THE AMERICAN SOCIETY FOR CELL BIOLOGY
The science of life, the life of science

ASCB NEWSLETTER

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AmerSocCellBio

Four ASCB Members Win 2012 Lasker Awards

Four longtime ASCB members have been named 2012 winners of awards in medical science by the Albert and Mary Lasker Foundation. Considered the American Nobel Prize in Medicine, the Albert Lasker Award for Basic Medical Research was given to three ASCB members—Michael Sheetz of Columbia University, James Spudich of Stanford Medical School, and 2012 ASCB President Ron Vale of the University of California, San Francisco—for "their discoveries concerning cytoskeleton motor proteins," according to the foundation. The foundation also named a fourth ASCB member—Donald D. Brown of the Carnegie Institution for Science in Baltimore—as co-winner of the 2012 Lasker-Koshland Award for Special Achievement in Medical Sciences for his "exceptional leadership and citizenship in biomedical science."

Spudich, Sheetz, and Vale revealed for the first time how families of tiny molecular motors power internal transport within cells and drive the fundamental mechanisms of life. Starting at Stanford in 1971, Spudich and his later visiting collaborator Sheetz pioneered the development of the alga *Nitrella* as a laboratory model system in which they could watch the movement of myosin motor proteins along cellular tracks made of actin filaments.

Lasker Awards, continued on p. 6

New Executive Director Sees Central Role for Cell Biology in Science and Policy


Stefano Bertuzzi

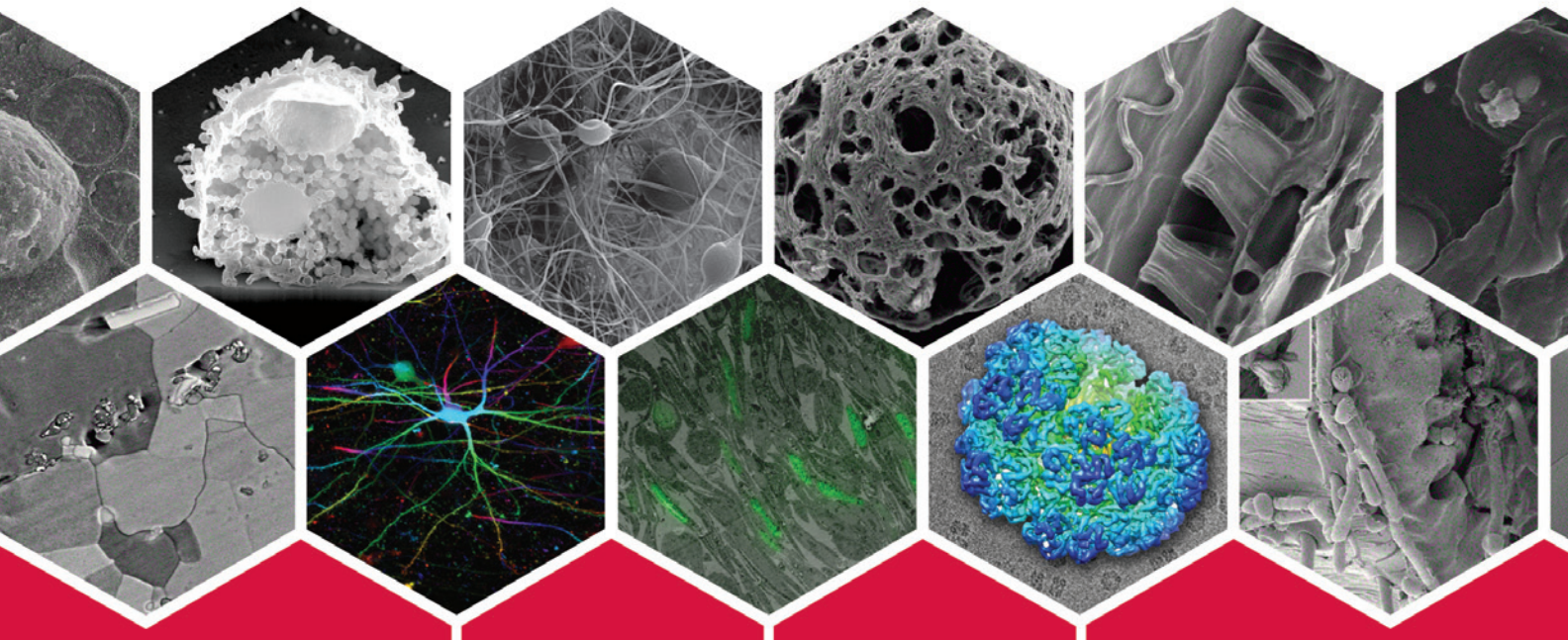
"My goal at ASCB will be to ensure that cell biologists remain central to the scientific and policy discourse, and to create scientific opportunities to advance our field, health, and the quality of life of millions of people in the United States and around the world," says Stefano Bertuzzi, who will become ASCB's Executive Director on November 1. He is currently the Director of the Office of Science Policy, Planning, and Communications at the National Institute of Mental Health (NIMH).

In announcing Bertuzzi's appointment, ASCB President Ron Vale said, "Stefano brings a wealth of experience to the ASCB, first as an accomplished bench scientist and then through his science policy work at the National Institutes of Health. The ASCB leadership strongly believes that Stefano will lead the ASCB to new heights and that he will be a great voice for the ASCB and for science."

Executive Director, continued on p. 7

Free Career Webinars! See page 5

Explore complex biological systems
Discover new context
Resolve to new breakthroughs



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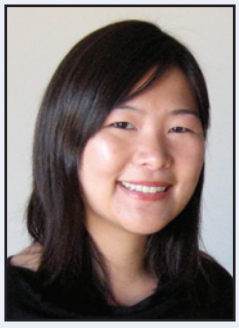
The Art and Science of Cell Biology (ASCB²)

This President's Column was written by guest columnists Janet Iwasa and Graham Johnson.

Captivating imagery has always complemented cell biology. Two new events at the ASCB 2012 Annual Meeting in San Francisco will explore issues at the interface of science and art that increasingly affect our field:

1) *From Histograms to Animations*, a Working Group focusing on visualization, will delve into ways for researchers to clarify complex data for analysis and communication.



Janet Iwasa

Graham Johnson

2) A scientific art show will serve as a prototype for a traveling gallery intended to immerse the public in the visual language of cell biology.

Since the time of Leeuwenhoek and Hooke's simple lenses, the beauty and mystery of life viewed under the microscope has inspired young scientists. Early microscopists' detailed illustrations, such as those published in Hooke's *Micrographia* (1665), fascinated both scientists and the public. Whereas these illustrations yielded both questions and answers for biologists, the public admired and discussed these images as art.

Today, individuals from diverse backgrounds make up a vibrant community growing at the intersection of art and science. From fine artists creating biology-inspired works, to scientists using art to better understand or communicate their own research, many noteworthy and exciting trends are evident. Through new ASCB events, we will address two issues of interest to cell biologists:

1)What can cell biologists gain from improved visualization tools and techniques?

2) How can we better engage the public and maintain their interest in cell biology?

The Scientist as Artist: Tools to Enhance Research and Creativity

Visualizations of biological data range from 2D bar graphs and charts to intricate molecular animations encapsulating decades of research. A well-conceived, well-executed presentation can be a powerful, lasting tool—not only to communicate results and theories but also to bring about new ideas.

As scientific illustrators, we frequently see that researchers gain new insights and testable theories during the course of their collaboration with us, ultimately leading to detailed models and animations. One portion of our Working Group, *From Histograms to Animations: Effective Visualization Makes Complex Data Clear*, aims to give researchers more direct access to these visualization processes through relatively easy-to-use software, storyboarding protocols to plan projects efficiently, and other resources and techniques. For more intricate systems or larger projects, we will demonstrate more advanced tools and general protocols to enable researchers to work effectively with visualization experts.

Today, individuals from diverse backgrounds make up a vibrant community growing at the intersection of art and science.

Molecular viewer software limits the types of visualizations that can be produced, and professional 3D animation software typically presents a dauntingly steep learning curve for nonspecialists. We will present new tools to reduce these technical barriers but will also focus on the more critical aspects of creating effective animations: what to include, what to leave out, and how to organize a story. We help our collaborators decide on all aspects of an animation, such as the number,

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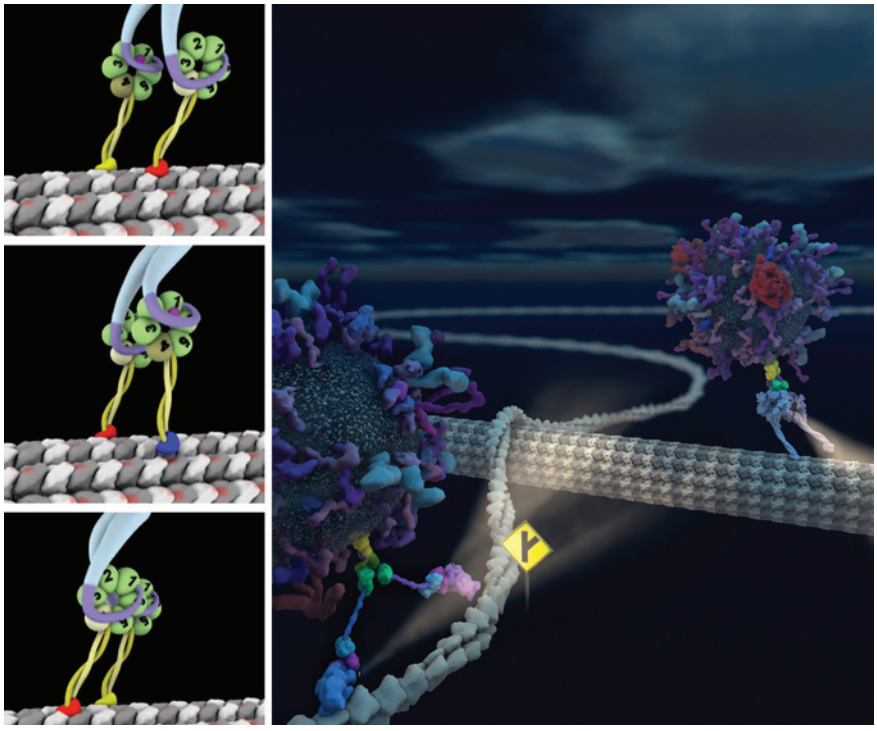


(Left) An articulated model can act as a virtual protein "puppet" that allows researchers to visualize complex processes in 3D, such as the walking cycle of the motor protein dynein. (Created by Iwasa in collaboration with the Reck-Peterson group at Harvard Medical School.)

(Right) From ASCB², this editorial image uses the structure of dynein to grab audience attention and summarize the key point of a research article. The illustration depicts molecular motors carrying cargo vesicles along different cytoskeletal substrates, with an intersection symbolizing the cargo's ability to transition between actin filaments and microtubules at specific molecular junctions. (Created by Johnson for Frank Heisler et al. for the April 14, 2011, cover of Neuron. *©G. Johnson and Elsevier, Inc.)*

By immersing a new audience in cellular and subcellular imagery without any attempt to overtly educate, we hope to remedy this unfamiliarity [of the public with cell biology], slowly connecting the world of cells and molecules to daily experiences.

shape, size, dynamics, kinetics, and localization of molecules. Although experimental evidence will guide many of these decisions, many questions inevitably remain, from visible gaps in structure to gaps in biochemical details. Recognizing these gaps in our knowledge, and attempting to fill them with hypothetical possibilities, can lead to new ideas and experiments. The final animation acts as a visual hypothesis—a dynamic model figure of sorts—that colleagues can readily view (and critique). As an example of this process, the accompanying figure shows a few frames from an animation of a 3D dynein model. Our session will also cover new, multiscale efforts under development that will allow sharing and iterative community improvement of such model figures.

Although relatively few cell biologists have experience with 3D animation (a fact that we hope to remedy), nearly all of us have created other forms of data visualization, such as charts and graphs of abstract data and vector-based illustrations for model figures. We often create these visualizations initially to explore and make sense of data, and then refine them to communicate ideas in a publication. Ideally, data visualizations clarify trends and outliers. Sometimes, however, poor representations of data lead to confusing—or worse, misleading—figures. Even though cell biologists rely heavily on data visualization, few have received any training on visual representation of data.

