yet we expect his argument that teaching is beneficial for research may be met with more skepticism. Thus, we would like to start by highlighting just a fraction of the research that supports this argument:

- Feldon and colleagues1 demonstrated that graduate students with teaching responsibilities showed significantly larger gains in research skills during their graduate careers than students who had no teaching responsibilities.
- Both graduate students and faculty advisors have attributed gains in graduate students’ research skills to their participation in teaching.2-4
- Decades of research on learning-by-teaching demonstrates that the process of teaching leads to improvements in knowledge retention, knowledge organization, and metacognition.5-8

A Wealth of Resources

Excitingly, ASCB has a wealth of resources to support members in their teaching. For example, the ASCB Education Committee organizes the Education Minisymposium and Initiative Forums at the Annual Meeting to highlight effective educational programs and strategies. The Committee also hosts renowned biology educators in providing professional development on teaching and learning via the Undergraduate and K–12 Education Workshops. Each of these events, and the Annual Meeting Educational Resources/Minorities Affairs Committee (MAC) Booth, provide attendees with practical tools to use in their teaching. They also provide venues for discussing instructional efforts with interested colleagues.

ASCB also publishes the online, open-access journal *CBE—Life Sciences Education* (*CBE-LSE*; http://www.lifescied.org), which has been recognized among education journals as “a great journal scientists might be caught reading.”9 *CBE-LSE* is written by and for people engaged in biology teaching in all environments, including K–12 schools, colleges, universities, professional schools, and museums. *CBE-LSE* publishes essays and research on educational innovations and their impacts, and on why and how people learn biology. *CBE-LSE* also publishes a number of features, including Approaches to Biology Teaching and Learning, Current Insights: Recent Research in Teaching and Learning, and From the National Academies/National Science Foundation, which bring educational resources, research, and policies to readers’ attention.

A report recently commissioned by the National Research Council and the Board on Science Education10 revealed that: 1) the number of publications of undergraduate biology education research increased substantially in the past decade, and 2) that *CBE-LSE* published an impressive 50 articles (26% of the total). That’s more than three times the rate of any other journal.

So when you decide to follow David Botstein’s advice to make teaching a priority, we hope you will take a closer look at *CBE-LSE*. For example, if you are wondering how to translate educational research into teaching practice in your own classroom, read Tanner’s article on “Moving Theory into Practice.”11 If you want an informed perspective on textbooks or online learning materials, peruse its Book Reviews or www.Life Science Education column. If you are interested in finding instruments useful for assessing students’ understanding of genetics, use of models, or learning about molecular and cellular biology, refer to the work of Smith and colleagues,12 Richmond et al.13 and Shi and colleagues,14 respectively. If you want to keep abreast of current research in biology teaching and learning, and the latest in curricula and approaches for teaching biology, subscribe to the journal’s RSS feed (http://www.lifescied.org/rss) or sign up to receive alerts when a new issue of *CBE-LSE* is published (http://www.lifescied.org/cgi/alerts/etoc).

Colleges and universities are charged with...
the education of future scientists. Infusing our research with the lessons learned from our teaching helps ensure that our protégés can connect the dots across disciplines and communicate with those within and beyond the scientific disciplines.

—Erin Dolan, Editor-in-Chief, CBE—Life Sciences Education, and Caroline Kane, Chair, ASCB Education Committee

References


Easy-to-Use Itinerary Planner

Did you know that ASCB offers an Itinerary Planner for the Annual Meeting? It allows you to search our entire online program by author, topic, key word, author’s affiliation, event type, or presentation number. Then you can add any or all selections to build your own itinerary and download it to Excel, Outlook, or iCal. Using this system will enable you to plan each day so you don’t miss anything! The Itinerary Planner is now available at www.miracd.com/ascb2011/Itinerary.

—Thea Clarke
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about how to train the optimal number of people for the appropriate types of positions that will advance science and promote health.” The Working Group will recommend actions to the Advisory Committee to the NIH Director and to the NIH Director. Toward that end the NIH issued a related Request for Information (RFI), focused on training and sustainability. The Society was pleased by the establishment and goals of the distinguished group, which includes ASCB member Keith Yamamoto. The Society disseminated a brief survey to members to ensure member input.

There was clear consensus among ASCB members who responded to the survey that the balance between trainees and post-training career opportunities, matching PhD and postdoctoral training with career expectations, and creating alternate career paths in academic research and other fields need discussion and attention. To aid the Working Group in its deliberations, ASCB also initiated discussion among members of the ASCB Council and Education and Public Policy Committees.

In addition to the summary of the ASCB member survey results, the Society submitted to NIH an individual response from Schmid, and comments from others.

**Summary of Membership Survey**

The duration, focus, and direction of training are key concerns today. PhD training has traditionally focused on preparing students for academic positions. With academic positions in short supply and competition intense, should graduate training now have additional requirements and/or alternate objectives? Should NIH take action? NIH is in a position to influence training due to the high volume of training grants it funds, and the high number of students and fellows supported by R01s. The recent statement by the National Institute of General Medical Sciences (NIGMS) on training makes clear its recognition that training today needs to change.

ASCB Council member Ray Deshaies argued that NIH has used training grants as a mechanism to reduce the duration to PhD, but this has had unintended negative consequences. Namely: “it has become routine for students to graduate without papers, and then they stick around for three, six, 12, or even more months in their PhD lab, finishing up papers from their PhD work. During those months they earn a higher salary. However, it cuts them out of some of the prestigious fellowships, which require that you are within 12 months of graduating in order to apply.”

Duration is only one important aspect of PhD training. What should PhD students learn, receive, and produce? The survey queried members on requirements for published papers, submitted research proposals, teaching opportunities, presenting research orally, and specific curricula. All of these were considered important by a majority of all respondents. Many of the Society’s leaders also believe that interdisciplinary training is important, but only a third of member respondents thought this should be required. ASCB Council member Yixian Zheng noted the value of PhD programs that combine biology and computation. Perhaps NIH could seek alliances with other government agencies to develop joint programs, she suggested.

ASCB Secretary Jean Schwarzbauer argued that “training for other careers should come from programs that specialize in those careers.” And she was against adding requirements for PhD training: “Additional requirements would more than likely slow down the time to degree without adding value to the educational experience.” Council member JoAnn Trejo

**PhD Training**

While the majority of ASCB members believe that a four- to five-year training period for biology PhDs is appropriate (61%), a significant number think that five to six years may be more appropriate (27% of professors vs. only 14% of graduate students and 19% of postdocs). Only a small minority of professors support shorter PhD training periods (10%). Perhaps, not surprisingly, graduate students and postdocs remain more than twice as positive about shorter training periods, with nearly a quarter favoring a three- to four-year period. The Society suspects that the value of a lengthier training period becomes more evident in retrospect.

ASCB Council member Ray Deshaies argued that NIH has used training grants as a mechanism to reduce the duration to PhD, but this has had unintended negative consequences. Namely: “it has become routine for students to graduate without papers, and then they stick around for three, six, 12, or even more months in their PhD lab, finishing up papers from their PhD work. During those months they earn a higher salary. However, it cuts them out of some of the prestigious fellowships, which require that you are within 12 months of graduating in order to apply.”

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agreed, and stressed the value of curriculum that is more problem-based to develop critical thinking, with limited lecture time. Council member David Botstein recommended that guidelines or suggestions might be in order, but not requirements.

Last, there were many comments on the importance of mentorship. PIs have a responsibility to their graduate students to provide mentorship to help them develop professionally. We applauded NIGMS’s interest in tracking students on R01s, recommending or requiring IDPs, PI attention and access, and guidance about career options and development. It’s worth noting, as did ASCB Public Policy Committee member David Burgess, that PIs need training about the majority of career paths that current PhDs, can pursue. Burgess is also PI on ASCB’s Minority Access to Research Careers grant.

Council member Inke Näthke noted that many countries do things differently and, in most cases, that tends to work, too (i.e., three- to four-year PhDs, which have made two postdocs a common occurrence in the UK; a master’s always before a PhD in Germany). Realistic expectations are key, and careers can take many different forms.

**Postdoctoral Training**

Postdoctoral fellowships have become long-term, low-paying positions for many. While there are similar beliefs about the duration and number of postdocs among ASCB members as for predocs, beliefs about requirements differ greatly. A consensus of ASCB Council members, reflected in many of the comments that accompanied the survey, was that the requirements for postdoctoral training should be highly flexible, dependent on career objectives, and individually determined.

Postdoctoral training needs to be more customized after considering individual career objectives and expectations, many agreed. Schmid stated that the general goals of the postdoc are:
- To demonstrate independence and establish expertise in a chosen field
- To be proficient in writing papers, grants, and communicating his or her work
- To be able to identify important questions, to design and develop a project, and to bring it to completion

These transferable skills are required for success in any career.

Mentoring younger colleagues (graduate students) or directing technicians would also be useful, Schmid added. Indeed, mentoring by postdocs of graduate/undergraduate students was recommended as a requirement by more than 70% of respondents.

Not surprisingly, the value of an IDP and PI mentorship is firmly accepted by all groups for postdoctoral training—with close agreement on value (selected as a requirement by 80–82%). As Public Policy Committee member Tom Pollard, an ASCB past president, noted, mentorship of postdocs should be a moral imperative:

“PIs should feel obligated to give postdocs not only guidance but also independence, not only responsibilities for research but also requirements to make regular presentations to sharpen communication skills; and not only research opportunities, but also the chance to mentor students with faculty guidance.” And postdocs should consider, together with their advisor, whether their skills, ambitions, and passions are best suited for research or for other career options. If the latter, then expectations and goals need to be adjusted to prepare for success in a chosen field, Schmid said.

**Workforce Issues**

In today’s competitive environment, questions about the value of master’s-level staff scientists and PhD-level staff scientists have arisen, along with concern about excessive time spent in postdoctoral fellowships. While postdoctoral positions are inherently unstable and low-paying, positions for master’s-level staff and PhD-level staff scientists may not be—hence, one attraction. In addition such positions may help meet the need in larger labs for assistance with training and mentorship, lab organization/management, and problem-solving and data interpretation.

Should scientific training be more of a step-by-step process? Should master’s degrees be considered differently? Schmid suggests reinvigorating these programs and increasing their prestige. Indeed, professional science master’s programs have grown, and, reportedly, offer good placement rates for graduates.

Students might also begin study in a master’s...
program, to determine where their interests and abilities lie. Master’s degrees could be a prerequisite for PhD programs, Schmid suggests. Professors would need to guide this process, helping to set short-term goals that can fulfill the requirements for a master’s thesis, while contributing to a PhD thesis or postdoctoral project, Schmid notes. Career development offices would help link master’s students with career opportunities in multiple arenas.

A major question is how many PIs know how to prepare students and postdocs for nonacademic positions. “Institutions need to figure out how to help students think about transferring their skills to other career tracks and matching expectations/requirements for those career tracks,” Schmid noted. If the status quo is unsustainable, then we must change, she continued: “We need to create additional flexibility in how we train PhD students. The pathway of PhD to postdoc should no longer be default and instead needs to be individually and carefully considered. Because the postdoc should be exclusively reserved for those training for academic/private or government research careers, only those who have demonstrated the passion, creativity, and risk-taking attributes necessary for success in this career should consider a research postdoc. The acquired skill sets and passions of other PhDs need to be matched with other career options where success is more likely, and their unique skills can have a greater impact. PhD programs should have professional aptitude testing and career counseling programs to help students make these decisions.”

Pollard added that “the system needs to do better giving trainees advice about their prospects and career options earlier at each step in the process. This process should give trainees a chance to learn about their aptitude for, and their commitment to, a career somewhere in the broad range of careers open to individuals with advanced training in biology.”

—Joan Goldberg

“The pathway of PhD to postdoc should no longer be default and instead needs to be individually and carefully considered.”
The rules of the Nobel Foundation require that the winner be alive at the time of the award. However, the Karolinska reaffirmed the prize after news of Steinman’s death emerged, saying that the selectors had voted the award in good faith.

Steinman discovered what he called dendritic cells in 1972 while working in the joint Rockefeller lab of Zanvil Cohn and James Hirsch. It took Steinman six years to build a strong scientific case for the tree-like immune cells as the primary activators of T-cells, and nearly 20 years more to have his ideas generally accepted. Steinman’s original presentations were met by what Ira Mellman of Genentech described as “downright nasty hostility.” Mellman was a postdoc in the Cohn lab after Steinman’s time there.

In a 2008 interview, Steinman was more diplomatic, saying that tissue culture methods of the period made it difficult for his critics to replicate his findings. He also said that most immunologists at the time did not share the cell biology background ingrained in him by Cohn and Hirsch. “We were looking through the eyes of cell biologists,” said Steinman. “We were trained that way.”

Steinman had been an ASCB member since 1974. For his work on dendritic cells, he won the Lasker Prize for Basic Medical Research in 2007 and the Canada Gairdner International Award in 2003.

Steinman’s family will receive a half share of the U.S. $1.45 million prize, which was also awarded jointly to Jules Hoffman of the National Center for Scientific Research in Strasbourg, France, and Bruce Beutler of The Scripps Research Institute in San Diego. The ASCB sends its condolences to Steinman’s family, whose loss is shared by the ASCB community.

—John Fleischman

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2011 Award Recipients and Presentations

British Young Cell Biologist of the Year Awardee
Ian McGough, University of Bristol
Poster (Board #B452)
A Novel SNX3-dependent Retromer Pathway Is Required for Wnt Secretion
Tuesday, Dec. 14, 1:00 pm–2:30 pm

Bruce Alberts Science Education Awardee
Peter Bruns, Howard Hughes Medical Institute, retired; Sunday, Dec. 12
Award presentation and talk
CourseSource, a New Partnership for Higher Education
Sunday, December 4, 9:45 am-10:15 am
Room 610

Merton Bernfield Memorial Awardee
Dylan Tyler Burnette, National Institute of Child Health and Human Development, NIH
Invited talk
Bleaching/Blinking Assisted Localization Microscopy (BALM) for Super-Resolution Imaging Using Standard Fluorescent Molecules
Minisymposium 9, Monday, Dec. 5, 4:30 pm-6:35 pm
Four Seasons Ballroom 4

Early Career Life Scientist Awardee
Maxence Nachury, Stanford University Medical School
Invited talk
The BBSome at the Crossroad of Signaling, Trafficking, and Tubulin Acetylation
Minisymposium 20, Tuesday Dec. 6, 4:30 pm-6:35 pm
Four Seasons Ballroom 4

Norton B. Gilula Memorial Awardee
Shijing Luo, Princeton University
Poster (Board #847)
Molecular Mechanisms Distinguishing Reproductive Aging from Somatic Aging
Monday, Dec. 5, 12:30 pm–2:00 pm

French Society for Cell Biology Awardees
Daphné Dambournet, Institut Pasteur
Poster (Board #B589)
Spatial and Temporal Control of Lipids and F-actin in Cytokinesis Completion
Tuesday, Dec. 6, 12:30 pm–2:00 pm

E.B. Wilson Lecturers
Invited talks
Gary G. Borisy, Marine Biological Laboratory
E.B. Wilson, MBL, and the Physical Properties of Protoplasm
J. Richard McIntosh, University of Colorado, Boulder
Mitosis Futures: The Past Is Prologue
James A. Spudich, Stanford University
Molecular Motors: Where Do We Go from Here?
Tuesday, December 6, 7:00 pm-8:00 pm
Wells Fargo Theater

E.E. Just Lecturer
Jerry Charles Gaydens, City College of New York
Award presentation and talk
Thymic Nurse Cell Function: The “Proto-Thymus”? Sunday, December 4, 2:00 pm-3:00 pm
Room 601

Keith R. Porter Lecturer
Jennifer Lippincott-Schwartz, National Institute of Child Health and Human Development, NIH
Invited talk
Navigating the Cellular Landscape with New Optical Probes, Imaging Strategies, and Technical Innovations
Sunday, December 4, 7:00 pm-8:00 pm
Wells Fargo Theater

MBoC Paper of the Year Awardee
Nicholas O. Deakin, SUNY Upstate Medical University
Invited talk
Distinct Roles for Paxillin and Hic-5 in the Regulation of Tumor Cell Plasticity, Invasion, and Metastasis
Minisymposium 18, Tuesday, Dec. 6, 4:30 pm-6:35 pm
Four Seasons Ballroom 1

WICB Junior Awardee
Melissa M. Rolls, Pennsylvania State University
Invited talk
Axon Injury Triggers a Microtubule-based Pathway That Protects Dendrites.
Minisymposium 15, Monday Dec. 5, 4:30 pm-6:35 pm
Four Seasons Ballroom 3
Presentation of Award, Tuesday, Dec. 14
2:30 pm–4:00 pm, Room 103BC

WICB Senior Awardee
Susan Wente, Vanderbilt University Medical Center
Award presentation
Tuesday, December 6, 3:30 pm-4:30 pm
Room 610
Visit the ASCB website at www.ascb.org/meetings/subgroup/subgroup.cfm to view full descriptions, speaker lists, and schedules for each of these exciting Subgroup sessions.

**Annual Meeting Schedule By Day**

**SATURDAY, DEC. 3**

**Special Interest Subgroups**
12:30 pm–5:00 pm

*Note: You must be registered for the ASCB Annual Meeting to attend these sessions.*

**A. 3D Architecture: From Genome to Tissue and Back**
*Organizers:* Nastaran Zahir Kuhn, National Cancer Institute, NIH; and Sean Hanlon, National Cancer Institute, NIH

**B. A Mile-High View of Mitotic Assembly**
*Organizers:* Kevin Vaughan, University of Notre Dame; and Edward Hinchcliffe, Hormel Institute, University of Minnesota

**C. Building the Cell**
*Organizer:* Wallace Marshall, University of California, San Francisco

**D. Clathrin-Independent Endocytosis**
*Organizers:* Ivan Robert Nabi, University of British Columbia, Canada; and Radu V. Stan, Dartmouth Medical School

**E. Endocytic Recycling Pathways and Compartments—Many Guises, Many Functions**
*Organizers:* Jennifer Stow, University of Queensland, Australia; and Julie Donaldson, National Heart, Lung, and Blood Institute, NIH

**F. Extracellular Matrix Regulation of Programmed Cell Death**
*Organizers:* Jayanta Debnath, University of California, San Francisco; and Mike Overholtzer, Sloan-Kettering Institute

**G. Function of Intermediate Filaments: Mechanics and Signal Transduction**
*Organizers:* Karen M. Ridge, Northwestern University; and Harald Herrmann, DFKZ-University of Heidelberg, Germany

**H. Genetic and Epigenetic Regulatory Networks in Biology and Pathology**
*Organizers:* Gary Stein, University of Massachusetts Medical School; Jane Lian, University of Massachusetts Medical School; and Masaki Noda, Tokyo Medical and Dental University, Japan

**I. Mechanisms for Rapid Cell Migration—Results of the First World Cell Race Will Be Presented**
*Organizers:* Manuel Thery, French Alternative Energies and Atomic Energy Commission (CEA), France; and Ana-Maria Lennon-Dumenil, Institute Curie, France

**J. Microtubules in Cell Migration**
*Organizers:* Gregg Gundersen, Columbia University; Gaudenz Danuser, Harvard University; and Torsten Wittmann, University of California, San Francisco

**K. Muscle Cytoskeletal Protein Assembly in Normal and Diseased Muscles**
*Organizers:* Joseph W. Sanger, SUNY Upstate Medical University; and Carol Gregorio, University of Arizona College of Medicine

**L. Nonconventional Functions of Molecular Motors**
*Organizer:* Virgil Muresan, UMDNJ, New Jersey Medical School

**M. Nuclear Envelope Adhesions and the Nucleoskeleton**
*Organizers:* Katherine Wilson, Johns Hopkins School of Medicine; and Yixian Zheng, Carnegie Institution for Science

**N. Posttranslational Regulation of the Cytoskeleton**
*Organizers:* Anna Kashina, University of Pennsylvania; and Jeannette Chloë Bulinski, Columbia University

**O. Protein Balance and the Regulation of Cell Mass**
*Organizers:* Jon Yewdell, National Institute of Allergy and Infectious Diseases, NIH; and Denys Wheatley, BioMedES, UK

**P. Rab and Arf GTPases: Trafficking, Disease, and Therapeutic Targets**
*Organizers:* Angela Wandinger-Ness, University of New Mexico HSC; and Elizabeth Sztul, University of Alabama at Birmingham

**Keynote Symposium**
6:00 pm
*Molecules and Systems: Our Quest for a Physiology of the Cell*
*Marc Kirschner, Harvard Medical School*
SUNDAY, DEC. 4

Symposia

Molecular Mechanisms
8:00 am–9:30 am
Chair: Robert Singer, Albert Einstein College of Medicine
Dicing and Beyond: Regulatory RNA in Humans and Bacteria. Jennifer A. Doudna, University of California, Berkeley/HMMI
Molecular Origami: Chaperone-Assisted Protein Folding and Misfolding in Health and Disease. Judith Frydman, Stanford University

Function of Multi-Molecular Machines
10:30 am–12:00 Noon
Chair: Jan Ellenberg, European Molecular Biology Laboratory, Heidelberg, Germany
Single Molecule Microscopy of Macromolecular Machines: The Spliceosome. Melissa Moore, University of Massachusetts Medical School/HMMI
Mechanisms and Regulation of Cullin-RING Ubiquitin Ligation Machines. Raymond Deshaies, California Institute of Technology/HMMI
Spatio-Dynamics of Clathrin-Mediated Endocytosis in Yeast and Mammals. David Drubin, University of California, Berkeley

Microscopy Workshop
Quantitative Live Cell Microscopy
2:00 pm–4:00 pm
Presenters: Khuloud Jaqaman, Harvard Medical School, and Jennifer Waters, Harvard Medical School

Translational Research Session
Bench to the Patient through Cell Biology: Managing Protein Folding in Human Disease
2:30 pm–4:00 pm
Moderator: William E. Balch, The Scripps Research Institute
Speakers:
Discovery and Development of CFTR Correctors for the Treatment of Cystic Fibrosis. Frederick Van Goor, Vertex Pharmaceuticals
Chemical and Biological Strategies for Ameliorating Neurodegenerative Diseases. Jeffrey Kelly, The Scripps Research Institute
Targeting the Proteasome: A Research Tool Becomes a Powerful Cancer Therapeutic. Alfred Goldberg, Harvard Medical School

Minisymposia

4:30 pm–6:35 pm

Actin Dynamics
Co-Chairs: Marie-France Carlier, French National Center for Scientific Research (CNRS), Gif-sur-Yvette, France; and Rong Li, Stowers Institute for Medical Research

Cell-Cell and Cell-Matrix Interactions
Co-Chairs: Josephine Adams, University of Bristol, UK; and Kris DeMali, University of Iowa

Chemical Biology: Probes and Therapeutics
Co-Chairs: Lisa Belmont, Genentech, Inc.; and Alice Ting, Massachusetts Institute of Technology

Innovations in Cell Biology Graduate Education
Co-Chairs: Caroline Kane, University of California, Berkeley; and Susan Wick, University of Minnesota

Membrane Fission and Fusion
Co-Chairs: Marko Kaksonen, European Molecular Biology Laboratory, Heidelberg, Germany; and Alex Merz, University of Washington School of Medicine

Synthetic Cell Biology
Co-Chairs: Pamela Silver, Harvard Medical School; and Ron Weiss, Massachusetts Institute of Technology

The Nuclear Periphery
Co-Chairs: Brian Burke, Institute of Medical Biology, Singapore; and Valérie Doye, Institute Jacques Monod, France

Working Group: Learning from Heterogeneity and Stochastic Cell Behavior
Co-Chairs: Johan Paulsson, Harvard Medical School; and Lucas Pelkmans, Swiss Federal Institute of Technology Zurich (ETH)
Acknowledgement

The ASCB appreciates the creativity and hard work of the following members who put together an outstanding program for the 2011 ASCB Annual Meeting: Jan Ellenberg (Program Chair), Andrew Belmont, Velia Fowler, Scott Fraser, Benjamin Geiger, Klaus Hahn, Rebecca Heald, Jodi Nunnari, ASCB President Sandra Schmid, Robert Singer, and John Tyson.

MONDAY, DEC. 5
Symposia
Cellular Networks and Information Processing
8:00 am–9:30 am
Chair: John Tyson, Virginia Polytechnic Institute and State University
Organizing Genetic Information and Its Processing without Membrane Compartimentalization. Christine Jacobs-Wagner, Yale University/HHMI
Cell Signaling at the Single-Cell Level. Michael Elowitz, California Institute of Technology/HHMI
Self-Organization of Cellular Structures
10:30 am–12:00 pm
Chair: Rebecca Heald, University of California, Berkeley
Self-Organization of Secretory Compartments. Benjamin Glick, University of Chicago
Spatiotemporal Integration of Chemical and Mechanical Signals in Cell Migration. Gaudenz Danuser, Harvard Medical School
Modeling Cytoskeletal Structures with Cytosim. Francois Nedelec, European Molecular Biology Laboratory, Heidelberg, Germany

Minisymposia
4:30 pm–6:35 pm
Bioengineering and Mecanobiology
Co-Chairs: Adam J. Engler, University of California, San Diego; and Celeste Nelson, Princeton University
Cell Polarity
Co-Chairs: Thomas Lecuit, Institut de Biologie du Developpement de Marseille-Luminy (IBDML), France; and Lesliee Rose, University of California, Davis
Cellular Functions of Ubiquitin and Ub-related Proteins
Co-Chairs: Claudio Joazeiro, The Scripps Research Institute; and Frauke Melchior, ZMBH, University of Heidelberg, DFKZ-ZMBH Alliance, Germany
Chromosome Structure and Epigenetics
Co-Chairs: Sue Biggins, Fred Hutchinson Cancer Research Center; and Job Dekker, University of Massachusetts School of Medicine
Meiosis and Oogenesis
Co-Chairs: Laurinda A. Jaffe, University of Connecticut Health Center; and Marie Verlhac, Centre for Interdisciplinary Research in Biology, CNRS/INSERM, Collège de France, Paris, France
Modeling and Simulation of Cellular Functions
Co-Chairs: Hana El-Samad, University of California, San Francisco; and Ewa Paluch, Max Planck Institute of Molecular Cell Biology, Dresden, Germany
Motors and Microtubule Dynamics
Co-Chairs: Jonathan (Joe) Howard, Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany; and Patricia Wadsworth, University of Massachusetts
Working Group: Using Large Data Sets as Tools to Understand Cell Biology
Co-Chairs: Lani Wu, University of Texas Southwestern Medical Center; and Wolfgang Huber, European Molecular Biology Laboratory, Heidelberg, Germany