Bang Wong's "Points of View" series in *Nature Methods* shows that understanding basic design principles is essential to creating effective scientific figures. In our session, Wong will highlight many key concepts from these columns to help researchers create effective 2D and 3D visual communications.

We invite you to come to our Working Group and share some of the challenges that you have faced while making representations of your data.

The Art and Science of Cell Biology (ASCB²): An Art Show at the Annual Meeting

With the support of ASCB President Ron Vale, we have planned a new event at the ASCB Annual Meeting. The Art and Science of Cell Biology (ASCB²) will be an art gallery spread across two open spaces in the Moscone Center, featuring large-format prints of molecular and cellular images.

Scientific visualizations can reach far beyond our laboratories. Popular, public-facing efforts to highlight visually striking scientific images have increased. Competitions such as the National Science Foundation–American Association for the Advancement of Science International Science and Engineering Visualization Challenge, Nikon's Small World microscopy competition, and ASCB's Celldance, as well as the cover illustrations of many research journals (see accompanying figure), and encourage scientists to evaluate their visual work with an aesthetic eye. As with the illustrations of Hooke, diverse audiences can appreciate the images and illustrations in these contests. Jargon-filled descriptions aren't necessary to appreciate these images; they simply engage a broader audience with aesthetically pleasing or curiosity-inducing qualities.

These examples highlight an issue we faced when presenting our molecular-scale work to

general audiences. Whereas astronomers can awe the public with images of galaxies and the surface of Mars, and hands-on physics exhibits at children's science museums attract hordes of school kids, using cell and molecular biology to draw and maintain the attention of general audiences is much harder. Although faceless molecules may never compete with dinosaurs, all these other branches of science have a commonality that gives them an advantage. Astronomy and physics exhibits can capitalize on everyday human experiences and a cultural vocabulary. We can look into the night sky to see constellations and our own Milky Way, making it a short leap to yearn to explore detailed findings from the Hubble telescope. But cell biology is often too alien for general audiences, both visually and semantically, leaving viewers more overwhelmed and confused than awed or inspired. We take for granted that outside our professional circles, the word *protein* usually brings to mind a juicy cut of beef rather than a folded polypeptide chain.

By immersing a new audience in cellular and subcellular imagery without any attempt to overtly educate, we hope to remedy this unfamiliarity, slowly connecting the world of cells and molecules to daily experiences. The inspiration for this immersive approach stemmed from a recent experience that Graham Johnson had during an exhibition of his artwork and a shared seminar with Ron Vale, which Janet Oliver of the University of New Mexico organized in conjunction with the Santa Fe Complex. The exhibit, consisting of molecular illustrations enlarged and hung as fine art, drew art lovers, scientists, and curious passersby. Although aesthetics, composition, value, and color initially drew viewers to study any given piece, discussion inevitably moved to biological content and context. Conversations and theories often headed down bizarre paths, but scientists mixed into the room would overhear and steer these conversations or would answer questions asked from a motivated, rather than a captive, audience.

This is an exciting time to work at the art–science junction, particularly as cell and molecular biologists. We hope that practical techniques learned in the Working Group will couple with inspiration from the gallery to help researchers create enduring visualizations. From this small beginning, we hope to expand into an annual event to branch out into local art galleries, where the public might join researchers to appreciate the beauty of cells and molecules and delve further into biology. We expect the events to create a fertile new ground for conversations about scientific visualization and a renewed appreciation of the beauty of cell biology that will eventually spread to the general public.

We hope that, with repeated exposure to such events, viewers will gain familiarity with the forms of molecules and cells, and then acquire a language with which to associate those forms. Viewers will better understand the context of these images as an extension of their daily experiences and gain the motivation to go from asking *What is it?* to *Why do I care?* and perhaps even to *How can I find out more?* ■

—Janet Iwasa, Harvard Medical School, and Graham Johnson, University of California, San Francisco

As scientific illustrators, we frequently see that researchers gain new insights and testable theories during the course of their collaboration with us, ultimately leading to detailed models and animations.

New! Free Career Webinars Being Offered in the Fall

Four Career Development Webinars will be offered free to ASCB members and member applicants this fall.

- Career Planning for Cell Biologists: Industrial Opportunities in the Current Economy. Thursday, October 11, 2012, 12:00 pm EDT
- Developing Your 30-Second Value Statement. Tuesday, October 23, 2012, 12:00 pm EDT
- Network Yourself to a Great Career. Thursday, November 15, 2012, 12:00 pm EST
- Identifying and Seizing Value from Conference Participation. Tuesday, November 27, 2012, 12:00 pm EST

For more information and to register, visit ascb.org, click on "Careers & Education," then "Career Webinars." ■

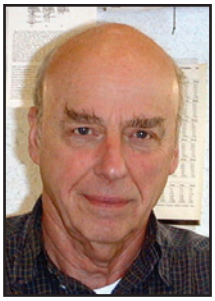
—Thea Clarke

Lasker Awards, continued from p. 1


Michael Sheetz


James Spudich


Ron Vale


Donald D. Brown

In the early 1980s, Sheetz and then graduate student Vale moved their experiments to the Marine Biological Laboratory in Woods Hole, MA, and the giant axon of the squid *Loligo pealei* to get a clearer view of myosin-powered transport along actin. Sheetz and Vale were able to see flurries of directed movement along the axon but realized that the movement was not on actin but on microtubules, the rapidly assembling and disassembling protein backbone of the cytoskeleton. They had discovered a whole new class of motor proteins, which they named the kinesins.

These breakthroughs in understanding how motor proteins drive internal transport, cell shape, and external cell movement set off a revolution in basic cell science and an ongoing wave of clinical innovations aimed at cardiac disease and cancer.

As a bench scientist starting out in the 1950s and later as director of the Embryology Department of the Carnegie Institution for Science in Baltimore, Brown wrestled with the mysteries of ribosomes, the cell's protein-making machinery, and of ribosomal RNA (rRNA). His work in frog embryos led Brown to the identification of several rRNA-producing genes and eventually to the first example of gene amplification, a process now known to underlie events from embryonic development to acquired drug-resistance in cancer cells. Outside the lab, Brown founded the Life Sciences Research Foundation by tapping into the growing pharmaceutical industry to fund independent postdoctoral research fellowships.

Along with Vale, who is the current president of the ASCB, the 2012 Lasker winners include two past ASCB presidents—Spudich in 1988–89 and Brown in 1991–92. Sheetz served on the ASCB Council from 1990 to 1992. The four 2012 winners bring the total of ASCB members who have received a Lasker award to 36. (See sidebar.) ■

—John Fleischman

ASCB Members Who Have Received Lasker Awards

1958 Theodore Puck	1988 Phillip A. Sharp	2004 Matthew Meselson
1966 George E. Palade	1989 Michael J. Berridge	2006 Elizabeth Blackburn
1971 Seymour Benzer	1989 Alfred G. Gilman	2006 Carol Greider
1978 Solomon H. Snyder	1993 Gunter Blobel	2006 Joseph Gall
1980 Paul Berg	1994 Stanley B. Prusiner	2007 Ralph Steinman
1982 J. Michael Bishop	1995 Emil R. Unanue	2008 Stanley Falkow
1982 Harold E. Varmus	1998 Leland H. Hartwell	2011 Franz Ulrich-Hartl
1982 Hidesaburo Hanafusa	2000 Aaron Ciechanover	2011 Arthur Horwich
1983 Eric Kandel	2000 Alexander Varshavsky	2012 Michael Sheetz
1985 Michael S. Brown	2002 James Rothman	2012 James Spudich
1985 Joseph L. Goldstein	2002 Randy Schekman	2012 Ronald Vale
1986 Stanley Cohen	2003 Christopher Reeve	2012 Donald D. Brown

Executive Director, continued from p. 1

Vale continued, "Stefano's appointment represents a new direction for the leadership of the ASCB. Because of his scientific experience, Stefano knows the excitement of discovery that drives all scientists, but he also understands the economic difficulties facing basic biomedical research in these uncertain times. He is particularly concerned about the careers of students and young investigators, which is very aligned with the interests and potential future roles of ASCB."

Bertuzzi expressed his strong commitment to listening and getting to know the Society well before diving into the Executive Director job. "I want to meet very soon with Council members, the various committees, and as many members and stakeholders as possible. The timing is excellent. The upcoming Annual Meeting provides the perfect opportunity for listening and meeting with people," Bertuzzi says.

In between jobs he plans to take a week off for a "retreat" to the Maryland Eastern Shore to think and write about key scientific topics that are relevant to ASCB: how to further bolster ASCB's communication strategy and products for its members; how to deal with the scientific workforce challenges during hard budgetary times, when the next generation of scientists is at risk; and how to capture and convey the benefits of basic research for health, wealth, and society at large. "It will be a fun ride," Bertuzzi says. "I can't wait to start, my head is spinning with ideas, but as I said, I first want to listen and understand from as many people as I can—my days at the 2012 Annual Meeting will be beyond busy, and this is just great!"

Before assuming his current post at NIMH, Bertuzzi headed the Return on Investment Program in the Office of the Director of the U.S. National Institutes of Health (NIH). A leading researcher in the regulation of neuronal axon guidance in the visual system, Bertuzzi was an NIH staff scientist in the National Institute of Neurological Disorders and Stroke. In his native Italy, Bertuzzi was the Director of the Laboratory of Mammalian Genetics at the Dulbecco Telethon Institute in Milan.

Bertuzzi first came to the United States in 1992 to work in the NIH intramural program as a graduate student from Milan's Universita' Cattolica del Sacro Cuore. He continued his research at NIH as a postdoctoral fellow, and then at the Salk Institute in La Jolla, CA. He returned to NIH in 2005 from the Dulbecco Telethon Institute, moving to the Office of the Director in 2006. Bertuzzi recently finished a master's degree focusing on health policy and health economics from the Bloomberg School of Public Health at The Johns Hopkins University.

"I see science as a complex ecosystem," says Bertuzzi, "where different stakeholders have different incentives. A professional society like ASCB has the exquisite role of defining—and constantly redefining—a field, pushing it, making it as relevant as possible in the scientific and policy arena, and with the general public."

Bertuzzi's selection is the culmination of a search that began early in 2012. Jean Schwarzbauer (Secretary, 2006–2011) chaired a search committee that included Holly Goodson (Councilor, 2008–2010), Suzanne Pfeffer (President, 2003), Sandra Schmid (President, 2011), and ASCB Senior Director of Finance and Administration Cynthia Godes. In an email to ASCB members announcing the appointment, Vale thanked the search committee for its hard work and expressed his gratitude to President-Elect Don Cleveland and Treasurer Thoru Pederson for helping to recruit Bertuzzi to the position. ■

—John Fleischman

Got Questions?