TUESDAY, DEC. 6
Symposia
Complex Cellular Functions: Linking Networks and Structures
8:00 am–9:30 am
Chair: Andrew Belmont, University of Illinois at Urbana-Champaign
Virtual Movement of a Signaling Network Translated into Real Movement of a Motility Network. William Bement, University of Wisconsin-Madison
Evolution of Epithelial Organization and the Cadherin-Catenin Complex. W. James Nelson, Stanford University
Mechanism of Multicellular Functions
10:30 am–12:00 Noon
Chair: Scott Fraser, California Institute of Technology
The Costs of Control: Strategies and Tradeoffs in Robust Tissue Pattern Formation. Arthur Lander, University of California, Irvine
Shaping the Embryo: Cellular Dynamics in Development. Jennifer A. Zallen, Sloan-Kettering Institute/HHMI
Generating Multicellular Architecture through Collective Migration. Darren Gilmour, European Molecular Biology Laboratory, Heidelberg, Germany

Minisymposia
4:30 pm–6:35 pm
Cell Biology of Micro-Organisms and the Evolution of the Eukaryotic Cell
Co-Chairs: Sean Crosston, The University of Chicago; and Joel B. Dacks, University of Alberta, Canada
Complete details at www.ascb.org/meetings

Cell Migration
Co-Chairs: Diane Barber, University of California, San Francisco; and Alex Mogilner, University of California, Davis

Cellular Mechanism of Disease and Aging
Co-Chairs: Craig Blackstone, National Institute of Neurological Disorders and Stroke, NIH; and Coleen Murphy, Princeton University

Cilia and Centrosomes
Co-Chairs: Ingrid Hoffmann, German Cancer Research Center (DKFZ), Germany; and Meng-Fu Bryan Tsou, Memorial Sloan-Kettering Cancer Center

Cellular Mechanism of Disease and Aging
Co-Chairs: Craig Blackstone, National Institute of Neurological Disorders and Stroke, NIH; and Coleen Murphy, Princeton University

Intracellular Sorting and Trafficking
Co-Chairs: Federica Brandizzi, Michigan State University; and Rainer Pepperkok, European Molecular Biology Laboratory, Heidelberg, Germany

Mitosis
Co-Chairs: Tarun Kapoor, The Rockefeller University; and Béla Novák, University of Oxford, UK

Nuclear Organization and Control of Gene Expression
Co-Chairs: Orna Cohen-Fix, National Institute of Diabetes and Digestive and Kidney Diseases, NIH; and Yaron Shav-Tal, Bar-Ilan University, Israel

Stem Cells and Pluripotency
Co-Chairs: Fernando Camargo, Children’s Hospital Boston and Harvard University; and Leanne Jones, Salk Institute for Biological Studies

WEDNESDAY, DEC. 7
Minisymposia
8:30 am–10:35 am
Cancer Cell Biology
Co-Chairs: Franziska Michor, Dana-Farber Cancer Institute; and Michael Yaffe, Massachusetts Institute of Technology

Cell Biology of RNA
Co-Chairs: Xavier Darzacq, Ecole Normale Superieure, France; and Leemor Joshua-Tor, Cold Spring Harbor Laboratory/HHMI

Cell Cycle Dynamics and Checkpoints
Co-Chairs: Frederick Cross, The Rockefeller University; and Silke Hauß, Friedrich Miescher Laboratory of the Max Planck Society, Germany

Cell-Pathogen Interactions (Viruses and Bacteria)
Co-Chairs: Nihal Altan-Bonnet, Rutgers University; and Olivia Steele-Mortimer, Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases, NIH

Collective Cell Behavior and Morphogenesis in Development
Co-Chairs: Ryoichiro Kageyama, Kyoto University; and Denise Montell, Johns Hopkins University School of Medicine

Organelle Biogenesis and Autophagy
Co-Chairs: Anne Simonsen, University of Oslo, Norway; and Gia Voeltz, University of Colorado, Boulder

Signal Transduction Networks
Co-Chairs: Philippe Bastiaens, Max Planck Institute of Molecular Physiology, Germany; and Wendell Lim, University of California, San Francisco/HHMI

Working Group: Imaging Cellular Structure across Scales
Co-Chairs: John Briggs, European Molecular Biology Laboratory, Heidelberg, Germany; and Melike Lakadamyali, Institute of Photonic Sciences (ICFO), Spain

Symposium
Design Principles of Cells and Tissues
11:00 am–12:15 pm
Chair: Velia Fowler, The Scripps Research Institute
Inside of the Cell, Meet the Extracellular Universe: Merging Tissue Engineering and Systems Biology, Linda Griffith, Massachusetts Institute of Technology
The Flagellar Length Control System, Wallace Marshall, University of California, San Francisco
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Annual Meeting Updates

ASCB Annual Meeting Attendee Hotel Contest Winners!
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Congratulations to the following winners of recent incentives offered by official ASCB hotels:

Richard Clark, Stony Brook University, one free hotel night
Ranita Ghosh Dastidar, The University of Texas at Dallas, one free hotel night
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Joyce Fernandes, Miami University, one free hotel night
Jolien Verdaasdonk, University of North Carolina, Durham, one free hotel night plus breakfast for two
Satyajit Mayor, National Center for Biological Science, Bangalore, one free hotel night
Charles Yeaman, University of Iowa, one free hotel night

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Fourth Annual “I Got ROCK’d at ASCB!”
We call them “Random Offers of Conference Kindness,” or “ROCK” and you could be a random beneficiary of a conference gift bag (filled with goodies from our generous exhibitors), but only if you’re spotted browsing the ASCB Annual Meeting Exhibit Hall by a ROCK spotter.

Want to Avoid Carrying Your Poster to the ASCB Annual Meeting?
Mira, the ASCB abstract vendor, is offering a poster printing service for accepted poster presenters at the 2011 ASCB Annual Meeting. Presenters received details on how to access this service in their acceptance notices, which were emailed in late September 2011 (or Nov. 1 in the case of late abstracts). The poster service costs $75 and includes gloss printing, packaging, and shipping directly to the Colorado Convention Center. Posters will be available for pick up at a designated counter in the Registration area beginning at 8:00 am on Saturday, December 3, 2011.

The deadline to upload files and receive the $75 rate is November 18, 2011. Presenters will still be able to use this service as a rush job after the deadline date. Request for service after November 18, 2011, will incur a fee of $125.00. The LAST DATE to upload your files for poster printing is November 23, 2011. After this date, Mira will no longer offer this service.

Please use your ASCB ID Number as your Login and your Last Name for your password to log into http://submissions.miracd.com/ASCB2011/Poster to upload your files. To get your ID number, contact ascbinfo@ascb.org.

For questions, contact:
Mira Digital Publishing
1-314-333-5160
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Monday–Friday

Mobile App
New this year! The ASCB is offering a mobile app for the 2011 Annual Meeting. Everything you need to have a great meeting experience will be available on your iPhone, iPad, Android phone, or Android tablet.
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ASCB will email attendees instructions and also post them on our website. Or you can search for “ASCB” in the iTunes App Store and the Android Market.
Annual Meeting Hotel Do’s and Don’ts

Avoid Housing Pirates: Only the official ASCB Housing partner onPeak and not the ASCB may contact you (either by email or phone) about booking hotels for the 2011 Annual Meeting in Denver. All exhibitors and meeting attendees should book hotels through onPeak at www.ascb.org/meetings.

If someone other than onPeak contacts you via email, phone, or fax, please do not provide your personal information, especially your credit card number. If you provide your credit card information to one of these companies (commonly referred to as “pirates” or “housing bandits”), your credit card may be charged and you might not have a hotel room when you arrive in Denver.

If you are contacted by anyone asking if you need a room at the upcoming ASCB Annual Meeting, or who represents himself or herself as the “ASCB housing partner” please get as much information as you can, such as name of the company, the person calling, and telephone number. Then contact Trina Armstrong, Director of Meetings, at tarmstrong@ascb.org or 301-347-9325.

Don’t Be a “No-Show”: If you cancel your plans to attend the 2011 ASCB Annual Meeting, remember to cancel your meeting registration and hotel reservation as quickly as possible. The ASCB strives to obtain the largest number of hotel rooms near the Colorado Convention Center at the lowest possible rate for attendees. Hotels are reluctant to commit large room blocks and offer lower rates if the Society has a high no-show rate (number of attendees with reservations who do not show up and do not cancel reservations). If a reservation is canceled properly, it will help you avoid charges and allows another ASCB attendee the chance to book the room.

Hotel Cancellation Policy: You may make changes to or cancel your hotel reservation online at onPeak or by clicking the link in your confirmation email. You may also call onPeak directly at 800-220-9540 within the U.S./Canada. International participants may make changes online at onPeak (use the URL in your hotel confirmation email) or may call 312-527-7300. The deadline for changes and cancellations through onPeak is November 27, 2011.

Rooming lists will be transferred to the hotels on November 28. Beginning November 29, individuals must contact hotels directly to change/cancel reservations.

Cancellations within 72 hours of the individual’s intended arrival will result in one night’s room and tax charged to the credit card provided and loss of reservation. Failure to check in on your confirmed arrival date will also result in a penalty of one night’s room and tax and loss of reservation.

— Trina Armstrong, Director of Meetings

Are You Getting the Latest ASCB Member Benefit?

You should now be regularly receiving our email update, ASCB Pathways—alerting you to the latest ASCB happenings and 2011 Annual Meeting updates. If you aren’t seeing the e-newsletter in your inbox, please check your spam filter, and/or contact your system administrator to whitelist *ascb.org. Based on member input, ASCB Pathways moved to monthly publication in October.
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*Dr. Wesley R. Browne, University of Groningen*
New Seminars and Talks from iBioSeminars and iBioMagazine

iBioSeminars is a collection of approximately 65 (and growing) free, online science lectures given by leaders in the scientific community. The goal of this project is to provide high-quality science seminars to anyone with an Internet connection and to reach students, educators, and researchers throughout the world. The project is now going into its fourth year. Lectures by Tony Hyman, Alfred Wittinghofer, Kai Simons, David Botstein, and Sangeeta Bhatia were recently released. New lectures by Alfredo Quiñones-Hinojosa, J. Michael Bishop, and Melissa Moore will also be on the website soon.

The goal of this project is to provide high-quality science seminars to anyone with an Internet connection and to reach students, educators, and researchers throughout the world.

Multiple Studios
This past summer, the iBioSeminars and iBioMagazine production team traveled to the Marine Biological Laboratory (MBL) in Woods Hole, MA, to tape 10 iBioSeminars and 17 iBioMagazine talks over the course of three weeks. The location gave the team wonderful access to a diverse group of scientists doing summer research, teaching courses, or working at nearby universities. The MBL studio is the project’s fourth studio location, in addition to the main studio at the University of California, San Francisco (UCSF), and studios at the Howard Hughes Medical Institute headquarters in Chevy Chase, MD, and at the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany.

Multiple Languages
The iBio team is also excited to announce that English subtitles are now available for 19 iBioSeminars. These iBioSeminars also have teaching tools (notes and questions for students) that aid in their use in the classroom. This effort, led by then UCSF graduate student Sarah Goodwin, and current UCSF graduate students Brooke Gardner, Lauren Booth, and Jeff Farrell, also resulted in the creation of time-stamped transcripts; the latter can now be used

The next quarterly issue will be released in early December.

Latest iBioSeminars

- Polymorphisms Can Map Human Genes by Linkage
  - David Botstein
  - Fruits of the Genome Sequence

- Multiwell Human Tripatterned Co-Cultured
  - Sangeeta Bhatia
  - Tissue Engineering
to translate seminars into a variety of languages. Currently, we are partnering with Marcela Colombres and students at the Fundación EcoScience in Chile to create Spanish subtitles for the 19 English-subtitled iBioSeminars. We have also received interest from the scientific community in translating lectures into Portuguese, Hebrew, and Russian. If you have an interest in helping to translate these seminars, contact ibioseminars@cmp.ucsf.edu. The iBio team welcomes all volunteers, and this is an easy and fun way to provide a useful educational resource to students and scientists in other countries.

**Multiple Viewing Sources**

iBioSeminars and iBioMagazines are available at www.ibioseminars.org and www.ibiomagazine.org. You can also view and download talks on iTunes U and YouTube by searching for iBioSeminars. If you enjoy this resource please subscribe to the iBio newsletter (notifying you of newly released talks) by signing up on the subscribe/contact page on our website. Subscribers help the project secure and maintain funding to keep iBioSeminars available as a free resource. We also welcome feedback, especially from those who have used iBioSeminars or iBioMagazine in the classroom as a student or teacher. Please write comments and suggestions to ibioseminars@cmp.ucsf.edu. Your experiences will be very valuable for shaping future education efforts, a major goal in the coming year.