Labby has answers. ASCB's popular columnist will select career-related questions for publication and thoughtful response in the *ASCB Newsletter.* Confidentiality guaranteed if requested. Write us at labby@ascb.org. ■

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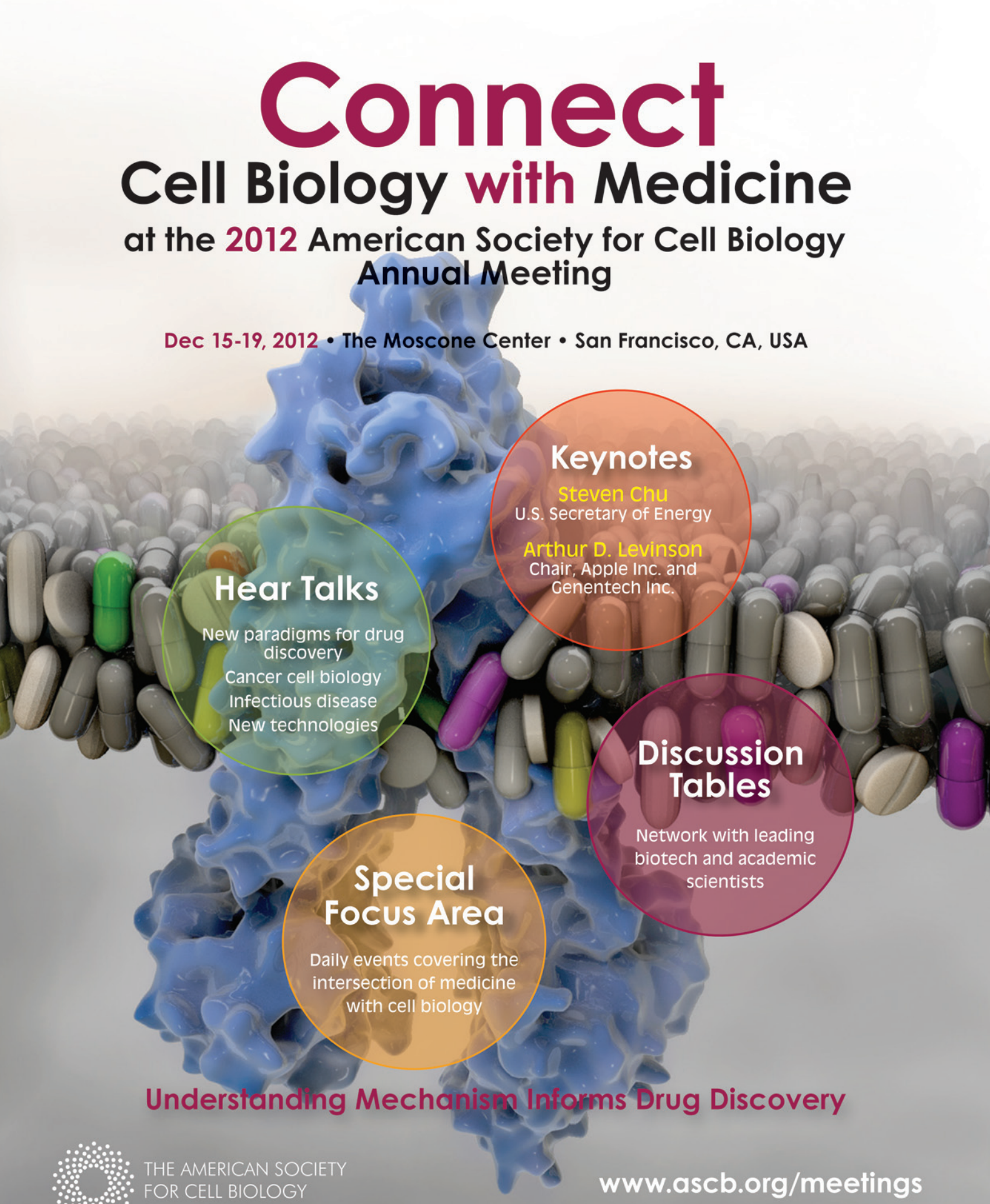

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U.S. Secretary of Energy

Arthur D. Levinson
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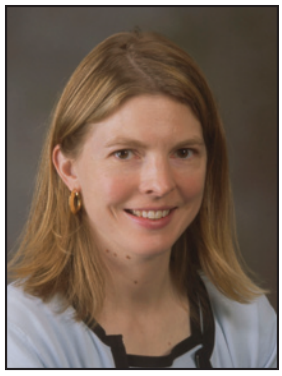
Background image created by Graham Johnson © for Andrew Ward for the journal *Clinical Pharmacology & Therapeutics*, January 14, 2010

So You're Interested in Teaching...

In the more than 12 years since I finished my doctoral degree, graduate students, postdocs, and even established faculty have asked me for advice on how to "switch" careers from science to science education. Here I describe my own journey and offer some advice for people interested in a career in science education.



Erin Dolan

Telling Interesting Stories

I was a typical high school student with an interest in biology—I didn't know of any career paths beyond becoming a physician or veterinarian. When I realized that pursuing either of those paths would require that I deal with bleeding and vomiting, I stuck with my plan to complete a BA in biology at Wellesley College but started looking for a new career direction. My professors were engaging teachers, telling interesting stories about how living things worked and encouraging students to address real biological problems. I wanted to be a professor! I was off to earn a PhD in neuroscience at the University of California, San Francisco (UCSF). Even though UCSF wouldn't offer me opportunities to teach undergraduates, I would be able to develop scientific communication skills through journal clubs, seminar series, and group discussions.

Advice: *There are many ways to develop teaching skills and demonstrate your ability to teach. Consider all of the venues for communicating about science beyond classroom teaching, such as seminar presentations or journal club discussions.*

At UCSF, I studied the molecular genetics of nervous system development in the model organism *Caenorhabditis elegans*. I also learned that the university was home to the Science & Health Education Partnership (SEP), the university's collaboration with the San Francisco Unified School District. SEP was founded in 1987 by Bruce Alberts, who had the foresight to ask teachers about their needs, interests, and priorities so that SEP programs could be designed responsively. By participating in SEP professional development and collaborating with San Francisco teachers, I learned that my role as a scientist was not to "fix" K–12 science education, but to share my science knowledge and skills and learn from teachers how to help students learn.

Advice: *Seek opportunities to work with experienced teachers and observe what they do to help students learn.*

Finding a Teaching Job

As I neared the end of my PhD studies, I applied for faculty positions at small colleges. On a whim, I also applied for a non–tenure track faculty position directing a high school outreach program at the University of Arizona (UA). I accepted the UA position because many of the scientists there were willing to think creatively about science education across the K–20+ continuum. For example, UA is one of the few universities in the country that grants tenure to faculty in its College of Science based on their scholarly accomplishments in science education (for details see reference 1, page 205: http://books.nap.edu/openbook.php?record_id=2310&page=205).[1] After three years at UA, I moved to a similar outreach position at Virginia Tech (VT).

All of my job applications included standard documents: cover letter, CV, teaching/outreach statement, and three reference letters. I expect that my applications stood out for three reasons.

First, I had demonstrated my interest in education over time. I wasn't applying for these positions because science hadn't "worked out" for me as a career path.

Second, when I wrote my teaching/outreach statement, I summarized my philosophy in a few sentences and dedicated the remainder of the statement to describing how I put my philosophy into action. I included specific examples of lessons or interactions with students and teachers.

Finally, I asked teachers and students to write letters on my behalf. My graduate advisor and dissertation committee members could certainly speak to my science knowledge and research skills, and their perspectives provided important insights that would appeal to other scientists. Yet they had limited knowledge of what I could do in a classroom.

Women in Cell Biology

By participating in SEP professional development and collaborating with San Francisco teachers, I learned that my role as a scientist was not to "fix" K–12 science education, but to share my science knowledge and skills and learn from teachers how to help students learn.

Advice: *Think about what search committees want to know, and craft your application accordingly. If the position involves teaching undergraduates or interacting with K–12 students, ask for references from people who have actually seen you do this and can describe your strengths using real examples.*

Learning from Others and from the Literature

After I was successful in getting grant funding for our education and outreach programs, VT converted my position to one that was eligible for tenure. I would be evaluated in terms of my research, teaching, and service accomplishments, but my research would be in the domain of science education rather than bench or field science. Like many biology education researchers, I had a background in experimental biology that had not prepared me to design or conduct theoretically informed social science research. I was fortunate enough to have several colleagues who had been successful in pursuing a similar path, and I regularly sought their advice and mentorship. I even sent emails to accomplished researchers in my fields of interest, and several were kind enough to respond.

Advice: *Don't make the journey alone. Seek out colleagues for feedback, support, and mentorship.*

I also scoured the education literature.[2] After developing some expertise in the language and discourse of science, it was difficult to start over in an entirely new discipline—and there wasn't even a PubMed for social sciences! I made a point of reading about how people learn[3] and about national visions of what science education should be (e.g., Project 2061, www.project2061.org; Vision and Change in Undergraduate Biology Education, http://visionandchange.org; and Scientific Foundations for Future Physicians, www.hhmi.org/grants/pdf/08-209_AAMC-HHMI_report.pdf).

Google Scholar (www.scholar.google.com) now makes finding science education research literature more straightforward. Also, a number of publications are available to support biologists in transitioning to careers that involve biology education scholarship.[4,5,6] The Biology Scholars Program (www.biologyscholars.org) offers professional development aimed at preparing scientists to assess and study teaching and learning. And the newly established Society for the Advancement of Biology Education Research (SABER; https://saber-biologyeducationresearch.wikispaces.com) offers networking opportunities for those with an interest in biology education research.

Advice: *Dedicate time to learning what is already known and seeking out professional development and networking opportunities. You will save time in the end.*

I am now an associate professor in the Department of Biochemistry and Molecular Biology at the University of Georgia, which is home to one of the only multifaculty biology education research groups in the country. My research involves the study of science research as a context for teaching and learning. My group studies scalable ways of engaging high school and undergraduate students in science research, graduate and postdoctoral mentoring of undergraduate researchers, and research as a mechanism for undergraduates to gain access to social capital within the scientific community. I teach introductory biology for nonmajors and biochemistry for life science majors. I am interested in how undergraduates develop expertise in biochemistry, and in using the results of my group's research to inform biology teaching and education programming.

When I first considered a career in biology, I never envisioned being where I am now!

Advice: *Keep an open mind—opportunities may arise where you least expect them.* ■

—Erin (Peckol) Dolan, University of Georgia

Like many biology education researchers, I had a background in experimental biology that had not prepared me to design or conduct theoretically informed social science research.

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This Is What They Stand For

The 2012 U.S. presidential campaign is in full swing, complete with detailed news coverage and wall-to-wall TV commercials. Most U.S. television viewers probably can't wait for the return of paper towel and blood pressure control ads in November.

Lost in the glare of the "they said–they said" political ads are the documents each major political party publishes that outline the policies and principles the party stands for.

In 2008, three of the major political parties—the Green Party, the Republican Party, and the Democratic Party—all took strong positions in support of increased federal funding for biomedical research, with the Democratic platform specifically calling for a doubling of federally funded basic research.

The 2012 party platforms include new policy priorities in response to a new political and policy environment but also retain some "old chestnuts" that are important to party loyalists. The Republican platform strongly supports federal investment in biomedical research and calls for a focus on research on rare diseases. The platform also repeats party support for adult, umbilical cord blood, and induced pluripotent stem cell research while opposing human cloning and embryonic stem cell research. The platform strongly supports federally funded research and development (R&D) and recognizes that "America's leadership in life sciences R&D and medical innovation is being threatened." Curiously, the platform places blame for the loss of that leadership at the feet of the U.S. Food and Drug Administration.

As in 2008, the Green Party platform is generally supportive of medical research, with a focus on specific diseases, including immune-related diseases and HIV. The Greens specifically call for a stop to animal experiments at the U.S. National Institutes of Health and they oppose "military and corporate control over the priorities and topics of university academic research."

The Democratic platform is the only document of the three that calls for a doubling of funding for major research agencies. The platform also calls for increased funds to prepare the next generation of scientists. It outlines ways to ensure that foreign students remain in the United States once they have completed their education. Science is a continuing thread throughout the Democratic platform but in most cases as one of the examples of what could be done if Democratic economic policies are enacted or what would be harmed if Republican policies are put in place. ■

—Kevin M. Wilson

You can read the individual party platforms at the following locations:

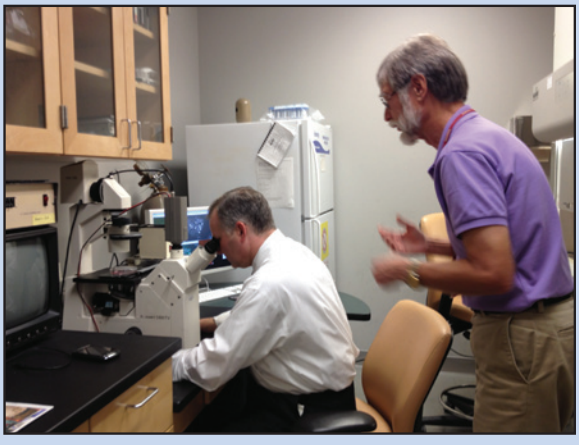
Green Party Platform
www.gp.org/committees/platform/2010

Republican Party Platform
www.gop.com/2012-republican-platform_home

Democratic Party Platform
www.democrats.org/democratic-national-platform

For information on elections, candidates, and issues and for voting information, go to http://votesmart.org. ■

Invite Your Representative to Tour Your Lab



Representative Tim Griffin (R-AR) examines colonies of HeLa cells transfected for a Golgi apparatus protein that is tagged with GFP during a tour of the lab of ASCB member Brian Storrie (right). For tips on inviting your representatives to tour your lab, go to www.ascb.org/files/policy/ADV_SCIENCE_Take_Sen-Rep_Work.pdf.