—iBioSeminars/iBioMagazine Team
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HIGHLIGHTS from MBoC

The Editorial Board of *Molecular Biology of the Cell* has highlighted the following articles from the October 2011 issues. From among the many fine articles in the journal, the Board selects for these Highlights articles that are of broad interest and significantly advance knowledge or provide new concepts or approaches that extend our understanding.

**Role of malectin in Glc2Man8GlcNAc2-dependent quality control of α1-antitrypsin**


In cells, human malectin stably interacts with newly synthesized α1-antitrypsin variant null (Hong Kong) (ATNHK) but not α1-antitrypsin, via G2M9 glycans. The interaction of ATNHK with malectin results in enhanced endoplasmic reticulum–associated degradation of ATNHK and prevents the secretion of the misfolded glycoprotein. These findings provide evidence of a role of malectin in glycoprotein quality control via recognition of G2M9.

*Mol. Biol. Cell* 22 (19), 3559–3570

**Heat shock factor 2 is required for maintaining proteostasis against febrile-range thermal stress and polyglutamine aggregation**


HSF2 regulates proteostasis capacity against febrile-range thermal stress, which provides temperature-dependent mechanisms of cellular adaptation to thermal stress. Furthermore, HSF2 has a strong impact on disease progression of Huntington’s disease R6/2 mice, suggesting that it could be a promising therapeutic target for protein misfolding diseases.

*Mol. Biol. Cell* 22 (19), 3571–3583

**A phosphatase threshold sets the level of Cdk1 activity in early mitosis in budding yeast**

S. L. Harvey, G. Enciso, N. Dephoure, S. P. Gygi, J. Gunawardena, and D. R. Kellogg

The Wee1 kinase inhibits cyclin-dependent kinase 1 (Cdk1) during early mitosis. A low level of Cdk1 activity must escape Wee1 inhibition to initiate early mitotic events, but the underlying mechanisms have remained unknown. In this paper, we show that a specific form of protein phosphatase 2A opposes activation of Wee1, which allows low-level activation of Cdk1 in early mitosis.

*Mol. Biol. Cell* 22 (19), 3595–3608

**Kinesin-3 and dynein cooperate in long-range retrograde endosome motility along a nonuniform microtubule array**

M. Schuster, S. Kilaru, G. Fink, J. Collemare, Y. Roger, and G. Steinberg

We studied molecular motors in long-range motility of early endosomes (EEs) in a fungal model system that contains a bipolar, dendrite-like microtubule (MT) array. Dynein moves retrograde EEs over ~10 μm, before kinesin-3 takes over for a further ~80 μm along antipolar MT bundles. Thus kinesin-3 is the major motor for retrograde EE motility.

*Mol. Biol. Cell* 22 (19), 3645–3657

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During spore formation in *Schizosaccharomyces pombe*, the syntaxin ortholog Psy1 is endocytosed and dynamically translocates to the nascent forespore membrane (FSM) in late meiosis. The upper insets show the colocalization of GFP-Psy1 (left, green) with the signal from the endocytosis tracer FM4-64 (center, magenta) on the nascent FSM. The upper-right inset shows the merged image of GFP-Psy1 and FM4-64. The bottom images show the localization of mCherry-Psy1 (magenta) and a P-type ATPase, Pma1 (green). See *Mol. Biol. Cell* 22 (19), 3658–3670. (Image: Jun Kashwazaki, Department of Biology, Graduate School of Science, Osaka City University, Sumiyoshi-ku, Osaka 558-8585, Japan)
Spatial control of Cdc42 activation determines cell width in fission yeast
F. D. Kelly and P. Nurse
We found 11 wide mutants, seven of which affect the activation of Cdc42. Through epistasis analysis and protein retargeting, we showed that a guanine nucleotide exchange factor and a GTPase-activating protein of Cdc42 each affects cell width independently from different cellular domains. We propose that these proteins set up a spatially restricted gradient of activated Cdc42 that directs cell growth.
Mol. Biol. Cell 22 (20), 3801–3811

Rab22 controls NGF signaling and neurite outgrowth in PC12 cells
L. Wang, Z. Liang, and G. Li
Rab22 is a small GTPase that is localized on early endosomes and regulates early endosomal sorting. This study reports that Rab22 promotes NGF signaling–dependent neurite outgrowth and gene expression in PC12 cells by sorting NGF and the activated/phosphorylated receptor (pTrkA) into signaling endosomes to sustain signal transduction in the cell.
Mol. Biol. Cell 22 (20), 3853–3860

Time-lapse images of representative Dictyostelium wild-type, pirA–, and scrA– cells. Each of the two mutant strains lacks one protein of the SCAR/WAVE complex, which regulates Arp2/3-mediated F-actin polymerization. The color map shows the magnitude of the stresses applied to the substrate. The blue arrows show the pole forces applied by the cells. See the article by Bastounis et al. in the November 1, 2011, issue of MBoC. (Image: Effie Bastounis, Department of Bioengineering, Jacobs School of Engineering, and Section of Cell and Developmental Biology, Division of Biological Sciences, University of California, San Diego, La Jolla, CA)
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Most scientists have benefited from mentoring or have served as a mentor. Here we offer our perspectives on these processes. Although we are at different places in our careers and experiences, we agree on some core components of mentoring: the importance of recognizing individual needs and experiences, the possibility of building long-lasting relationships through mentoring, and the need to recognize that mentoring is a two-way relationship.

Through our experiences as “outsiders,” either as a member of an underrepresented minority (Himes) or as a woman (Wandinger-Ness), we have gained insights as both mentees and mentors.

**Acknowledging Individuality and Personal Experiences**

There is no blank slate; each of us is a composite of our personal and professional life experiences. It is therefore important for both mentors and mentees to acknowledge individual strengths and weaknesses and to draw on metacognition. We have found it helpful to articulate individual needs both orally and in writing to ensure that there is agreement on what each partner in the mentoring relationship needs and can provide. This is crucial to get past the danger of stereotyping and projecting goals onto the partners.

Formal individualized career development plans are helpful for both partners to reach agreement and get what they need. There are a number of online resources for getting started (e.g., the plans for graduate students provided by University of Minnesota¹ and the Medical College of Wisconsin,² for postdoctoral fellows by the Federation of American Societies for Experimental Biology,³ and for junior faculty by the University of California, San Francisco, Division of General Internal Medicine⁴).

For mentors, such a process is a great way to attend to the individuality of trainees and their specific needs and goals. For mentees it enables the articulation of specific priorities the achievement of which is measurable and visible. Developing an honest, mutually agreed to plan is central to achieving goals and for success that is satisfying for both the mentor and the mentee.

Frequent evaluation of progress toward goals through self-assessment and mentor feedback helps ensure that individual needs are met. It can identify problems that need attention early before a crisis develops. Sometimes success depends on seeking and recommending counsel from others. Widening the mentoring net may be important to match mentee needs with individual mentor strengths. There may be difficult issues to be broached with which other potential mentors have more experience. For example, for women and minorities, the

**Frequent evaluation of progress toward goals through self-assessment and mentor feedback helps ensure that individual needs are met.**
“imposter syndrome” and being “iconic” or “a poster child” are lived experiences that can create a sense of isolation. Receiving wisdom from women and minorities who have worked through these challenges is very meaningful and especially helps mentees feel “different” or isolated to move forward.

Finding suitable role models is often the key to helping mentees develop a sense of inclusion. Both of us have identified role models throughout our careers: peers, teachers, and people in leadership positions who served as mentors or advisors and were essential for visualizing the successes of women and minorities and overcoming low points or self-doubt. Relationships founded on mutual trust and honesty enable mentor and mentee to have a dialog about their individual needs.

Building Long-Lasting Relationships: Mentoring as Family

Mentoring relationships often begin with family members and expand to include particular lab members, lab directors, colleagues, and peers. These relationships grow and mature over time and often continue long after mentees have left the home, lab, institution, or job and gone on to independent careers.

Like family relationships, mentoring relationships can be complex. Mentors may have to serve different roles. Sometimes they provide nurturing and support when mentees are in need of encouragement and perspective. At other times mentoring, like being a parent, requires pushing and urging the mentee, which may initially be resented by mentee. Later the mentee may realize that the mentor had his or her best interests at heart.

As with family, retaining contact, sharing goals and aspirations, celebrating success, and having honest, two-way dialogue about difficult issues are all central to vibrant, long-lasting mentoring relationships. Mentors often enjoy hearing from former trainees and can offer continued support in the form of letters of recommendation, advice, and counsel long after mentees have moved on. And of course mentees can benefit from reaching back to past mentors, providing updates on their own progress and receiving advice.

The extended lab and scientific family when nurtured and supported brings a special reward: being part of a vibrant network through which new connections are made, information and experiences are exchanged, and transitions to the next career phase are facilitated.

Reciprocity through Mentoring Platforms and Reverse Socialization

Most of us have occupied several “rungs” on the mentoring ladder during the course of our careers. Indeed, it is common to be simultaneously both a mentor and a mentee. In the more standard view of mentoring, the mentor of some higher status or level of knowledge gives assistance or guidance to the mentee, who has less experience. In other words, individuals on higher rungs provide information and opportunities for those at lower levels, while they themselves receive advice from superiors. In this view, the mentoring ladder is a uni-directional progression. This perspective on mentoring excludes the idea of reciprocity between mentee and mentor and the opportunity for the mentor to learn from the mentee.

In summary, through our diverse experiences, we find that mentoring entails acknowledging individuality and personal experiences, building
long-lasting relationships (mentoring as family), and reciprocity through mentoring platforms. These core foundations have enhanced our mentoring relationships and contributed to our success and satisfaction.

—Christopher M. Himes, Massachusetts College of Liberal Arts, and Angela Wandinger-Ness, University of New Mexico

Notes
1 www.grad.umn.edu/career/IDPgrad.pdf.
4 http://dgim.ucsf.edu/facultydevelopment; see “Individual Development Plan Form.”

The authors thank 2005 E.E. Just Awardee Maggie Werner-Washburn and ASCB Minorities Affairs Committee Chair Renato Aguilera for helpful comments.

Christopher M. Himes has the perspective of a mentee who recently began serving in a mentoring role. He has benefited from mentoring and research opportunities gained through programs for students from groups traditionally underrepresented in graduate education. He has recently contributed back to such programs, mentoring women and other students from underrepresented backgrounds. He was an Institutional Research and Career Development Award (IRACDA) Fellow of the Academic Science Education and Research Training (ASERT) Program at the University of New Mexico. He is now STEM Outreach Manager for the Massachusetts College of Liberal Arts. As a student, Himes received support from the Ronald E. McNair Post-Baccalaureate Program. The McNair program commemorates the achievements of African American physicist and astronaut McNair and supports the training and mentoring of first-generation college students with financial need and students from groups traditionally underrepresented in graduate education and with strong academic potential. Himes has recently served as a mentor through the Undergraduate Opportunities Program at the University of New Mexico.

Angela Wandinger-Ness is Director of the IRACDA ASERT program at the University of New Mexico. She draws on cultural heritage and a love of science instilled by parents, inspired teachers, and key role models. As the longstanding PI of a federally funded research program and director of a training program with a focus on increasing diversity in science, she has advised, nurtured, and mentored more than 100 undergraduate, graduate, and medical students, postdoctoral fellows, and junior faculty toward successful and independent careers. The majority were women and trainees from various cultural, ethnic, and socioeconomic backgrounds.

A New Look for ASCB’s Journals

Molecular Biology of the Cell and CBE—Life Sciences Education have unveiled updated and redesigned websites. Readers will enjoy the new, more contemporary design, better and more flexible use of screen real estate, and enhanced functionality.

New features include:
- Links to selected articles on the homepage
- Lists of most-read and most-cited articles
- Links to other ASCB resources
- The ability to view abstracts from the table of contents by mousing over links
- An expandable reading frame for HTML versions of articles
- RSS feeds

More enhancements are coming soon. Check out the redesigned websites: www.molbiolcell.org and www.lifescied.org.

—W. Mark Leader
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NIH Asked, ASCB Members Answered

The U.S. National Institutes of Health (NIH) recently asked for community input into the deliberations of the Advisory Committee to the NIH Director Working Group on the Future Biomedical Research Workforce. In response to the request, the ASCB developed a survey and sent it to U.S. members for their comment.

In only two days, ASCB received hundreds of responses, including many thoughtful comments. Thanks to the survey responses, the ASCB was able to submit a detailed response to the NIH request (see page 1).

—Kevin M. Wilson

ASCB Asks Industry to Join the Fight for the NIH

The ASCB has a message for the companies that provide supplies and equipment to U.S. National Institutes of Health (NIH)-funded research labs and the businesses that depend on NIH-funded investigators: You need to let your congressional representatives know how important NIH funding is to your business and your employees.

The ASCB has recently launched a new campaign to expand the size of the community advocating for the NIH. The ASCB hopes to involve: 1) companies that supply labs with equipment and supplies, 2) biotech companies that benefit from NIH-supported basic research, and 3) patient organizations whose members will be the ultimate beneficiaries of basic research.

So far, ASCB Public Policy Director Kevin Wilson has contacted almost 200 executives at over 140 individual companies to encourage them to become involved in advocating for the NIH. The ASCB has created a website that includes tips on how companies can educate their federal representatives about the importance to their businesses of NIH funding.