Cancer Bills Would Harm Research Funding

ASCB-Founded Group Forces Changes

Representative Anna Eshoo (D-CA) and Senator Sheldon Whitehouse (D-RI) have both introduced bills that would drastically change the way research funds are distributed by the U.S. National Institutes of Health (NIH).

The bills, the Pancreatic Cancer Initiative (PCI; H.R.733 and S.362), would direct the National Cancer Institute (NCI) to spend $887.8 million over five years specifically on pancreatic cancer research. The bills create the Interdisciplinary Pancreatic Cancer Coordinating Committee to set research priorities, define fiscal needs, and establish a peer review committee to review and prioritize grant applications. The committee would include only one NCI representative.

The Coalition for the Life Sciences (CLS), a coalition of six biomedical and research organizations founded by the ASCB, has written to Eshoo and Whitehouse highlighting two concerns it has with the legislation.

In his letter, Keith Yamamoto, longtime ASCB member and CLS Chair, told the sponsors of the bills that the separate authority given to the Coordinating Committee to prioritize and award grants "would bypass and disrupt the NIH-wide merit review system, which has, for over 65 years, identified and selected for support the most important biomedical discoveries in the world." This separate authority would also limit the ability of the NCI to define overall research priorities and coordinate research with other institutes.

The CLS letter also expressed concern that the PCI would "isolate, by virtue of the narrow scope and separate authority of the Coordinating Committee, pancreatic cancer from remarkable discoveries being made in other cancers and across the biomedical research landscape. This capacity for findings in one disease, or area of research, or experimental system, to inform others is especially crucial for the most complex, difficult problems, the ones that provide the fewest clues, such as pancreatic cancer."

The Pancreatic Cancer Action Network (PanCAN) has aggressively supported the PCI, including sending toe tags with the names of pancreatic cancer victims to members of Congress. However, in response to the arguments made by the CLS, PanCAN has proposed changes to the legislation to address CLS concerns.

As of press time, the details of a new version of the PCI are not clear. ■

—Kevin M. Wilson

CLS on Capitol Hill

The Coalition for the Life Sciences (CLS) hosted a Congressional Biomedical Research Caucus on September 12. Siddhartha Mukherjee from Columbia University presented a briefing entitled "The Emperor of All Maladies." Prior to his formal presentation, Mukherjee (left) met with three of the co-chairs of the Caucus, Reps. Rush Holt (D-NJ), Charlie Dent (R-PA), and Brian Bilbray (R-CA).

Political Advocacy by the ASCB and Its Partners

Many scientists take for granted that scientific societies such as ASCB are advocates for the well-being of their individual members and the health of science. However, advocacy is a relatively recent development that emerged over the past two decades. Science advocacy is essential in the United States, because science competes for taxpayer dollars with every other activity that the federal government supports. Advocacy is also important to ensure that lawmakers adopt sensible policies. Here I summarize how ASCB and its allies learned to fulfill this obligation, and I ask you to join the effort. Although the objective of these advocacy efforts is to influence political decisions through education and information, the efforts by scientific societies are entirely nonpartisan. Support from both major political parties is essential to meet our goals.

Thomas D. Pollard

How ASCB First Engaged in Advocacy

During the 1970s and '80s, biomedical scientists discussed federal funding and public policies that affected our science, but we tended to talk to ourselves, because we lacked effective ways to communicate with politicians or the outside world. ASCB got involved with advocacy when I was president in 1988. The Council decided to hire a staff member to work on public policy, and since then the Society has rarely questioned the value of its public policy efforts. Three fabulous staff members have worked for ASCB on public policy: Julie Taylor, followed by Tim Leshan for about seven years, and Kevin Wilson, who has been our director of public policy for more than a decade.

The original concept was to focus on public policy positions that influence science, but two circumstances in 1989 escalated the task to one of political advocacy. First, the number of R01 research grants from the U.S. National Institutes of Health (NIH) plateaued in 1989 and appeared to be going into decline. Second, the Association of American Medical Colleges (AAMC; representing U.S. medical schools) and Association of American Universities (AAU; representing major research universities) proposed higher rates of reimbursement for indirect costs on research grants. This change would have diverted a larger fraction of grant dollars to institutions. These threats drove ASCB and the American Society for Biochemistry and Molecular Biology (ASBMB) to issue a press release critical of the AAU–AAMC proposal. This action catalyzed our collaboration with other societies and, on this issue, put bench scientists at odds with their institutional leaders.

ASCB's Advocacy Collaborations

In 1990, ASCB and ASBMB decided to hire a professional to help us educate Congress. ASCB President-Elect Marc Kirschner and ASBMB President Daniel Lane organized the search. One candidate, retired Congressman Peter Kyros, stood out from established Washington lobbying firms with a proposal that our societies sponsor a Biomedical Research Caucus in Congress to give scientists the opportunity to explain their work and its value for society. The idea was that better information about biomedical research would help Congress justify strong appropriations for the NIH, the National Science Foundation, and other agencies that support fundamental scientific research.

The societies hired Kyros, and Kirschner organized a committee of the sponsoring societies to advise him. The founding members of this Joint Steering Committee for Public Policy (JSC) were the American Association of Anatomists, ASCB, ASBMB, and the Biophysical Society. The group changed its name to the more descriptive Coalition for the Life Sciences (CLS) in 2007. ASCB has continuously sponsored JSC/CLS, even as its membership changed over the years. Current members include ASBMB, ASCB, the American Society for Clinical Investigation, the Genetics Society of America, the Howard Hughes Medical Institute, and the Society for Neuroscience, collectively representing more than 60,000 scientists.

JSC/CLS has used three approaches to its advocacy for the biomedical research community. First, Kyros helped members of Congress organize the Congressional Biomedical Research Caucus (www.coalitionforlifesciences.org/cbrc), with the goal to increase interest in biomedical research among lawmakers. To date

During the 1970s and '80s, biomedical scientists discussed federal funding and public policies that affected our science, but we tended to talk to ourselves, because we lacked effective ways to communicate with politicians or the outside world.

The idea [behind the Biomedical Research Caucus] was that better information about biomedical research would help Congress justify strong appropriations for the NIH, the National Science Foundation, and other agencies that support fundamental scientific research.

the Caucus has sponsored talks on Capitol Hill by almost 300 biologists. Harold Varmus recruited the speakers for the Caucus meetings until he became NIH director in 1993. Then Mike Bishop took over as scientific advisor to the Caucus for almost 15 years. Over the years, the lawmakers leading the Caucus have served as advocates inside Congress for biomedical research by sending "Dear Colleague" letters on key issues to their fellow lawmakers.

Second, JSC started a grassroots network of scientists called the Congressional Liaison Committee (CLC) to serve as an advocate for the community by engaging with politicians on scientific issues. For the past seven years, Lynn Marquis has been doing a superb job as CLS director. She maintains the CLC membership list, organizes Congressional Biomedical Research Caucus events, coordinates activities of the member societies, organizes visits by groups of biologists to Capitol Hill, and represents the coalition as a member of influential policy groups in Washington, DC. About 3,000 biologists currently participate in CLC, which last year sent more than 6,000 letters to Congress. To date, CLS has sponsored visits to Washington by more than 200 biologists.

Third, JSC/CLS has taken public positions on important issues. The most important position statement was a pivotal opinion piece in 1993 by Bishop, Kirschner, and Varmus in *Science* magazine, proposing that the NIH budget be doubled in five years.[1] Remarkably, through hard work by many individuals, including Peter Kyros, and many organizations, this dream came true between 1998 and 2003, accounting for the current size of the NIH budget.

JSC/CLS has benefited from strong leadership. Kirschner was the energetic, inspirational founding chair. He established a board that included representatives from the participating societies and an equal number of at-large members, who have volunteered their time. Eric Lander, Harold Varmus, and Keith Yamamoto followed Kirschner as chair of the JSC/CLS Board. In 2009, President Obama named Lander and Varmus as co-chairs of the President's Council of Advisors on Science and Technology, so our modest volunteer coalition has given two of our leaders a voice at the White House.

ASCB has provided office space and support for JSC/CLS. JSC/CLS has benefited from the guidance of ASCB's exceptional executive directors, Dorothea Wilson, Elizabeth Marincola, and Joan Goldberg, all masters at making our volunteer organization work by "leading from behind." Marincola served as JSC executive director from 1991 until her departure from ASCB in 2005. Rather than take personal credit for the success of the Society, these leaders worked tirelessly to help volunteer members do their best and receive credit for work well done.

ASCB Public Policy Committee

In addition to working with other societies on advocacy through JSC/CLS, ASCB has had its own public policy effort through its Public Policy Committee, which focuses on issues of particular concern to ASCB members. One example is stem cells, where ASCB has been an advocate in the political and legal arenas for the value of stem cell research and sensible federal management of the work. The strength of this effort has been to ground arguments about policy on scientific knowledge about the challenges and potential benefits of stem cell technology. Kevin Wilson amplified our impact on the stem cell issue through his leadership of an influential Washington coalition of like-minded groups called the Coalition for the Advancement of Medical Research.

Obligations upon Individuals to Participate in Advocacy

Biologists are discouraged about the country's negative partisan mood, which has led (with the exception of the 2009 American Recovery and Reinvestment Act stimulus funding) to NIH budgets that have declined in purchasing power over the past decade—just when technical and conceptual breakthroughs have opened vast opportunities for biologists to contribute to society through discoveries and innovation. We face several problems: the worldwide economic recession, a shortage of champions for biomedical research in Congress, and an unsustainable model for funding biomedical research.

Individual scientists must consider how they can help their own cause. First, each ASCB member should participate in the Society's advocacy efforts for strong federal support of biomedical research. Join the CLC (www.coalitionforlifesciences.org) and respond to requests to inform your elected officials about the value of biomedical research. CLC has 3,000 members, but that is only 5% of the 60,000 people in the sponsoring societies. A second option is to join Project 50, the ASCB Public Policy Advocacy Team (www.ascb.org/

Project50). Given our dire circumstances, more members of our community must participate, and all scientists should encourage their U.S. representatives and senators to champion our cause.

Second, as proposed by Larry Goldstein,[2] all applicants for federal funds should write their members of Congress when a decision is made about funding a grant application. Goldstein calls this concept "Congress 111." If the grant is funded, one should thank Congress for appropriating the funds. If the application is not funded, one should explain the effort put into the application and how the lack of funds will affect research and employment in the laboratory.

I am by nature an optimistic person and proud that ASCB and its partners have made a difference through advocacy. However, we have not come close to my original goal that biologists be recognized publicly as strong advocates for federal funding and rational policies. Although I strongly oppose the positions of the National Rifle Association (NRA) on firearms in our society, one must be impressed with their influence in American politics. Given the superior value of our cause, if our advocacy were 1% as strong as that of the NRA, biomedical research would undoubtedly thrive. The unanswered question is, "Why are members of the NRA more concerned about regulations of firearms than biological scientists are about their financial and professional well-being?" ■

—Thomas D. Pollard, Yale University

Note

This is a condensed version of a Perspective that will appear in the November 1, 2012, issue of *Molecular Biology of the Cell.*

References

[1]Bishop JM, Kirschner M, Varmus H (1993). Science and the new administration. *Science* 259, 444–445.
[2]Goldstein LSB (2010). Unconventional allies: interdisciplinary approaches to science policy and funding. *Trends Cell Biol* 20, 695–698.

Interesting Uses of The Cell: An Image Library-CCDB

The Cell: An Image Library-CCDB (www.cellimagelibrary.org) continues to evolve. Some interesting new or anticipated uses for images in The Cell include the following:

- *The Scientist* chose an image from The Cell as its Image of the Day and tweeted it to its followers on August 2, 2012.
- The Cell was noted as one of the "Four Short Links" on August 9, 2012, on the O'Reilly Radar web page at http://radar.oreilly.com/2012/08/four-short-links-9-august-2012.html.
- A PhD student in Australia used images from The Cell in his research on denoising microscopy images.
- We continue to see examples where The Cell is used as an archive for supplemental information for journal articles.