The website, NIH Creates Jobs, is at www.ascb.org/NIHCreatesJobs.html. Please share the URL with your suppliers and business partners and encourage them to speak out now on behalf of NIH funding.

—Kevin M. Wilson

Organismal Biologist to Lead NSF BIO

An environmental endocrinologist has been selected as the new head of the U.S. National Science Foundation’s (NSF) Directorate of Biological Sciences (BIO).

John C. Wingfield, who previously served as division director of Integrative Organismal Systems at the NSF, will now serve as the Assistant NSF Director for Biological Sciences. Before joining the NSF in 2010, Wingfield chaired the Department of Zoology at the University of Washington from 1999 to 2003. He has also held an Endowed Chair at the University of California, Davis, since 2007.

—Kevin M. Wilson
How does the ASCB represent members’ interests to funding agencies, Congress, and other important bodies? Who represents you and how? Last month the ASCB Newsletter featured an article focused on the ASCB Public Policy Committee (PPC), Project 50, and the Congressional Liaison Committee (CLC). This article specifically focuses on the Coalition for the Life Sciences (CLS), a key partner in advocating for ASCB members’ interests.

The ASCB first organized a coalition of like-minded scientific societies in 1989. At that time, U.S. National Institutes of Health (NIH) appropriations were under threat and declining in value. At the same time, the organizations that normally advocated for biomedical research—universities and the groups representing them—were supporting higher indirect cost reimbursement rates. ASCB members knew that such expenses would come out of research grants. Alarmed by these developments, leaders from the ASCB joined with leaders of the American Society for Biochemistry and Molecular Biology (ASBMB) and the Biophysical Society to object to the call for higher indirect cost reimbursements. Subsequently, the leaders of these societies decided that self-advocacy was imperative. Thus, the Joint Steering Committee for Public Policy (JSC) was formed. Its initial mission: to bring scientists together to advocate for federal funding for basic biomedical research.

The ASCB and JSC partnership has endured and grown for 22 years. During that time the JSC was renamed the Coalition for the Life Sciences to better reflect its focus; and the CLS has grown from three societies to six members, including ASCB, ASBMB, the American Society for Clinical Investigation, the Genetics Society of America, the Howard Hughes Medical Institute, and the Society for Neuroscience. In addition, the CLS mission, like that of the ASCB, has grown from solely focusing on funding to incorporating a broader focus on policy: namely, policies that advance biological research. Uniting with one voice strengthens our position with policy leaders on Capitol Hill and at the NIH.

Why the CLS?
Many organizations in Washington, DC, serve a role similar to that of the CLS. So why does the ASCB remain such a strong partner in the CLS? Communicating with Congress and the NIH, major universities, and other institutions is an extraordinary task. Through various programs the CLS has a proven track record of actively engaging scientists with elected officials and NIH leadership.

The CLS is unique in how it brings science to Capitol Hill. The then-JSC helped Congress launch the Congressional Biomedical Research Caucus (CBRC) in 1990. The CBRC has since grown to become perhaps the most credible caucus in Congress, as well as a model for other congressional caucuses. A caucus serves a convening, organizing, and advocacy function for members of Congress who support their purpose, in this case, the importance of scientific research. Caucuses are also bipartisan, no-dues associations for congressional representatives.

Through various programs the CLS has a proven track record of actively engaging scientists with elected officials and NIH leadership.

CBRC activities feature a highly successful series of briefings that brings research leaders—many of whom are ASCB members—to Capitol Hill to describe the latest advances in biomedical research.
The explicit messages are that science is an iterative process of discovery fueled by individual investigators, and that taxpayer dollars are well spent in, often NIH's, support of this research.

The CLS brings top leaders of federal agencies and Congress together with CLS leadership to strengthen our partnerships and tackle critical issues of concern to biomedical research. The CLS has not only met with influential leaders in Congress but with representatives from President Obama’s Administration, NIH, and individual Institute Directors. Administration representatives include individuals directly responsible for drafting the NIH and National Science Foundation budgets and policy that affect biomedical research. The CLS has had continued access to NIH Directors since Harold Varmus served in that role; many on the CLS Board serve in leadership positions on various NIH Councils.

The CLS serves another important role—the organization of scientific citizens for advocacy. Through its Congressional Liaison Committee (CLC), chaired by ASCB member Tom Pollard, the CLS can organize the voices and passions of individual biomedical scientists in participating member societies. In fact, the CLS offers a limited amount of travel awards to individual scientists to come to Washington, DC, and advocate for biomedical research. (For information, visit http://www.coalitionforlifesciences.org/be-an-advocate/capitol-hill-days.)

The CLC also develops scientific citizens through its mail/email campaigns to elected officials. Email campaigns are easy to participate in, as the CLS drafts letters for individuals’ personalization and signature. It’s free to join the CLC, and CLS staff will guide you through the Washington bureaucracy. To join, visit http://www.coalitionforlifesciences.org/be-an-advocate/cls-grassroots-advocacy/join-the-clc.

The ASCB scientific community is fortunate that the CLS leadership includes many respected scientists, including ASCB members Keith Yamamoto (chair), Mary Beckerle, Jeremy Berg, Martin Chalfie, Jack Dixon, Gerald Fink, James Haber, H. Robert Horvitz, Richard Hynes, Elizabeth McNally, Pollard, Joan Steitz, and Janet Shaw.

Biomedical research faces many challenges in Washington, from funding to peer review, science education to stem cell research. The CLS and ASCB will continue to use their strong partnership to confront challenges to the scientific community.

—Lynn Marquis, Director, CLS

The Coalition for the Life Sciences sponsored a Capitol Hill Day on September 21, 2011. Capitol Hill Days are an opportunity for scientists across the U.S. to come to Washington, DC, and meet with Members of Congress. Left to right: Katherine Taylor, University of Texas Medical Branch; Rep. Dennis Kucinich (D-OH); Nicolaus Schmandt, Case Western Reserve University School of Medicine; and Ashley Purgason, University of Texas Medical Branch.

The CLS and ASCB will continue to use their strong partnership to confront challenges to the scientific community.

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ASCB Cell Biology Workshop Held in Ghana

For two weeks in July, 24 African scientists joined a team of instructors from the U.S. and Africa at the Kumasi Centre for Collaborative Research (KCCR) in Kumasi, Ghana, for an intensive workshop on modern cell biology. The emphasis was on protozoan pathogens and cancer biology. This was the fifth in a series of cell biology workshops sponsored by the ASCB and held in East and West Africa since 2005. The workshops, funded by a grant from the Carnegie Corporation of New York, aim to increase the capacity of young scientists. The workshops also increase the capacity of African educational and research institutions for study and research in the biomedical, veterinary, and plant sciences.

Although cell biology is critical to most aspects of modern biomedical and agricultural research, basic knowledge about the subject, as well as the basic equipment, technologies, and skills to profit from its power, are currently lacking in much of Africa. The ultimate goal of this educational project is to enhance sustainable scientific productivity in Africa. Toward that end, the workshops aim to better prepare African students to address some of the continent’s most pressing humanitarian challenges. The organizers hope that training in cell biology will contribute to the retention of skilled African scientists by African institutions. The intent is to diminish the brain drain that draws talented Africans who want to conduct cutting-edge research away from their homeland.

Meet the Participants
The 24 participants in this two-week cell biology boot-camp were selected from 89 applicants. All welcomed the opportunity for professional development and came hoping to gain new knowledge and skills. All are postgraduates, and most are currently engaged in research and teaching. Many hold master’s or PhD degrees, or are just entering such degree programs. The majority hailed from the English-speaking countries of Ghana and Nigeria, although several French speakers from Cameroon, Mali, and the Ivory Coast also attended. All the participants and instructors lived and ate their meals on campus during the workshop; thus there was ample opportunity for discussion, individual attention, and mentoring by the instructors.

Meet the Instructors and Coordinators
The team of volunteers was led by Dick McIntosh (University of Colorado), who was joined by the author (Stanford University), Kirk Deitsch (Weill School of Medicine, Cornell University), Karen Duca (Kwame Nkrumah University of Science and Technology, Ghana), Joaquin Espinosa (University of Colorado), Mahasin Osman (Brown University), Joy Power (University of Colorado), and David Roos (University of Pennsylvania). Most of these scientists were veterans of previous workshops. The instructors were aided by a team of able teaching assistants—Ryan Henry (University of Colorado), Dinkorma Ouologuem (University of Pennsylvania), Nicole Kennerly (a former graduate student from University of Colorado), and two participants from previous ASCB workshops, Reuben Ayivor-Djani (Kwame Nkrumah University of Science and Technology, KNUST) and Lydia Mosi (University of Ghana).

The workshop was greatly enhanced by the very generous access we were granted to use the laboratory and teaching space at KCCR. That institution is a joint venture among the Ministry of Health of the Republic of Ghana, KNUST, and the Bernard-Nocht Institute.

A student froze a nitrocellulose filter in preparation for a beta-galactosidase assay that will measure p53 activity in yeast.
for Tropical Medicine in Hamburg, Germany (www.kccr-ghana.org). This first-class research facility is the site of several large collaborative research projects carried out by African and European scientists; it also hosts educational programs such as ours. KCCR Director Thomas Van Kampen, Co-director Ellis Owusu-Dabo, and Head of Laboratories Kerstin Shand were indispensible in the planning and execution of all aspects of the course; their efforts were greatly appreciated by all.

Introducing the Format
The curriculum for this ambitious ASCB workshop included a broad range of activities. Morning classroom lectures covered basic topics in cell and cancer biology and presented cell biological aspects of research on protozoan parasites. Instructors also gave “tool talks,” in which experimental approaches such as fluorescence microscopy, microarrays, mass-spectroscopy, RNAi, fluorescence-activated cell sorting, and culture methods for protozoan parasites were discussed in depth. These sessions were often quite interactive, with participants asking many questions that sparked discussion for the whole group.

Much time and expertise were devoted to the afternoon practical laboratory exercises, a monumental organizational effort ably spearheaded by Power, with help from Henry and other instructors. Student feedback consistently indicates that these practicals are highly appreciated and give students valuable hands-on experience with unfamiliar experimental techniques and equipment. Initial practicals focused on cell imaging and examined Plasmodium-infected erythrocytes at different stages of the organism’s life cycle as well as cultured cells stained with fluorescent dyes. For most of the students this was the first time they had ever used a fluorescence microscope. They were very excited to see cells in such a different way.

Other practicals covered basic molecular biology experiments—for example, students isolated Plasmodium DNA from blood spots and used PCR and restriction digests to diagnose whether the parasite in each sample was sensitive or resistant to the drug chloroquine. Later in the course, students isolated RNA from two mammalian cell lines. One contained the p53 tumor suppressor, and the gene had been deleted from the second. Students performed rtPCR to examine patterns of gene expression in both cell types after exposure to the DNA-damaging agent 5-fluourouracil. Another exercise presented a very different way to analyze p53 function—students worked with yeast strains that expressed either a wild-type or mutant allele of human p53 and carried out basic gene expression assays to determine if the mutant alleles were functional. No one in the class had worked with yeast before, and the students were enthusiastic about the possibilities of exploiting this inexpensive and easy-to-culture model organism for their own research.

Adding Special Features
The course also included two interactive sessions on bioinformatics in which students used their own computers to carry out a series of searches, queries, and comparative exercises. The first session taught students how to access information about the Plasmodium genome by using the PlasmoDB database. They learned how to use the database to analyze Plasmodium gene expression, function, and structure. The second session introduced students to human gene expression databases and showed them how to identify genes that have distinct expression patterns in different types of cancer cells. While scientists in many parts of the world routinely take advantage of the freely available data that are accessible through these basic Internet resources, we found that many of the participants in this course had no direct experience utilizing them. Internet access in many parts of Africa is still somewhat limited, but it is improving. Thus, familiarizing the next generation of scientists with basic knowledge of bioinformatics offers the potential for huge impact.

Five two-hour sessions of the course were devoted to close reading and discussion of articles from the primary literature that coordinated with a topic presented in lecture.
These papers represented a wide range of subjects and approaches, and students worked in small groups with an instructor and a teaching assistant (TA). They focused on puzzling through each figure of each paper, as well as on understanding the logic and conclusions presented. This was a huge challenge for most students, and an area in which they grew tremendously during the workshop.

The journal club sessions also gave students the opportunity to work closely with each other, as well as with journal club facilitators to help the entire group consider experimental design and the interpretation of data. Responses from all of the African workshops indicate that our African participants highly value these critical reading skills; they sincerely want to improve their abilities in this area. By the final journal club, students and instructors alike were impressed and gratified by the confidence participants had gained in tackling these research papers.

Every moment of the day was put to good use during the very intense two-week period. In the evening after dinner, students participated in discussions about career development and professional ethics. They also received tips from local scientists, e.g., William Oduru, Dean of the College of Natural Resources, KNUST, about how to apply for grants to fund their education and research. Several evenings were also spent enjoying and discussing iBioSeminars, a freely accessible ASCB resource (www.ibioseminars.org). Students listened to Joe DeRisi discussing the regulation of gene expression throughout the Plasmodium life cycle, and Randy Schekman on strategies for studying membrane trafficking. They also watched Brian Druker describing the development of Imatinib (Gleevec) as an anti-cancer drug. Participants enjoyed these seminars, and also received DVDs containing a selection of 20 iBioSeminars to use in their own teaching. Each participant also received a flash drive including all instructional materials from the lectures, practicals, and bioinformatics workshops. The full text of several cell biology textbooks was also included.