Fluorescent image of the sporangium, an enclosure in which spores are formed, of the slime mold *Craterium minutum*. Honorable Mention, 2011 Olympus BioScapes Digital Imaging Competition.® By Dalibor Matýsek and the 2011 Olympus BioScapes Digital Imaging Competition.® www.cellimagelibrary.org/images/41635.

The Cell was developed by the ASCB under a Grand Opportunities grant from the National Institute of General Medical Sciences. A no-cost extension of that grant continued to support the Library until August 31, 2012. Now The Cell has moved to the National Center for Microscopy and Imaging Research Cell Centered Database (CCDB) for its day-to-day management. The ASCB will maintain a role in advertising the Library, soliciting images, serving as an advocate for the resource, and creating a community committed to The Cell-CCDB.

Join us on LinkedIn for more conversation on everything microscopy related at www.linkedin.com/groups?about=&gid=3733425. Also, don't forget to "like" us and share images on Facebook at www.facebook.com/CellImageLibrary.

Please help us spread the word and share with your colleagues what a great resource The Cell: An Image Library-CCDB is.

Have you used The Cell in interesting ways or in an article? Are you interested in submitting images or collaborating with The Cell-CCDB? Please let us know by sending an email to David Orloff at dorloff@ncmir.ucsd.edu. All documented usage helps support our efforts to obtain continued funding. ■

—David Orloff

ASCB Scientists Teach Cell Biology in Ghana

During the last two weeks of July 2012, seven U.S.-based cell biologists joined several faculty members from the Department of Biochemistry, Cell, and Molecular Biology of the University of Ghana–Legon to conduct an intensive, two-week workshop titled *Cell Biology of Infectious Pathogens*. This workshop represented the seventh in a series of ASCB-organized African workshops sponsored by the Carnegie Corporation of New York with additional support from the Porter Endowment.

Kirk W. Deitsch

This year's installment highlighted both protozoan and bacterial pathogens, focusing on malaria parasites and species of mycobacteria that cause tuberculosis and Buruli ulcer (a severe skin infection indigenous to tropical regions, including Ghana). Past courses have emphasized diverse topics, including trypanosomes (which cause African sleeping sickness), toxoplasma, and cancer. Although the workshops have highlighted different organisms, the overriding theme has always been an understanding of the basic concepts of cell biology that unify all aspects of modern biology.

Although the workshops [through the years] have highlighted different organisms, the overriding theme has always been an understanding of the basic concepts of cell biology that unify all aspects of modern biology.

Faculty

The American faculty who took part in the July workshop included several veterans from previous courses: Martha Cyert (Stanford University), Kirk Deitsch (Weill Cornell Medical College), J. Richard (Dick) McIntosh (University of Colorado), and Joy Power (University of Colorado). They were joined by Robert Husson (Children's Hospital and Harvard Medical School) and by two graduate student teaching assistants, Selasi Dankwa (Harvard School of Public Health) and Lena Pernas (Stanford University).

In addition to faculty from the United States, the workshop also relied heavily on faculty from the Department of Biochemistry, Cell, and Molecular Biology at the host institution. Lydia Mosi provided specific expertise on *Mycobacterium ulcerans* (the cause of Buruli ulcer), and Gordon Awandare served as a source of knowledge regarding the biology of malaria parasites. Awandare also handled the local arrangements for hosting the event, including all logistical and technical requirements. His preparations were extensive, and thanks to his efforts, the course was conducted in a smooth and efficient fashion.

Workshop Format

This year's workshop followed a basic structure developed over previous years. Morning lectures on important topics in cell biology included the following:

- The Organization of the Cell
- Cell Growth and Division
- Protein Folding and Assembly into Complexes
- Regulation of Transcription in Bacteria and Eukaryotes
- The Cytoskeleton
- Signaling in Bacteria and Eukaryotes

Additional lectures were given on more specific topics:

- Introduction to Tuberculosis
- Other Mycobacteria
- The Cell Biology of *Plasmodium*
- Model Organisms
- What Is Systems Biology?

These lectures were augmented by more informal "Tool Talks" that covered technical topics as diverse as basic tools for molecular biology (PCR and DNA sequencing) and various aspects of light, fluorescence, and electron microscopy. Workshop faculty encouraged students to participate actively in lectures and tool talks through questions and discussion, and this year's class proved to be a very active group. Sessions included frequent breaks to answer questions, clarify concepts, and diverge into informal discussions.

Beyond formal classroom lectures and seminars, the workshop also included small-group sessions organized as either journal clubs or tutorials intended to help students

design and present research proposals. For the journal clubs, faculty chose recent research articles to illustrate specific aspects of cell biology and experimental design. The journal clubs also offered examples of concepts delivered in preceding lectures. These sessions exposed students to critical reading of the primary literature, a skill that all young research scientists must develop.

Proposal-development sessions gave students a chance to get feedback on their personal research projects from the faculty and other students. Students learned to develop their ideas into hypothesis-driven research proposals, culminating in formal oral presentations delivered on the last day of the workshop in a student symposium. With strong encouragement from their peers, the energy and enthusiasm of the students for their research projects shined through, providing an enjoyable and rewarding conclusion to the intense two-week gathering.

Participant Diversity and Background

The 25 students at this year's workshop were particularly diverse, arriving from eight West African countries: Burkina Faso, Cameroon, Congo, Côte d'Ivoire, Ghana, Mali, Nigeria, and Senegal. All either were pursuing advanced degrees in biological sciences or were early-stage faculty members seeking insights into advanced cell biology concepts and techniques. Most were also researching infectious diseases endemic to West Africa, including malaria, Buruli ulcer, tuberculosis, and HIV. Several faculty with expertise in these topics gave students advice and information specific to their chosen field of research.

The Department of Biochemistry, Cell, and Molecular Biology at the University of Ghana–Legon has ongoing, externally funded research projects on both malaria and mycobacteria, thus providing additional expertise. Funds from the Carnegie Corporation and the Porter Endowment provided several pieces of laboratory equipment, which were left at the site of the workshop and will help to improve the research capacity of the host department.

Gordon Awandare (far right) mentors students during a journal club session at this year's ASCB-organized Cell Biology of Infectious Pathogens *workshop.*

Students conducting experiments during a laboratory practical exercise. Students had daily laboratory sessions that exposed them to many modern techniques in molecular and cell biology.

Beyond formal classroom lectures and seminars, the workshop also included small-group sessions organized as either journal clubs or tutorials intended to help students design and present research proposals.

Former Students and Career Pathways

In addition to the July 16–27 workshop, a reunion of students from past courses took place on Saturday, July 28. This gathering not only allowed former students to reconnect and interact but also enabled the organizing faculty to witness the career trajectories of former students.

The afternoon was devoted to giving students time to present research talks describing their current work, to describe how their careers had progressed since attending the workshop, and to share their immediate and long-term goals. The faculty were particularly gratified to hear many success stories, including those of students enrolled in doctoral programs throughout the world as well as those who continue to conduct research

at academic institutions in West Africa. All students expressed strong feelings regarding the benefits of attending the ASCB-sponsored workshops and mentioned how attending the course had influenced their careers. Their comments and suggestions were collected and will be incorporated into the design of future workshops held in West Africa and other parts of the world.

Course Organization and Financial Support

This year's course also witnessed a transition in the recent history of ASCB-sponsored workshops in Africa. The financial support for this workshop series was primarily from the Carnegie Corporation through a grant to ASCB, with Dick McIntosh as PI. Dick not only served as the primary organizer of the previous workshops but also guided the organization and scientific foundation of each course. Each year, he assembled the talented team of faculty who donated their time to make the courses a success. This year Dick stepped down as organizer and asked me to continue this outstanding scientific tradition. Everyone associated with the African education initiative extends thanks to Dick for his years of service.

The grant from the Carnegie Corporation is also now completed, so organizers of future workshops will seek new sources of financial support. Through the efforts of Judith Kimble, the incoming chair of the ASCB International Affairs Committee, funds to support next year's workshop have been obtained from the Howard Hughes Medical Institute. With the continued support of the ASCB membership and administration, the organizers anticipate continuing this series of educational endeavors well into the future. ■

—Kirk W. Deitsch, Weill Cornell Medical College

Did You Know…?

- The 2013 ASCB membership renewal reminder was sent out recently. If you did not see the email and aren't sure if you have renewed your membership for 2013, please contact us at ascbinfo@ascb.org today.
- Regular members can renew for two years or three years at special *discounted rates!*
- Renew now to ensure you don't miss an issue of the *ASCB Newsletter* or *Molecular Biology of the Cell.*
- You can also renew your subscriptions to the following journals at *discounted rates* when you renew your ASCB membership:
  - The latest volumes of *Annual Review of Cell & Developmental Biology*
  - *Biology of the Cell*
  - *Development*
  - *Journal of Cell Science*
  - *Journal of Experimental Biology*
- Renewal is easy—go to www.ascb.org and click on "Membership." ■

NIGMS Hosting Online Cell Day for Young Students

The National Institute of General Medical Sciences (NIGMS) is hosting an interactive Web chatroom about cells on Friday, November 2, 2012, from 10:00 am–3:00 pm EDT.

Called "Cell Day," the chat will be an online Q & A. Middle and high school students can post questions about cell biology or scientific careers, and NIGMS staff scientists will provide written answers. Members of the ASCB are welcome to log on and view the chatroom live or access the transcript, which will be available shortly after the chat is over.

More information about Cell Day, including how students and teachers can register to participate, is available at http://publications.nigms.nih.gov/cellday2012/index.html. The event is one of the ways that NIGMS is marking its 50th anniversary. For other anniversary-related activities, see www.nigms.nih.gov/About/50Anniversary. ■

Postdocs and Students! Apply to Organize ASCB-Funded Local Meetings in 2013

Want valuable experience in organizing a meeting? Interested in helping promote scientific exchange? ASCB is pleased to announce it will again fund young scientists to organize one-day local meetings. Such meetings must involve two or more institutions (within the United States or international), and topics can range from basic science to career development as long as there is clear relevance to the broadly defined field of cell biology. Applicants must be or become members of the ASCB.

The application process is simple. You will need to provide CVs of all organizers, a description of the meeting and sessions, and a proposed budget of up to $1,500. A larger budget that is suitably justified may be awarded in exceptional cases, depending on the availability of funds.

Application deadlines: Oct. 1, 2012, and April 1, 2013. Meetings may be held anytime within one year of funding approval. For more information, and to apply, visit www.ascb.org and click on "Meetings," then "Local Meetings." ■

—Thea Clarke

New ASCB Member Benefit: One-on-One CV Review

Need some help with a cover letter, CV, resume, statement of teaching philosophy, or other document for the next step in your career? Members of the ASCB Education and Women in Cell Biology Committees and ASCB members in industry are willing to help. Just fill out a short form (www.ascb.org), and we'll put you in touch with the right reviewer. Then the two of you can decide which digital collaboration tool to use (email, Google Docs, Skype, Wikispaces, etc.). You must be an ASCB member to take advantage of this new service. ■

—Thea Clarke

December 15–19, 2012 | Ron Vale, President | Tony Hyman, Program Chair

Annual Meeting Schedule By Day

M Cell Biology and Medicine

P Intersection of Cell Biology and the Physical Sciences

SATURDAY, DEC. 15

Special Interest Subgroups

12:30 pm–5:00 pm

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

M P **A. A Physical and Mechanical Perspective to Understanding the Emergence and Progression of Cancer**
Organizers: *Sean Hanlon*, National Cancer Institute/NIH; and *Nastaran Kuhn*, National Cancer Institute/NIH

M P **B. Aneuploidy: Causes and Consequences**
Organizer: *Daniela Cimini*, Virginia Tech

M **C. Axonal Transport: Mechanisms of Regulating Cargo Transport in Neuronal Development, Maintenance, and Disease**
Organizers: *Erika Holzbaur*, University of Pennsylvania; and *Sandya P. Koushika*, Tata Institute of Fundamental Research, Mumbai, India

D. Beyond Border Control: Nuclear Pores, the Nuclear Envelope, and the Rest of the Cell
Organizers: *Mary Dasso*, National Institute of Child Health and Human Development, NIH; and *Yuh Min Chook*, University of Texas Southwestern Medical Center at Dallas

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

M P **F. Connexins, Innexins, and Pannexins: Roles for Gap Junctions and Intercellular Channels in Cell Signaling**
Organizers: *Viviana Berthoud*, University of Chicago; and *Michael Koval*, Emory University

P **G. Counting Molecules in Cells: Insights into Structures and Mechanisms**
Organizers: *Vladimir Sirotkin*, SUNY Upstate Medical University; and *Jian-Qiu Wu*, The Ohio State University

P **H. Cytoskeletal Dynamics and Their Role in Cellular Form and Function**
Organizers: *Adriana Dawes*, The Ohio State University; and *Arpita Upadhyaya*, University of Maryland, College Park

I. Endocytosis and Signal Transduction
Organizers: *Guangpu Li*, University of Oklahoma Health Sciences Center; and *Sandra Schmid*, University of Texas Southwestern Medical Center at Dallas

M P **J. Entry, Exit, and Movement of Proteins within the Cilium: The Transition Zone (TZ) and Ciliary Tip**
Organizers: *Joel Rosenbaum*, Yale University; *Jeremy Reiter*, University of California, San Francisco; and *Maxence Nachury*, Stanford University

K. Evolutionary Cell Biology
Organizer: *Ursula Goodenough*, Washington University in St. Louis

M **L. Exosome and Microvesicles**
Organizers: *Stephen Gould*, Johns Hopkins University; and *Doug Taylor*, University of Louisville

P **M. Frontiers in Cytokinesis**
Organizers: *Julie Canman*, Columbia University; and *Amy Maddox*, University of Montreal

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

M P **O. The Cellular and Molecular Basis of Metastatic Disease**
Organizers: *Laura Machesky*, The Beatson Institute for Cancer Research, UK; and *Mark McNiven*, Mayo Clinic

P **Interdisciplinary Session**

12:30 pm–5:00 pm

Open Problems in Biology Requiring the Physical Sciences

Keynote Symposium

6:00 pm

Steven Chu, U.S. Secretary of Energy
Arthur D. Levinson, Chairman of Genentech, Inc., and Apple, Inc.

To Be Announced

The Science and Culture Behind Successful Cancer Therapeutic Development

Visit **www.ascb.org/meetings** to view full descriptions, speaker lists, and schedules for each subgroup session. Just click on "Program," then "Scientific Program."

THE AMERICAN SOCIETY FOR CELL BIOLOGY

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THE AMERICAN SOCIETY FOR CELL BIOLOGY

San Francisco, CA, USA

www.ascb.org/meetings

December 15–19, 2012 | Ron Vale, President | Tony Hyman, Program Chair

More details at www.ascb.org/meetings

SUNDAY, DEC. 16

Symposium

8:00 am–9:30 am

M P Cell Fate Decisions

Hans Clevers, Hubrecht Institute, The Netherlands
Tariq Enver, UCL Cancer Institute, University College, London, UK
Shinya Yamanaka, Center for iPS Cell Research and Application (CiRA), Kyoto University, Japan

Frontier Symposium

10:30 am–12:00 Noon

M Cell Biology and Medicine

Susan Lindquist, Whitehead Institute for Biomedical Research and Massachusetts Institute of Technology/HHMI
Anne O'Garra, MRC National Institute for Medical Research, Mill Hill, London, UK
Joseph Schlessinger, Yale University School of Medicine

M Panel Discussion

4:30 pm–6:35 pm

Sense and Reproducibility: The Problem of Translating Academic Discovery to Drug Discovery

Minisymposia

4:30 pm–6:35 pm

M Cancer Cell Biology

Cristina Lo Celso, Imperial College London, UK
Jeffrey Settleman, Genentech, Inc.

M P Cell Mechanics and Intermediate Filaments

Harald Herrmann, German Cancer Research Center, Heidelberg, Germany
Sarah Köster, Georg-August-University Göttingen, Germany

M Cell Migration and Motility

Marianne Bronner, California Institute of Technology
John Condeelis, Albert Einstein College of Medicine

Integrated Research and Teaching and Its Benefits to Faculty and Students

David Botstein, Princeton University
Karen Kalumuck, Exploratorium

P Molecular Motors

Vladimir Gelfand, Northwestern University Feinberg School of Medicine
Kathleen Trybus, University of Vermont, Burlington

P Regulation/Organization of the Genome

Daniela Rhodes, Nanyang Technological University, Singapore, and MRC Laboratory of Molecular Biology Cambridge, UK
David Sherratt, University of Oxford, UK

P Signal Transduction/Signaling Networks

Fumiyo Ikeda, Institute of Molecular Biotechnology, Austria
Galit Lahav, Harvard Medical School

M Stem Cells and Induced Pluripotency

Margaret Fuller, Stanford University School of Medicine
Marius Wernig, Stanford University School of Medicine

MONDAY, DEC. 17

Symposium

8:00 am–9:30 am

M New Model Systems for Cell Biology

Lawrence S.B. Goldstein, University of California, San Diego, School of Medicine
Nicole King, University of California, Berkeley
Alejandro Sánchez Alvarado, Stowers Institute/HHMI

Frontier Symposium

10:30 am–12:00 Noon

P Applying Physics, Engineering, Computation to Cell Biology

William Bialek, Princeton University
Margaret Gardel, University of Chicago
Rob Phillips, California Institute of Technology

Minisymposia

4:30 pm–6:35 pm

Autophagy, Self Renewal, and Cell Death

Ana Maria Cuervo, Albert Einstein College of Medicine
Feroz Papa, University of California, San Francisco

M Cell Biology of Neurodegeneration

Don Cleveland, University of California, San Diego
Morgan Sheng, Genentech, Inc.

P Cell Division

Daniel Gerlich, Institute of Molecular Biotechnology of the Austrian Academy of Sciences, Austria
Gohta Goshima, Nagoya University, Japan

M P Cell-Cell and Cell-Matrix Interactions

Joan Brugge, Harvard Medical School
Viola Vogel, ETH Zurich, Switzerland

M Cell Biology and Medicine

P Intersection of Cell Biology and the Physical Sciences

THE AMERICAN SOCIETY FOR CELL BIOLOGY

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2012 ANNUAL MEETING

THE AMERICAN SOCIETY FOR CELL BIOLOGY

San Francisco, CA, USA

www.ascb.org/meetings

December 15–19, 2012 | Ron Vale, President | Tony Hyman, Program Chair

Annual Meeting Schedule By Day

M Cell Biology and Medicine

P Intersection of Cell Biology and the Physical Sciences

Intracellular Sorting and Trafficking

Wanjin Hong, Institute of Molecular and Cell Biology, Singapore

Anne Spang, Biozentrum, University of Basel, Switzerland

P Microtubule Organization and Dynamics

Elizabeth C. Engle, Children's Hospital Boston/Harvard Medical School/HHMI

Luke Rice, University of Texas Southwestern Medical Center

M P Physical and Computational Tools for Cell Biology

Adam Cohen, Harvard University

Jan Liphardt, University of California, Berkeley

P Working Group: From Histograms to Animations: Effective Visualization Makes Complex Data Clear

Janet Iwasa, Harvard Medical School

Graham Johnson, University of California, San Francisco

Important Dates

Meeting registration, abstract submission, and hotel reservations are available at **www.ascb.org/meetings.**

October 10
Early Meeting Registration

October 17
Late Abstract Submission ends

Remember!

You don't have to present a poster to attend/register for the meeting. ■

TUESDAY, DEC. 18

Symposium

8:00 am–9:30 am

M Prokaryotic Communities

Bonnie Bassler, Princeton University/HHMI

Lora Hooper, University of Texas Southwestern Medical Center at Dallas/HHMI

Dianne K. Newman, California Institute of Technology/HHMI

Frontier Symposium

10:30 am–12:00 Noon

Synthetic Biology

Jay D. Keasling, University of California, Berkeley, and Lawrence Berkeley National Laboratory

Wendall Lim, University of California, San Francisco/HHMI

Laurie Zoloth, Northwestern University Feinberg School of Medicine and Weinberg College of Arts and Sciences

Minisymposia

4:30 pm–6:35 pm

M Cell Biology of Regeneration

Rachel Roberts-Galbraith, University of Illinois, Urbana-Champaign

Curtis Thorne, University of Texas Southwestern Medical Center at Dallas

Cell Biology of the Neuron

Wieland B. Huttner, Max Planck Institute of Molecular Cell Biology and Genetics, Germany

Fumio Matsuzaki, RIKEN Center for Developmental Biology, Kobe, Japan

P Cell Polarity

Yves Barral, ETH Zurich, Switzerland

Stephan Grill, Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

M Cellular Stress, Protein Folding, and Disease

Nancy M. Bonini, University of Pennsylvania/HHMI

Andy Dillin, Salk Institute for Biological Studies/HHMI

P Micro- and Coding RNA

Cliff Brangwynne, Princeton University

Tracy Johnson, University of California, San Diego

M Molecular Basis of Infectious Disease

Norma Andrews, University of Maryland, College Park

Pascale Cossart, Institut Pasteur, France

P Organelle Structure and Vesicle Formation

Elizabeth Conibear, University of British Columbia, Canada

Richard A. Kahn, Emory University School of Medicine

M Working Group: New Technologies in Proteomics

Pieter Dorrestein, University of California, San Diego

Steve Gygi, Harvard Medical School

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More details at www.ascb.org/meetings

WEDNESDAY, DEC. 19

Minisymposia

8:30 am–10:35 am

P **Actin Organization and Dynamics**
Enrique M. De La Cruz, Yale University
Ann Miller, University of Michigan, Ann Arbor

P **Cell Growth and Cell Cycle Control**
Sue Jaspersen, Stowers Institute for Medical Research
Jan Skotheim, Stanford University

P **Development and Morphogenesis**
Carl-Philipp Heisenberg, Institute of Science and Technology Austria, Austria
Ichiro Nishii, Temasek Life Sciences Laboratory, Singapore

M P **Membrane Organization and Lipid Dynamics**
Vytas A. Bankaitis, Texas A&M Health Science Center
Margarida Barroso, Albany Medical College

P **Nuclear Structure and Function**
Kerry Bloom, University of North Carolina, Chapel Hill
Anne Villeneuve, Stanford University School of Medicine

P **Prokaryotic Cell Biology**
Martin Thanbichler, Max Planck Institute for Terrestrial Microbiology
Ethan Garner, Harvard Medical School

P **Working Group: New Technologies in Imaging**
Catherine Galbraith, National Institute of Child Health and Human Development/NIH
Eva Nogales, University of California, Berkeley/HHMI

M **Working Group: New Technologies in Molecular Biology/Genetics**
L. Stirling Churchman, Harvard Medical School
A. Francis Stewart, BioInnovationsZentrum, TU Dresden, Germany

Symposium

11:00 am–12:00 Noon

Chromatin Dynamics
Barbara Meyer, University of California, Berkeley/HHMI
Kim Nasmyth, University of Oxford, UK

M Cell Biology and Medicine

P Intersection of Cell Biology and the Physical Sciences

New! 25% Discount for Friends

ASCB members can now offer up to three colleagues who are not ASCB members a 25% discount off the nonmember rate to attend the Annual Meeting. We will verify nonmember status and provide you with a special URL to pass to your colleagues to register at the discounted rate. All ASCB members who bring friends will be entered in a drawing to win an iPad. This is a great opportunity to invite colleagues from the biotech and physical sciences communities! Sign up at www.ascb.org/meetings. ■

Acknowledgement

The ASCB appreciates the creativity and hard work of the following members who put together an outstanding program for the 2012 ASCB Annual Meeting: *Tony Hyman* (Chair), *Ron Vale* (Co-Chair), *Christine Jacobs-Wagner*, *Juergen Knoblich*, *Ira Mellman*, *Samantha Reck-Peterson*, *Peter Sorger*, *Elizabeth Sztul*, *Julie Theriot*, *Fiona Watt*, and *Ginger Zakian*. ■

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Cell image created by Graham Johnson for Pollard T, Earnshaw W. *Cell Biology*, Elsevier ©2007

Elkhatib, Vromman Honored as Young French Cell Biologists


Nadia Elkhatib


François Vromman

The French Society for Cell Biology recently chose two young scientists to receive student travel awards. Nadia Elkhatib and François Vromman will receive expense-paid trips (compliments of the French Society for Cell Biology) and meeting registration (compliments of the ASCB) to attend the 2012 ASCB Annual Meeting in San Francisco. They both will present their posters and will report on their meeting experiences for the *ASCB Newsletter*.