When participants applied to attend the ASCB workshop, they submitted a brief summary of a research project in process or planned. During the two weeks at KCCR, the students worked with the instructors and TAs on refining and modifying their proposal, and developing an oral PowerPoint presentation about the project. The latter was delivered to the entire group on the last day of the course.

These sessions were among the most exciting because the students were able to apply the knowledge gained in the workshop to a research question that they were passionate about. The research topics varied widely. Several participants are studying natural products and traditional herbal remedies in the hope of finding new antimalarial or anti-cancer drugs. One participant, Olivier Etchian, is a marine biologist from the Ivory Coast; he is developing methods to detect parasitic infections in mangrove oysters so that a clean stock of organisms can be identified for use in aquaculture. Lawrence Owusu, from KNUST, is studying the diagnosis and treatment of Burkitt’s lymphoma in Ghana. Daniel Tagoe from Cape Coast University, Ghana, is studying the role of the innate immune response in inflammation caused during lymphatic filariasis (also known as elephantiasis). All the participants are striving to improve an aspect of human health in their immediate community through their research. And they are clearly devoted to their mission. Their passion and commitment to being scientists, and to using their skills to better the daily life of Africans, are truly inspiring.
Looking Forward
At the conclusion of this intensive workshop, instructors and participants were all exhausted but exhilarated. When asked to list the best aspects of the course on a confidential survey, virtually every student cited the close and frequent interactions they had with instructors. They also noted how much their knowledge of cell biology and research methods had grown.

One participant reported, “I learned from faculty members I chat with that I should learn to think outside the box and try to look at cell problems and other problems as a network.”

Another stated, “I have learnt a great deal and I offer my appreciation for being selected to attend this workshop. I have had a lot of insight and channeled my research into areas I had earlier thought was impossible for me.”

This deep appreciation for the course and the instructors’ efforts was uniformly felt and relayed from students to instructors. By this measure, each workshop held over the past six years has been hugely successful.

It is harder to measure the long-term impact of the courses. Follow-up questionnaires are distributed to students six months after taking one of the courses. And some of the updates from former students are particularly encouraging.

Feedback from the course taught in Ghana in July 2009 revealed that all students are actively engaged in research and/or teaching. Many are enrolled in or have completed graduate degree programs in Africa or Europe. One student from that course, Gertrude Ecklu-Mensah, carried out research at the Marine Biological Laboratories in Woods Hole, MA, based on her proposal from the ASCB course. Another, Bismarck Dinko, will attend the Biology of Parasitism summer course there in 2012. Students from the 2010 summer workshop are making similar progress on their educational goals; and one, Anastasia Aikins, has developed a course for high school students and their teachers. It’s based on the material she learned in the ASCB course.

Finally, it was extremely satisfying that two TAs in this year’s course were former participants in ASCB workshops.

Training 24–25 African scientists each summer could be viewed as a tiny drop in an infinitely large bucket. However, we hope that by encouraging and facilitating interactions among these cohorts, the students themselves will create a community. Our hope is that this community will prove capable of impacting a larger group of African scientists, and that the capacity to offer African-led cell biology workshops will grow in the future.

In the short term, resources for a course in Ghana in July 2012 have been secured, thanks to a gift from the K.R. Porter Endowment for Cell Biology. This ensures that 25 more cell biologists will be recruited to the fold. Beyond that, however, the future is uncertain. Current organizers Dick McIntosh and Kirk Deitsch are actively searching for an agency that will consider a funding proposal for this worthwhile project. Please contact either ASCB member if you have ideas for possible avenues of solicitation.

—Martha Cyert on behalf of the International Affairs Committee
and fellow workshop instructors

Our hope is that this community will prove capable of impacting a larger group of African scientists, and that the capacity to offer African-led cell biology workshops will grow in the future.
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Ron Vale

Then a new Japanese postdoc, Gohta Goshima, arrived at the University of California, San Francisco (UCSF), lab of Ron Vale in 2002, expecting to join a motor protein outfit. After all, Vale was known for his role in the discovery of kinesin, the plus-end-oriented molecular motor that strolls along microtubules, towing intracellular cargoes to their destinations. Goshima had been drawn to Vale after hearing him lecture in Japan (and in Japanese) on motor proteins, including the growing superfamily of kinesins. In San Francisco, Goshima joined Vale’s ambitious biophysical group exploring molecular motors, microtubules, and actin in the cell cycle. But others in the Vale lab group were looking at mRNA localization, and another small cluster was investigating signal transduction in the immune system. Goshima found all this “wide view” science under one lab roof exciting if a little bewildering. The link, of course, was Vale, who was able to follow it all. Goshima grew to enjoy the lab’s experimental diversity, even as his own work homed in on augmin. Augmin is a protein complex Goshima discovered that beefs up microtubule nucleation sites in the mitotic spindle.

Vale’s research lab was only part of his wide interests. There was Micro-Manager, the open source software that Vale developed together with Nico Stuurman and Nenad Amodaj to control modern robotic microscopes and cameras. There was the Microscopy4Kids website that Vale started to show teachers how a low-cost digital microscope could bring excitement for science into elementary and middle school classrooms. There was Vale’s involvement with the biotech company that he co-founded and still advises, Cytokinetics. And after a sabbatical in Bangalore, Vale returned determined to stoke the bioscience revolution in India. How? By founding and organizing an international course in microscopy (the Bangalore Microscopy Course) and meetings devoted to mentoring Indian postdocs and junior faculty (the Young Investigator Meeting), and by setting up a website that serves as a central portal for information and networking on Indian biology (IndiaBioscience.org).

Then there were the summers when Vale, along with family and a rotating cast of UCSF lab members, decamped for the Marine Biology Laboratory (MBL) in Woods Hole, MA. Vale—ASCB President-Elect—and ASCB Past President Tim Mitchison from Harvard Medical School completely revamped the MBL’s venerable Physiology Course. They turned it into an innovative training group and research center that combined cell biology with physical science and computational approaches.

Green Screen Science

Goshima saw the start of Vale’s iBioSeminars before he returned to Japan in 2007 to join the faculty at Nagoya University. The seminars grew out of a Vale plan to put world-class talks on the Web by filming them in a standardized “green screen” video format. That’s what weather forecasters use. Working with the Howard Hughes Medical Institute (HHMI), ASCB, and UCSF, Vale has since expanded his video efforts, adding iBioMagazine. The educational outreach channel features shorter video pieces on the human side of being a scientist.

Goshima notes Vale’s unwavering commitment to family—his wife, cell biologist Karen Dell, and children, Christopher, 16, and Sophie, 14. Dell was Reviews Editor at the Journal of Cell Biology for a decade and now edits talks for iBioSeminars. Goshima mentions Vale’s love for sabbaticals—he spent a year sabbatical with Toshio Yanagida in Japan, eight months with Satyajit Mayor in India, and three months with Ari Helenius in Switzerland. His family often travels with him for work or vacation. (Vale’s children currently report that their passports have been stamped in 25 countries.)
Finally Goshima recalls Vale’s other great passion—the San Francisco Giants. Family, lab, and baseball seemed to collide on the afternoon that a major paper they’d submitted to a major journal came back rejected. Goshima was distraught. Vale had tickets and kids. “Why don’t you come with us?” Vale suggested. At the ballpark, Vale waited for lulls in the action to glance over the rejected paper and toss out suggestions. “I don’t even remember how the game went, but somehow by the end I had got rid of the bad feelings,” Goshima says.

“I remember someone asking Ron, ‘How are you managing so many things?’ His answer was, ‘I’m not. They manage themselves.’” Goshima reports.

Vale has a different take on his managerial style. “I just juggle, keep my eye on the ball, and hope for the best.”

Chaos Theory
Still, the sheer scale of Vale’s scientific portfolio long ago convinced Dyche Mullins, a UCSF colleague and Vale’s successor as a co-director of the MBL Physiology Course, that Ron Vale was one of the “half a dozen people in each generation without whom the world would descend into utter chaos.” Mullins mentions Vale’s ever-lengthening publications list, his manifold international activities, and his election as President of the ASCB as proof. “He has organizational skills that I’ve never seen in anyone else,” says Mullins. “Ron is never content to run his lab and create great science. He’s always creating some new infrastructure and some new creative enterprise. And now he’s taking over as ASCB President.”

Ron Vale is from Hollywood, being both a graduate of Hollywood High School and the son of the Hollywood screenwriter and novelist Eugene Vale. His mother, Evelyn Wahle, had been an actress with Broadway credits, yet his parents never pushed a show business career for their only child. “They wanted to expose me to lots of things,” Vale recalls, “and they were always fans of science. My parents, neither of whom finished college, were completely self-taught. My father knew more about history, literature, and religion than virtually anyone I have known. My mother was similar. She liked to take me to museums, and when my dad enrolled in an astronomy class at UCLA, he took me along. He thought I might be interested.”

Vale was interested in many things, but biology moved to the fore in high school when he interned in a University of California, Los Angeles, lab. He chose the University of California, Santa Barbara (UCSB), over Stanford for the chance to work in UCSB’s College of Creative Studies with Beatrice Sweeney, a pioneer in studying circadian rhythms using dinoflagellates. “She was an amazing scientist and a dynamic woman who was a real ball of fire in the laboratory,” Vale remembers.

Vale took some of that spirit to Stanford Medical School when he started in the MD/PhD program there. For his PhD research, he was drawn to the neuroscience lab of Eric Shooter and experiments on nerve growth factor and its receptor ligands. On the floor below the Shooter lab, Stanford’s Jim Spudich, an ASCB past president, and his sabbatical visitor from the University of Connecticut Health Center, Mike Sheetz, had just made an experimental breakthrough on one of the oldest logistics problems in muscle motility. Vale thought the work on muscle might be applied to neurons. Neurons are the longest cells in the human body, yet no one in 1983 had any idea of how neurons handled the internal transport of proteins and organelles over such distances. Motor proteins seemed the likely answer and myosin, the best-known candidate. Sheetz and Spudich reconstructed in vitro the movement on purified actin of myosin-coated plastic beads. Vale wondered if the beads could track non-muscle myosin movement inside intact neurons. Sheetz encouraged him to try.

Squid to Go
The first step was to order squid, Loligo pealei, a creature beloved in neuroscience because of its outsize axon. Vale filed a squid request with Stanford’s Hopkins Marine Station but the squid were just not running that spring. (It would turn out to be an El Niño year in the eastern Pacific.) Hurriedly, Vale and Sheetz transferred their experiment eastward to MBL, where fishing reports were more favorable. Vale flew east, loaded up a rusty Volkswagen Beetle with lab supplies from the Sheetz lab at Storrs, and drove to Woods Hole with a windsurfing board lashed to the roof.

They set up operations in cooperation with Tom Reese and Bruce Schnapp, who had an established electron microscopy (EM) laboratory at MBL. Schnapp also had an early version of a video enhanced-contrast microscope developed from the independent work at Woods Hole by Bob Allen and Shinya Inoue. The squid neuron was the star of many of these early microscope videos. One by Allen, S.J. Lasek, and Scott Brady showed small membrane
organelles moving at fast speeds inside the cell. Hypothesizing that actin might be involved, Sheetz and Vale hoped to reconstitute that system with myosin-coated beads injected into a squid axon. Nothing happened. In the videos, the myosin-coated beads sat there inert. More perplexingly, in one control experiment a few beads without the myosin coating were seen moving about. It was a back-to-square-one moment. Indeed, later that summer, Schnapp, Reese, Sheetz, and Vale found that the filaments supporting long-distance transport in the axon were microtubules, not actin.

Vale returned to Woods Hole the following summer with a new strategy to take apart the squid axon biochemically. Vale assembled an in vitro test system, mixing microtubules extracted from cow brain with membrane organelles and purified cytosol from squid neurons. With added ATP, the system sprang to life, the organelles chugging along the microtubules like freight cars on a model railroad track. As a control, Vale ran the system without the organelle cargoes—just cow microtubules, squid neuron cytosol, and ATP. To his astonishment, the microtubule segments became the cargo, being shuttled across the bare glass substrate by some kind of engine that was stuck to the surface of the glass coverslip. It was two o’clock in the morning when Vale witnessed this result and suddenly realized that here was an abundant, free-floating motor protein with an affinity for microtubules and ability to attach itself to surfaces.

Such a motor would explain the baffling result in his first experiment where only the bare plastic beads moved along the axons. Indeed, the movement of plastic beads repeated beautifully when tested with neuronal cytosol. Something other than myosin moved those beads, something that could anchor itself to bare plastic, to glass, and to organelles. But what was the factor? Vale asked Stanford to defer his year of medical “clerkships” needed for his MD so that he could spend the winter of 1985 in Woods Hole.

The Winter of Content

The village in winter was another planet. The summer crowds were gone, the smart restaurants and boutiques closed, the village bar reclaimed by commercial fishermen. The weather closed in. Most of the MBL campus was boarded up, but working alone in a corner of the Reese lab Vale made steady progress. “It was the scientific experience of a lifetime to be chasing down this problem in this almost 19th-century setting of Woods Hole in winter,” Vale recalls. “You could just dig into the problem, waking up every morning and deciding what’s the next thing to do, without any type of distraction.”

The protein was kinesin, the unidirectional molecular motor that walks step-wise toward the plus ends of microtubules. Today we know of 45 varieties of kinesins in humans alone, says Vale. They perform specialized functions in all realms of cellular behavior. Vale has remained at the forefront of motor protein biophysics, developing the first single molecule assay, solving the first crystal structure, and building an increasingly detailed structural picture of kinesin motility. Now, most of his lab’s biophysical effort has shifted toward dynein, another microtubule motor protein.

The discovery of a whole new class of motor proteins launched Vale’s academic career. He joined UCSF in 1986, became a full professor in 1994, and was named an HHMI investigator in 1999. But Vale says that hoping for a Eureka moment is not enough to sustain a research career. “You have to enjoy science and celebrate the small victories. Otherwise, the profession is just not tenable. You have to enjoy going into the lab every day with the hope of just getting the problem you’re working on that one step forward.”

The next step forward for Vale is the presidency of the ASCB in 2012. ■

—John Fleischman

“You have to enjoy science and celebrate the small victories. Otherwise, the profession is just not tenable. You have to enjoy going into the lab every day with the hope of just getting the problem you’re working on that one step forward.”
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A Tenure Review Glitch Stirs Anxiety

Dear Labby,

I am up for tenure this year, and although my Chair and the members of the department’s Personnel Action Committee (PAC) all told me my case looked promising, a serious wrinkle has developed: Of 14 investigators from whom letters were requested, 10 have declined! And two of the four who accepted are my graduate and postdoc advisors. I was devastated by this news. The 10 who declined included eight scientists I suggested and two others suggested by one or more PAC members. My Chair is now seeking additional letters (eight invitations) and is committed to getting my case moved forward. Meanwhile I am really depressed. You are always so helpful. Any advice?

—Knocked Back

Dear Knocked Back,

This is indeed a very low acceptance. At Labby’s institution the acceptance rate for tenure review letter invitations is approximately 65% (usually invitees are mostly investigators suggested by the candidate, with two to three suggested by the PAC, the same mix as yours). Whatever the average is for your institution, in entertaining (or accepting) the notion that this reflects reservations that would-be writers may have about your case, you are jumping to a conclusion. It is likely that all those who declined sent reasons such as too busy, one of my R01s is up for renewal, I have study section coming up, I am on sabbatical and swore off doing such things, etc. These are the usual reasons for declining invitations and are likely honestly given. A more nuanced situation is when the invitee feels that he or she might prepare a positive letter, but senses the need for a fair amount of work to do so. Labby always recommends that individuals suggested (by the candidate or the PAC) be scientists so knowledgeable about the candidate’s work that their decision to write letters would not be influenced by that consideration.

A new factor may have crept in during the past year (when it sounds like your letters were requested). The recent ending of National Institutes of Health (NIH) American Recovery and Reinvestment Act supplemental awards, together with the current nadir in NIH and National Science Foundation grant application success rates, has placed many U.S. investigators in positions of declining almost everything; many are focusing only on their teaching and institutional service responsibilities. They are saving every other minute and calorie of energy for their research.

One idea would be to ask your Chair to immediately send, in addition to the second set of invitations that just went out, a few requests to admired senior figures who might be semi-retired. Such individuals sometimes have a bit less crashing anxiety about their labs and, in addition, bring broad perspective to the task from years of experience. Even one letter from such a person close to your research field could be particularly influential at the institutional tenure committee level. If your package ends up with four or five letters from the second set of requests (approximately a 33% response), and one or two from the “senior statesperson” type, your package would not be seen as deficient in letters. Tenure packages have abundant other information on candidates’ scientific impact and stature, as well as teaching and service. A key point in your inquiry is worth keeping in mind: You said that both your Chair and PAC think you have a strong case. The initial letter invitation responses may well be a statistical anomaly and/or have causes totally unrelated to the merit of your tenure case.

Hang in there. You may have been knocked back for a few weeks. But you certainly were not, and are not, knocked out.

—Labby

Direct your questions to labby@ascb.org. Authors of questions chosen for publication may indicate whether or not they wish to be identified. Submissions may be edited for space and style.
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Montrose J. Moses, the eighth President of the American Society for Cell Biology (ASCB; 1968–1969), passed away on September 26, 2011, at age 92. He was born in New York City on June 26, 1919; married Constance Roy in 1949; and had two daughters, Mollie and Katherine (Kitty). At the time of his death, he and his second wife, Marlene Molina Johnson, were estranged.

Monte was intrigued by biology since age nine when he first looked through a microscope. He attended Bates College (BS, 1941) and Columbia University (MA, 1942; PhD, 1949). Monte's education was interrupted by Army service in World War II (July 1942–March 1946); his final rank was Captain. He was in charge of radio-telephone operations in the Southwest Pacific.

His interest in electronics since high school in Winsted, CT, and Army experience were valuable as a graduate student when he helped to build a microspectrophotometer to quantify nucleic acids and proteins inside cell organelles. This furthered the development of this device after its inception two years earlier by Pollister and Ris.

Monte worked at Brookhaven National Laboratory from 1948 until 1957, quantifying DNA in single cells from normal and irradiated tissues. At this time, the debate of whether the genetic material was DNA or protein generated mounting evidence that it must be DNA. Monte wondered “how the DNA of specific genes was coded and kept in linear sequences during the events of meiotic prophase assembly.” This question led to his discovery of the synaptonemal complex (SC).

**Nothing in the Nucleus**

While still at Brookhaven, Monte worked at the Rockefeller Institute in Keith Porter's lab. In October 1955, Keith Porter appeared with a Petri dish of extracellular matrix grids of crayfish testis and invited Monte to view the specimens with him using their new Phillips EM 100. Porter quickly scanned the grids, looking for microtubules with no success, but Monte was intrigued by the possible chromosome masses that were speeding by and blurted out “Keith! Please could you rerun that bit? I saw some intriguing details!” Porter was rushing to an appointment, so he handed the Petri dish with grids to Monte and said “There’s nothing worth looking at in the nucleus. I’ve tried, and there’s nothing there I can work with.” He continued: “Why don’t you take these grids and see what you can find. Whatever it is, it is all yours.” Several weeks and many grids later, the discovery of an axial structure joining synapsed chromosomes was a reality. Monte published a short note followed by a more definitive paper. Monte's initial observations were soon confirmed and extended by Don Fawcett, who subsequently became the first President of ASCB.

The SC, a proteinaceous structure that is aligned in parallel between the two homologous chromosomes in prophase of meiosis I, assists in homologous chromosome recognition, synapsis, and recombination. It is a prerequisite for crossing-over. Monte spent his career studying the SC and opened the field to active investigations by many on its functions, protein constituents, and molecular mechanisms. In 2006, the Gordon Research Conference on Meiosis celebrated the 50th anniversary of the discovery of the SC with an introductory talk by Monte that captivated the audience.

**Colleague, Mentor, Co-founder, and Clown**

Monte joined the Department of Anatomy (now Cell Biology) at Duke University School of Medicine in 1959 as an Associate Professor, becoming Professor (1966), the R. J. Reynolds Professor (1981), and Vice-Chairman (1987–1988). Monte’s former graduate student, Mike Dresser, stated: “Endowed with a sharp, disciplined intellect and with patience when he recognized effort, Monte was an unsurpassed master of the Socratic method and handled stubborn graduate students, demanding colleagues, and testy competitors with an awe-inspiring grace.” Monte promoted the careers of women, collaborating with Sheila Counce, who had developed a whole mount spreading method for the SC, and Adelaide Carpenter, who had discovered SC-associated recombination nodules. Adelaide recalls that Monte was a true
gentleman, kind, thoughtful, and caring and that his science was always sound. She recalled though that his enthusiasm got the better of him when he tried to cram 500 slides into a 30-minute talk!

Monte was a member of the organizing group led by Keith Porter that met in New York City in 1960 and constituted the Provisional Council of ASCB. On March 13, 1961, he was appointed to the Provisional Executive Committee as Associate Secretary. Monte served as ASCB Secretary from 1962–1967 and was elected as the eighth ASCB President (1968–1969). In 1969, Monte established the ASCB career placement service, which he ran for many years with his assistant Marlene Johnson. Monte noted that many job openings were withdrawn due to a shortage of federal funds. As ASCB President, Monte brought the idea to Council that ASCB should define the importance of cell biology, why it should take federal funds for research, and its importance to the public. He argued that this would dispel the notion that research is a luxury that we can no longer afford. These arguments still apply today! As a result of the ensuing lively discussion, Council set up a Committee on Public Policy. Also under Monte’s term as President, a move was initiated to change the bylaws to allow student membership in ASCB.

Monte was an eternal optimist who always saw the good in the people around him. According to his daughter Mollie, he was a storyteller, scientist, musician, sailor, carpenter, juggler, magician, and photographer. He delighted ASCB attendees at the ASCB Annual Meeting in Houston in 1966 by singing songs during the social event held at Rice University. Monte had an enduring interest in theater—his mother was an actress and his father was a theater and book critic. As a boy, he was captivated by a parade on Broadway. He joined a circus and later quit, but his interest in theater continued. In Durham in 1978, Monte and his wife Connie helped save the Carolina Theatre from demolition and to reopen it as an art movie house. In the early days, Monte sometimes did the theater’s maintenance and repair himself, once spending Christmas Eve fixing the heating system in time for the next day’s showings. Monte’s genuine warmth, quick wit, and joy in entertaining others made him a successful circus clown in his younger years and colored his academic pursuits with a rare charm.

The family requests that, in lieu of flowers, contributions be made to the Connie and Monte Moses Endowment for Arts in Durham at the Triangle Community Foundation (www.trianglecf.org), or to Duke Hospice (http://dhch.duhs.duke.edu/hospice). ■

—Susan A. Gerbi with grateful acknowledgment of contributions from Adelaide Carpenter, Mike Dresser, Sharyn Endow, Joe Gall, Kitty Moses, Mollie Moses O’Dell, Bruce Nicklas, and Pat Pukkila

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LETTERS to the Editor

To the Editor:
I just read your President’s Column in the ASCB Newsletter (“Talent Management in Academic Research,” 2011) about equal contribution, the U.S. National Institutes of Health study sections, and open-access publication. I simply want to say I could not agree more with your views in all three topics. Two comments:

1) It is hard to believe the 0.8% co-first author figure reported—it must be higher in cell biology. Alternatively, the percentage may go up when considering journals with higher impact regardless of research field.

2) Following the advice of somebody senior in cell biology I recently directed my (first) R01 application to a more clinically oriented study section and it appears to be paying off. I expect funding confirmation from the October Council meeting. Reviewers even highlighted that this project would contribute needed cell biology in the specific field (platelet dense granule biogenesis).

Also on this topic, I agree that playing the numbers game is crazy at many levels. I spent a lot of time and effort on the R01 application and a separate U.S. National Science Foundation proposal on endocytosis that was recently funded. I think that it is a better approach than more poorly preparing a bunch of different applications.

Thanks for this and previous commentaries in the President’s Column.

—Santiago M. Di Pietro, Colorado State University

To the Editor:
Thank you for publishing the September President’s Column in which Sandy Schmid applauds Public Library of Science (PLoS) for its leadership in open-access publishing (“Open Access Isn’t Free”). The growth of PLoS ONE has indeed been remarkable and, as Schmid notes, other publishers have jumped on the bandwagon. We at PLoS are delighted by the proliferation of PLoS ONE “clones,” as it means that an ever-increasing proportion of the scientific literature is becoming freely available. It should be noted, however, that while many journals provide free access to their content, publisher copyright provisions often restrict its reuse. The right to reuse is one of the pillars of open access, allowing text mining, reanalysis of large datasets, unrestricted use in the classroom, translation of articles into other languages, and other important scholarly and educational applications. All PLoS journals, including PLoS ONE, use a Creative Commons license that allows anyone to copy, distribute, remix, and/or adapt the work, so long as attribution to the original publication is provided (http://creativecommons.org/licenses/by/3.0). Authors must scrutinize journal copyright policies carefully if they wish their work to be truly open access.

PLoS ONE is also about more than just open access; it would otherwise be hard to explain why the journal currently receives more than 2,000 submissions per month. By focusing strictly on technical rigor before publication and using new approaches such as article-level metrics to organize and assess the significance of the research after publication, PLoS ONE provides authors with a quicker and less subjective alternative to the traditional peer review and publication process.

Finally, I would like to correct a common misconception suggested in the column that PLoS ONE is the only profitable journal published by PLoS. While the sheer number of PLoS ONE articles published makes PLoS ONE the biggest contributor to PLoS’ financial success, the more traditional PLoS “community journals” run by academic scientists (including PLoS Genetics, PLoS Pathogens, and PLoS Computational Biology) also operate well in the black. It is clear from our experience and that of other publishers that open access and net revenue are not mutually exclusive, even for more selective journals. PLoS uses the net revenue from its publishing activities to help fund the development of new and better tools for scientific communication, in the same way that ASCB uses the net revenues generated by Molecular Biology of the Cell (MBoC) to help fund the many other worthwhile programs and activities of the ASCB.