Elkhatib is a PhD student at Institut Curie. Her abstract is entitled "Turnover of focal adhesions required for efficient cell migration is regulated by parallel actin bundles." Vromman is a PhD student at Institut Pasteur. His abstract is entitled "Chlamydia effectors target the host ESCRT system." ■

—Thea Clarke

ASCB TV! New This Year at the Annual Meeting

ASCB is pleased to announce a partnership with the global TV production company WebsEdge to launch a new program called ASCB TV at the 2012 Annual Meeting, December 15–19 in San Francisco. WebsEdge provides a unique, branded conference TV program that includes

- Journalist-led reports on key themes and issues
- Interviews with prominent cell biologists
- Up-to-date news from the meeting
- Reactions from meeting attendees
- Issue-based films from the field

Each daily program includes "thought leadership" pieces, five-minute sponsored film segments.

WebsEdge is reaching out to organizations and agencies to seek their involvement in creating these documentary-style films showcasing particular aspects of their programs and initiatives. Further information can be found at www.ascb.org/ascbtv.html. ■

—Trina Armstrong, Director of Meetings

Help Students by Being a Poster Judge at the ASCB Annual Meeting

The ASCB Minorities Affairs and Education Committees are looking for judges for the ASCB Poster Session Competition that will be held at the ASCB Annual Meeting on Saturday, December 15, 2012, from 3:30 pm–5:30 pm. There will be 60–80 posters, but each judge will be responsible for evaluating only two or three. Judging should take approximately one hour, so we ask that all judges arrive between 3:30 pm and 4:30 pm.

If you are interested in judging, please sign up at https://www.ascb.org/Meetings/Forms/MAC_Poster/mac.cfm. If you have any questions, please contact Deborah McCall at dmccall@ascb.org. ■

—Deborah McCall

Hotel Contest!

Attendees reserving a hotel room through onPeak at www.ascb.org/meetings by October 12, 2012, will automatically be entered in a drawing for a chance to win one of the following prizes, compliments of these hotels:

- **Hotel Nikko San Francisco:** Complimentary breakfast for two at the ANZU restaurant
- **Intercontinental San Francisco:** Dinner with a Star/Cocktail with a View package, which includes two cocktails at Top of the Mark (InterContinental Mark Hopkins) followed by dinner for two at Luce, winner of a coveted Michelin star rating (at InterContinental San Francisco)
- **San Francisco Marriott Marquis:** Two upgrades that will include concierge-level access at the hotel ■

Popular Science Discussion Tables Will Be Back in San Francisco

The Science Discussion Tables were crowded in Denver last year.

Students, postdocs, and PIs: Don't miss these special networking opportunities with some of ASCB's most distinguished senior scientists. Topics will cover all of the hottest cell biology areas as well as the interfaces between physics and cell biology and medicine and cell biology. See the full list of scientists, topics, and times at www.ascb.org/meetings. Click on "Program," then "Scientific Program." ■

Request for Volunteers—Membership Committee

The ASCB Membership Committee is looking for volunteers to fill three openings on the Committee roster beginning in 2013. The Membership Committee is charged with assessing membership benefits and recommending policies related to membership retention and growth. Committee members must be approved by Council.

If you're interested, please write to ascbinfo@ascb.org and note how long you've been an ASCB member and why you're interested in serving the ASCB. The ASCB seeks diversity on its committees and welcomes participation from members at all career levels, from all geographic and institutional settings, and with diverse specialties.

Thank you for considering committee service! ■

News from iBioSeminars and iBioMagazine

New iBioSeminar

Xiaowei Zhuang, Harvard University/Howard Hughes Medical Institute
Fluorescence Imaging at Nanoscale
Zhuang describes the recent development of subdiffraction limit, or superresolution, microscopy techniques, such as stochastic optical resolution microscopy (STORM), which allows scientists to obtain beautiful images of individual labeled proteins in live cells. Zhuang gives two examples of how her lab has used STORM: first to study the chromosome organization of *Escherichia coli* and, second, to determine the molecular architecture of a synapse. Available at www.ibioseminars.org.

iBioMagazine Issue 8 Released

iBioMagazine Issue 8 is now available at www.ibiomagazine.org. This issue features talks about discoveries, bioethics, international science, outreach, and careers.

A. Malcolm Campbell, Davidson College
Life at a Primarily Undergraduate Institution (PUI)
Campbell tells us about his experiences as a professor at a PUI. He has developed course curricula, written a textbook, and published papers and together with his students he conducts genomic and synthetic biology research.

Janet Woodcock, The Food and Drug Administration
Working at the Food and Drug Administration
Woodcock describes her experience working at the Food and Drug Administration and its key role in drug development.

Julie Huber, Marine Biological Laboratory
Microbial Oceanography
Being a microbial oceanographer allows Huber to combine traditional lab research with journeys to the bottom of the sea.

Satyajit Mayor, National Centre for Biological Sciences
Biological Sciences in India
Biological sciences are alive and well in India, and Mayor encourages involvement.

Howard Schachman, University of California, Berkeley
Openness in Academia
Schachman asks if openness and sharing in academia can be preserved.

J. Michael Bishop, University of California, San Francisco
How I Became a Scientist
Following his own interests and ideas led Bishop to a successful life in science.

Thomas Reese, National Institutes of Health
Visualizing Synaptic Signaling
Technological innovations let Reese and colleagues visualize synapses in action.

Cristián Hernández-Cuevas, RedBionova.com
Building *RedCiencia*
Hernández-Cuevas is creating an online global network for Spanish-speaking scientists.

Shahid Khan, The Molecular Biology Consortium and Lahore University of Management Sciences
Science in Pakistan
Khan describes, from firsthand experience, the challenges and excitement of science in today's Pakistan.

Marine Biological Laboratory Visiting Faculty
Summer at the Marine Biological Laboratory
Scientists flock to the Marine Biological Laboratory in Woods Hole, MA, each summer. We ask them why. ■

—Sarah Goodwin, iBioSeminars Director

HIGHLIGHTS from *MBoC*

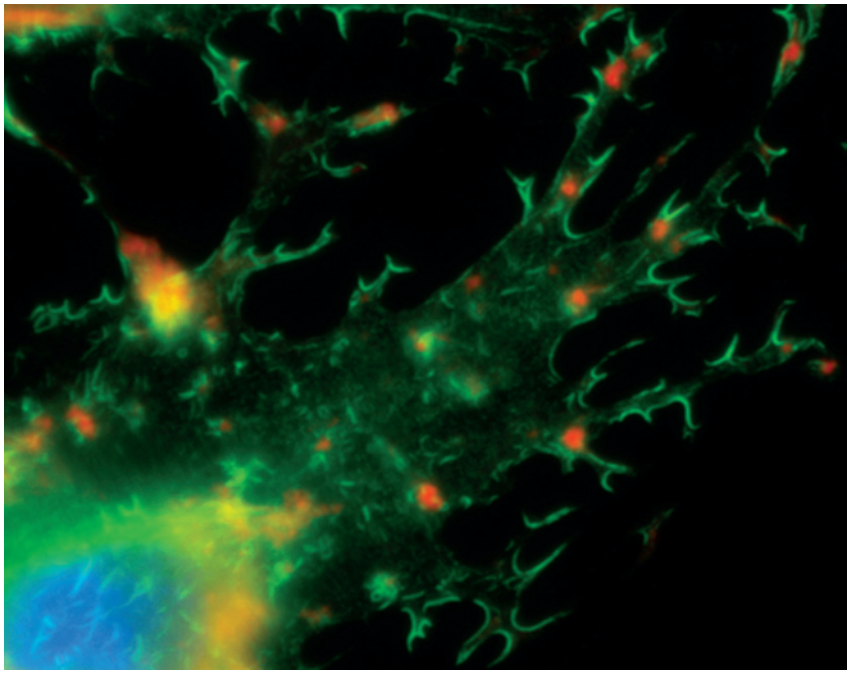
The Editorial Board of *Molecular Biology of the Cell* has highlighted the following articles from the September 2012 issues. From among the many fine articles in the journal, the Board selects for these Highlights articles that are of broad interest and significantly advance knowledge or provide new concepts or approaches that extend our understanding.

The yeast Hsp70 Ssa1 is a sensor for activation of the heat shock response by thiol-reactive compounds
Y. Wang, P. A. Gibney, J. D. West, and K. A. Morano

Diverse thiol-reactive compounds are found to activate the Hsf1-regulated heat shock response in *Saccharomyces cerevisiae*. The highly conserved cytosolic Hsp70 protein chaperone is shown to act as a sensor for these molecules through a pair of reactive cysteine residues in the nucleotide-binding domain.
Mol. Biol. Cell 23 (17), 3290–3298

Structure and functional studies of N-terminal Cx43 mutants linked to oculodentodigital dysplasia
Q. Shao, Q. Liu, R. Lorentz, X.-Q. Gong, D. Bai, G. S. Shaw, and D. W. Laird

Mutations in the connexin-43 gap junction protein cause the developmental disease known as oculodentodigital dysplasia. Structure and function approaches are used to demonstrate that the nature of the missense mutation in the amino-terminal domain of connexin-43 governs the mechanism that leads to loss of connexin-43 function.
Mol. Biol. Cell 23 (17), 3312–3321



Septins are small GTPases that localize in a filamentous pattern in cells. Treatment of cultured human podocytes with cytochalasin D disrupts the filamentous organization of the actin cytoskeleton, as visualized by phalloidin staining (red). In cytochalasin D–treated podocytes the normally linear septin 7 filaments (green) curl and form ring-like structures, indicating that septin 7 localization depends on an intact actin cytoskeleton. The nucleus is visualized with DAPI (blue). Septin 7 may participate in the regulation of glucose transport in podocytes. See Mol. Biol. Cell 23, 3370–3379. (Image: Anita A. Wasik, *University of Helsinki, Finland).*

Cdk1-dependent control of membrane-trafficking dynamics
D. McCusker, A. Royou, C. Velours, and D. Kellogg

Cyclin-dependent kinase 1 (Cdk1) is required for initiation and maintenance of polarized cell growth in budding yeast. Cdk1 activates Rho-family GTPases, which trigger polarization of the actin cytoskeleton for delivery of membrane to growth sites. It is found that Cdk1's function in polarized growth extends beyond that of actin organization.
Mol. Biol. Cell 23 (17), 3336–3347

Cell cycle–regulated cortical dynein/dynactin promotes symmetric cell division by differential pole motion in anaphase
E. S. Collins, S. K. Balchand, J. L. Faraci, P. Wadsworth, and W.-L. Lee

Evidence is presented for dynamic cortical association of dynein and dynactin in mammalian cells and its regulation by Plk1, astral microtubules, and the cell cycle. The asymmetric spindle positioning in LLC-Pk1 cells and its correction by dynein and dynactin provide a new system for analysis of spindle position and symmetric cell division.
Mol. Biol. Cell 23 (17), 3380–3390

Association of Lis1 with outer arm dynein is modulated in response to alterations in flagellar motility
P. Rompolas, R. S. Patel-King, and S. M. King