PLoS will soon make more details about its finances public, to clarify how the open-access business model works. We hope that forward-thinking societies like the ASCB will look at these data and consider moving their own journals—which in many respects are similar to the PLoS
LETTERS to the Editor

community journals—to a truly open access model. PLoS stands ready and willing to help societies with this transition; we all benefit from greater access to the literature.

—Gary Ward, Chair, PLoS Board of Directors

President’s reply: Thanks to Gary Ward for his thoughtful letter. MBoC, like PLoS, exists to serve the scientific community. We do this through constructive peer-review, handled by volunteer scientists who are respected leaders in their fields. MBoC seeks to facilitate the communication of new developments in cell biology. However, as PLoS is aware, even paperless, open-access journals cost money to produce and must make money to survive. MBoC is transparent in its costs and revenues, which are published annually in the ASCB Newsletter as part of the overall ASCB Treasurer’s Report. I am pleased to learn that PLoS also plans to publically release details of its finances. The same cannot be said of major private publishers, whose near monopolies are a financial burden to laboratories and institutions. It may be time for public and private funding agencies (NIH, NSF, MRC, CIHR, DFG, HHMI, BWF, MPI) to collectively set firm limits on the amount of direct and indirect research dollars that can be spent on publication and on library subscriptions to journals.

Importantly, the ASCB uses the profits from MBoC to support our substantial efforts in education, scientific advocacy, career development, increasing diversity, etc. Our revenues are generated through page charges (51%), modest subscription costs to libraries (45%), and from reprint and advertising sales (4%). Manuscripts are publicly available within one-to two weeks of acceptance, making MBoC virtually an open-access journal. The final, edited versions of articles are embargoed for two months to provide value to our library subscribers. If we were to lose this revenue by transitioning to a fully open-access model, then page charges, which siphon dollars directly from our laboratories, would likely double. The following are costs (in parentheses) of papers my laboratory has recently published in PLoS Biology ($2,850), Journal of Cell Biology ($2,780), Cell ($2,900), PNAS ($1,755), EMBO Journal ($1,264), and MBoC ($1,461). From this limited survey it appears that MBoC could double its page charges and still be in line with most competing journals; but we choose not to do so. All of our members receive the journal free of charge. We believe that this model serves both our individual members and the cell biology community.

—Sandra Schmid, ASCB President

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MBoC Special Issue Features ASCB Award Essays and More

Recipients of 2011 ASCB Awards share their views on science and science careers in the November 1, 2011, special issue of Molecular Biology of the Cell (MBoC). Look for essays by Jerry Guyden, Jennifer Lippincott-Schwartz, J. Richard McIntosh, Maxence V. Nachury, Melissa M. Rolls, James A. Spudich, and Susan R. Wente. In addition, Edward D. Salmon and Clare Waterman provide a Retrospective, “How we discovered fluorescent speckle microscopy,” and Lawrence S.B. Goldstein contributes a Perspective, “In the trenches: Lessons for scientists from California’s Proposition 71 campaign.”

The issue was conceived and assembled by MBoC Features Editor Doug Kellogg and MBoC Editor-in-Chief David Drubin. In their Editorial, they note, “[T]hese essays provide insight into research careers, education, mentoring, diversity, science advocacy, and how key discoveries were made.” They also point out that again in 2011 MBoC has maintained its strong ties to the ASCB Annual Meeting by inviting chairs of Minisymposia to write reviews of their sessions. These will be published early in 2012.

The cover of this special issue is a salute to The Cell: An Image Library (www.cellimagelibrary.org), the ASCB’s freely accessible, easy-to-search, public repository of reviewed and annotated images, videos, and animations of cells. Janet Iwasa, co-PI of the U.S. National Institute of General Medical Sciences award that supports The Cell, has composed a photomosaic diagram of a cell consisting of images from the library.

The issue is available online at www.molbiolcell.org/content/22/21.toc. A printed collection of the essays from the issue will be distributed at the 2011 ASCB Annual Meeting in Denver. In addition, meeting attendees will receive a poster of the cover illustration. After the meeting, the poster will be available through the ASCB’s online store (www.ascb.org/shop.html). ■

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Ever Heard of SCOPT?

So what exactly is SCOPT, and what does it do? The Subcommittee on Postdoctoral Training (SCOPT) is an ad hoc subcommittee of the Education Committee dedicated to supporting the career development of postdocs (see program description below) as well as promoting their involvement in Society activities. The two SCOPT co-chairs attend Education Committee meetings, organize an Annual Meeting program for postdocs, and occasionally write articles for the ASCB Newsletter.

In the past several years, co-chairs have essentially self-selected themselves during the SCOPT Open Forum. The Open Forum, held annually during the Annual Meeting, is an opportunity for postdocs (and graduate students) to discuss pertinent issues and identify areas where the ASCB can be helpful. This year’s Open Forum, Monday, Dec. 5, 10:00–11:00 am, will include some members of the ASCB Council. If you’re a postdoc, and want your voice to be heard, don’t miss this event.

For more information about SCOPT, and to view resources for postdocs, go to www.ascb.org, click on “Committees,” then “Postdocs.”

—Thea Clarke

Postdoc Presentation: “Getting Out of the Box: Transitioning to a Career Outside of Academic Research”
Sunday, December 4, 2011
10:00 am–12:00 Noon

Panelists representing careers in scientific entrepreneurship, science journal editing, experimental biology public policy, patent law, science funding, and science writing will discuss their professions and offer career advice for graduate students, postdocs, and early-career scientists entering the job market. Time will be allotted for a Q&A period.

Moderator: Sarah E. Szarowicz, U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick
Panelists: Richard C. Duke, Founder and Chief Scientific Officer, Colorado Institute for Drug Device and Diagnostic Development; Sharon Schendel, Journal Editor, Biology of the Cell; Timothy Worrall, Patent Lawyer, Dorsey and Whitney; Jennifer Hobin, Director of Science Policy, Federation of American Societies for Experimental Biology; Parag Chitnis, Deputy Director, Division of Molecular and Cellular Biosciences, U.S. National Science Foundation; and Fintan Steele, Science Writer, Director of Science Communications, Colorado Initiative in Molecular Biology.
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High-Throughput-Enabled Structural Biology Research (U01). The National Institute of General Medical Sciences (NIGMS) encourages applications to establish partnerships between researchers interested in a biological problem of significant scope and researchers providing high-throughput structure determination capabilities through the NIGMS PSI:Biology network. Applicants should propose work to solve a substantial biological problem for which the determination of many protein structures is necessary. Expiration: September 8, 2014. http://grants.nih.gov/grants/guide/pa-files/PAR-11-176.html.

L’Oréal USA Fellowships for Women in Science. This program annually recognizes and rewards five U.S.-based women postdoctoral researchers at the beginning of their scientific careers. Recipients receive up to $60,000 each that they must apply toward their postdoctoral research. Recipients also participate in a week of events that includes professional development workshops, media training, and networking opportunities. Applications due: December 15, 2011. www.lorealusa.com/forwomeninscience.

Mentored Quantitative Research Development Award (K25). The purpose of these National Institutes of Health (NIH) awards is to attract to NIH-relevant research those investigators whose quantitative science and engineering research has thus far not been focused primarily on questions of health and disease. Expiration: January 8, 2012. http://grants.nih.gov/grants/guide/pa-files/PA-09-039.html.


The National Academies’ Research Associateship Programs administer postdoctoral (within five years of the doctorate) and senior (normally five years or more beyond the doctorate) research awards sponsored by federal laboratories at over 100 locations in the U.S. and overseas. Quarterly application deadlines. www7.nationalacademies.org/rap.

National Science Foundation (NSF) Innovation Corps Program. This program will award $50,000 to 100 teams each year to enable scientists and engineers to turn their discoveries into startup companies. Over the course of six months, the teams will be mentored by entrepreneurs and venture capitalists, and additional training will come from the Stanford Technology Ventures Program at Stanford University. The program is a public–private partnership between NSF, the Deshpande Foundation, and the Kauffman Foundation. www.nsf.gov/news/special_reports/i-corps/index.jsp

Pathway to Independence Award. The primary purpose of the National Institutes of Health (NIH) Pathway to Independence Award (K99/R00) program is to increase and maintain a strong cohort of new and talented NIH-supported independent investigators. The program is designed to facilitate a timely transition from a mentored postdoctoral research position to a stable independent research position with independent NIH or other independent research support at an earlier stage than is currently the norm. Expiration: January 8, 2012. http://grants.nih.gov/grants/guide/pa-files/PA-09-036.html.
SHIFT Awards: Small Businesses Helping Investigators to Fuel the Translation of Scientific Discoveries (SBIR: R43/R44). These National Institutes of Health awards are intended to foster research that is translational in nature and to transform academic scientific discoveries into commercial products and services. They require that an investigator who is primarily employed by a U.S. research institution at the time of application transition to a small business concern (SBC) and be primarily employed (more than 50% time) by the SBC by or at the time of the award. Expiration: January 8, 2013.
http://grants.nih.gov/grants/guide/pa-files/PA-10-122.html#SectionIV3A.

Short Courses on Mathematical, Statistical, and Computational Tools for Studying Biological Systems (R25). The National Institute of General Medical Sciences encourages applications for Research Education Grants (R25) from institutions and organizations to conduct workshops and short courses to improve integration of mathematical, statistical, and computational approaches into biological and/or behavioral research. Support will be limited to activities that reach a wide audience of researchers. (This program is not intended for university courses or curriculum development.) Expiration date: January 8, 2015.

Structural Biology of Membrane Proteins (R01). This National Institutes of Health funding opportunity is for research that will lead to the determination of membrane protein structures at high resolution. In addition to the structures of integral membrane proteins, the structures of the complexes formed between these proteins and their biological partners are of interest. Expiration: September 8, 2013.

Supplements for Functional Studies Based on High-resolution Structures Obtained in the Protein Structure Initiative. The National Institute of General Medical Sciences (NIGMS) announces the availability of administrative supplements to provide funds to enable investigators interested in protein function to capitalize on the information and material products of the Protein Structure Initiative (PSI). These supplements are available for 1) NIGMS-funded research grants (R01, R37, and P01) as well as 2) investigators with peer-reviewed research grants not funded by NIGMS, through the PSI research centers.

Support of NIGMS Program Project Grants (P01). The National Institute of General Medical Sciences encourages innovative, interactive program project grant applications from institutions/organizations that propose to conduct research that aims to solve a significant biological problem through a collaborative approach involving outstanding scientists who might not otherwise collaborate. Expiration: September 8, 2014.

Transformative Research Awards. The National Institutes of Health Director’s Transformative Research Awards support collaborative investigative teams or individual scientists who propose transformative research projects that, if successful, will have a major impact in a broad area of biomedical or behavioral research. Projects must have the potential to create or overturn fundamental scientific paradigms through the use of novel approaches or to lead to major improvements in health through the development of highly innovative therapies, diagnostic tools, or preventive strategies. Letters of intent due: December 12, 2011. Applications due: January 12, 2012.

New ASCB Member Benefit
Are you planning to publish a book in 2012? If so, let ASCB know! Send the title, publisher, and ISBN information, and, if you wish, a thumbnail (300 dpi) of the cover. We’ll include it in the *ASCB Newsletter*. This publicity is available only to ASCB members. Please send submissions to Thea Clarke at tclarke@ascb.org.
MEMBERS in the News

Kenneth R. Miller, of Brown University, an ASCB member since 1973, was the recipient of the 2011 Stephen Jay Gould Prize. The prize is awarded annually by the Society for the Study of Evolution to recognize individuals whose sustained and exemplary efforts have advanced public understanding of evolutionary science and its importance in biology, education, and everyday life.

Yukiko Yamashita, of the University of Michigan, Ann Arbor, an ASCB member since 2004, was named one of the 22 recipients of the 2011 MacArthur Foundation Fellowship.

MEETINGS Calendar

A complete list of upcoming meetings can be found at http://ascb.org/othermeetings.php. The following meetings were added since the last issue of the Newsletter:

April 21–25, 2012. San Diego, CA

April 21–25, 2012. San Diego, CA

ASCB Annual Meetings

December 3–7, 2011. Denver

December 15–19, 2012. San Francisco

December 14–18, 2013. New Orleans

December 6–10, 2014. Philadelphia

December 12–16, 2015. San Diego

CALL FOR NOMINATIONS

2012 Vanderbilt Prize in Biomedical Science

The Vanderbilt Prize in Biomedical Science was created to honor and recognize a woman scientist of national reputation who has a stellar record of research accomplishments and is known for her mentorship of women. The winner nurtures the career, research, and studies of a promising woman beginning her Ph.D. studies at Vanderbilt.

The Vanderbilt Prize in Biomedical Science includes a $25,000 cash award to the recipient, who will visit Vanderbilt to give a lecture and serve as a mentor to the Vanderbilt Prize Scholar.

Nominations are now being accepted through January 31, 2012

Contact Danielle Certa for a nomination form: danielle.certa@vanderbilt.edu | (615) 936-6228
Or visit https://medschool.vanderbilt.edu/dean/ and click Vanderbilt Prize in Biomedical Science.
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