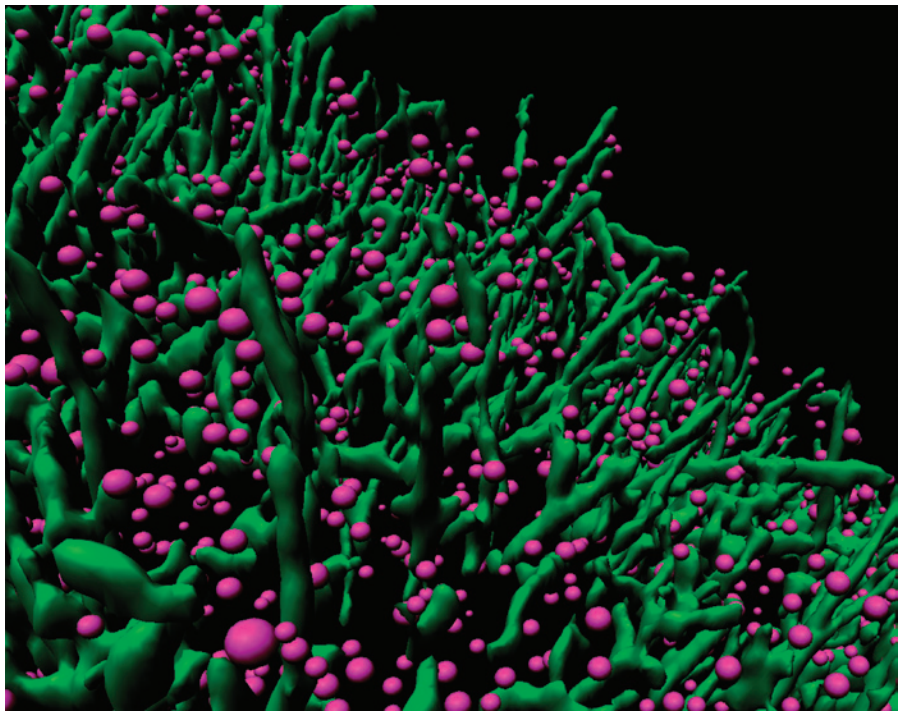
The cytoplasmic dynein regulatory factor Lis1, which induces a persistent tight binding to microtubules and allows for transport of cargoes under high-load conditions, is also present in motile cilia/flagella. Lis1 levels in cilia/flagella are dynamically modulated in response to imposed alterations in beat parameters.
Mol. Biol. Cell 23 (18), 3554–3565

AP-3 regulates PAR1 ubiquitin-independent MVB/lysosomal sorting via an ALIX-mediated pathway
M. R. Dores, M. M. Paing, H. Lin, W. A. Montagne, A. Marchese, and J. Trejo

A GPCR ubiquitin-independent MVB/lysosomal sorting pathway is regulated by the adaptor protein complex-3 (AP-3) and ALIX, a noncanonical ESCRT component. AP-3 binds to a PAR1 C-tail–localized, tyrosine-based motif and mediates PAR1 lysosomal degradation. AP-3 also facilitates PAR1 interaction with ALIX, suggesting that AP-3 functions before PAR1 engagement of ALIX and MVB/lysosomal sorting.
Mol. Biol. Cell 23 (18), 3612–3623

Sialylation of N-linked glycans mediates apical delivery of endolyn in MDCK cells via a galectin-9–dependent mechanism
D. Mo, S. A. Costa, G. Ihrke, R. T. Youker, N. Pastor-Soler, R. P. Hughey, and O. A. Weisz

The sialomucin endolyn is implicated in adhesion, migration, and differentiation of various cell types. Apical delivery of endolyn requires recognition of sialic acids on its N-glycans possibly (or likely) mediated by galectin-9.
Mol. Biol. Cell 23 (18), 3636–3646



Superresolution micrograph of the surface of a sea urchin embryo 60 minutes after fertilization. The multidrug transporter ABCB1a (magenta) has moved to the tips of the microvilli (green, actin) thereby establishing efflux activity. See Mol. Biol. Cell 23, 3663–3672. (Image: Kristen Whalen, *Scripps Institution of Oceanography)*

Actin polymerization controls the activation of multidrug efflux at fertilization by translocation and fine-scale positioning of ABCB1 on microvilli
K. Whalen, A. M. Reitzel, and A. Hamdoun
Multidrug efflux is activated at fertilization in sea urchin eggs, but it is unclear how cortical reorganization initiates transport. Using structured illumination microscopy, we found that the multidrug transporter ABCB1a translocates along polymerizing actin filaments to the microvillar tips. This short-range (micrometer scale) translocation is necessary for up-regulation of efflux activity.
Mol. Biol. Cell 23 (18), 3663–3672

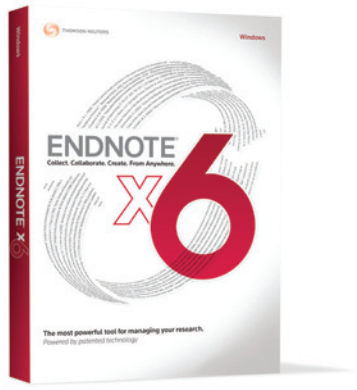
Structure and functional studies of N-terminal Cx43 mutants linked to oculodentodigital dysplasia
D. Xu, N. V. Grishin, and Y. M. Chook

There are 221 experimentally validated, leucine-rich nuclear export signal (NES)–containing CRM1 cargoes in a database named NESdb. Entries in NESdb are annotated with sequence and structural information on both NES and cargo proteins, as well as with experimental evidence on NES-mapping and CRM1-mediated nuclear export.
Mol. Biol. Cell 23 (18), 3673–3676

ECM stiffness primes the TGFβ pathway to promote chondrocyte differentiation
J. L. Allen, M. E. Cooke, and T. Alliston

ECM stiffness enhances chondrocyte differentiation by priming cells for a potent response to TGFβ. ECM stiffness modifies the TGFβ pathway at multiple levels, including stiffness-sensitive induction of TGFβ1 expression, Smad3 phosphorylation, and synergistic activation of chondrocyte differentiation, by combining TGFβ and an inductive ECM stiffness.
Mol. Biol. Cell 23 (18), 3731–3742 ■

MILLIONS OF STUDENTS AND RESEARCHERS USE ENDNOTE TO MANAGE THEIR REFERENCES AND CREATE BIBLIOGRAPHIES. WHY NOT YOU?



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Should PhDs Become K–12 Teachers?

To the Editor:
I am the director of a National Institutes of Health (NIH)–sponsored Institutional Research and Academic Career Development Award (IRACDA) fellowship program that provides postdoctoral fellows with training and experiences in research and pedagogy. I have been actively involved in education and research scholarship and have a number of thoughts in response to Ron Vale's provocative column about PhDs in K–12 classrooms (President's Column, August 2012 ASCB Newsletter).

1) The NIH Science Education Partnership Award (SEPA) program, funded by the director's office, can provide graduate fellowships for teaching and partnerships with K–12 classrooms with a clinical translational science emphasis.

2) For years, the National Science Foundation (NSF) offered the GK–12 program that had an emphasis similar to that of SEPA except in science, technology, engineering, and mathematics (STEM) disciplines, but it was phased out just over a year ago. Some of the fellows in my IRACDA program gained high school teaching experience through the GK–12 program. Perhaps a call to the National Science Foundation for reinstating the GK–12 program with a targeted focus could be helpful.

3) At the most recent national IRACDA conference I advocated collaboration between SEPA and IRACDA to extend such experiences to postdoctoral fellows. My suggestion was based on a listing of "alternative career tracks" presented by one of the conference speakers that included K–12 teaching. The twist I would add is building a bridge that addresses the salary gap and how to extend the ripple effect of incorporating highly trained PhDs at the K–12 level: All schools are being asked to meet the National Core Standards and to incorporate critical thinking skills and hands-on learning. Therefore perhaps there needs to be a track built whereby PhD-level scientists can help nucleate such activities across the science curriculum at a school or even a district. PhDs with training in pedagogy could help build curricular materials, contribute to professional development, and more. Thus it could be possible that instead of having only lone examples of PhD scientists in individual classrooms, they would be visible throughout the K–12 system, including in classroom, leadership, and administration roles. This could be a way to build teams of educators that work collaboratively, as is generally the case in science.

4) Could the Teach for America model be improved and expanded? In this model undergraduates in the STEM disciplines are encouraged to become K–12 teachers for a minimum of two years. While this program is hugely competitive, one of the downsides that has come out is that the undergraduates may have lots of STEM knowledge but don't have any training in teaching and pedagogy and don't have to be licensed. Hence they often burn out and do not become stable participants in the K–12 teaching field. Also, because Teach for America often pays its participants more than bona fide, fully trained, licensed teachers, the appointment of Teach for America fellows has often created ill will rather than bring the community together. However, in principle, if some of these issues could be dealt with perhaps such an organization would be useful in helping to place PhD scientists in communities and schools with greatest need.

5) No matter what mechanisms are used, it will be important to approach this with humility and seek the input of K–12 schools when building a program that aims to incorporate PhD scientists. It is important to create a sense of unity instead of one where the PhDs might be misperceived as threats or as failures.

—Angela Wandinger-Ness, University of New Mexico Health Sciences Center

All schools are being asked to meet the National Core Standards and to incorporate critical thinking skills and hands-on learning. Therefore perhaps there needs to be a track built whereby PhD-level scientists can help nucleate such activities across the science curriculum at a school or even a district.

To the Editor:
Ron Vale's President's Column on PhDs as K–12 teachers was forwarded to me by science education colleagues in Seattle, and it interested me because I have secondary teaching certification in both Indiana and Washington state and earned my PhD at the University of Washington. After completing my PhD in 2008, I taught for two years at a high school in Kent, WA, and 1.5 years at

I wanted to be the best biology teacher I could be, and I felt that doing research first hand was the best way to do that.

another high school in Seattle, WA. I am currently working in science outreach in the Department of Genome Sciences, University of Washington.

I knew I wanted to be a high school science teacher since I was a sophomore in high school. This career aspiration was the result of having outstanding high school biology teachers and a history of teaching in my family. However, I haven't always felt supported in my decision to teach high school and often got questions like, "If you have a PhD, why are you teaching high school?" With that said, many students and parents appreciated the fact that I had research experience that enabled me to provide opportunities for students that they would not otherwise have gotten. This is the reason I didn't stop with a bachelor's degree in biology and biology education (Purdue University) and pursued a PhD in biology. I wanted to be the best biology teacher I could be, and I felt that doing research first hand was the best way to do that.

I think that having a program for PhDs interested in high school teaching would be excellent! I also like the idea of building a community of PhDs teaching at the high school level. This support system could be local, regional, or even national. Considering that 50% of teachers leave the profession within the first five years, whether they have a PhD or not, support needs to be long term. This support is imperative, because there are barriers to getting highly qualified people into high school teaching, but there are probably even more barriers to keeping highly qualified people in teaching.

—Jeff Shaver, University of Washington

To the Editor:
Bravo to Ron Vale for his superb column on PhDs as K–12 teachers. It's one of the finest discussions of this issue ever.

I would like to add one important supplement to Ron's superb commentary:

We should also strongly encourage folks with research master's degrees to go into K–12 teaching. This would play a key role in helping to expand the role of our colleagues with research experiences in K–12 teaching. It might be much easier to encourage folks with research master's degrees to enter K–12 teaching on a large scale. In this way our kids will be trained by folks who really know science, as beautifully stated in Ron's outstanding column.

Europe is way ahead of the United States on this front (see my commentary at http://comments.sciencemag.org/content/10.1126/science.1218387). This could change the face of science education in the United States.

—Steven B. Oppenheimer, California State University, Northridge

To the Editor:
I appreciate the concern for high-school teaching expressed in Ron Vale's President's Column in the August 2012 *ASCB Newsletter.* In it he calls for a "large government or philanthropic organization...[to establish] a first-of-kind program to facilitate the transition of PhD graduates into HS teaching." In fact, such a program exists.

The Robert Noyce Teacher Scholarship program, administered by the Division of Undergraduate Education in the Directorate of Education and Human Resources at the National Science Foundation, was established in 2002 by act of Congress. It funds several types of pathways from science, technology, engineering, and mathematics (STEM) degrees into the primary- and secondary-school teaching profession, including scholarships for undergraduate STEM majors to earn certification and scholarships for STEM professionals to earn either certification or a master's degree in teaching. It is the latter pathways that most closely address the need expressed in the column.

Grants are awarded to institutions of higher education throughout the country in which collaborations between STEM departments and departments or schools of education have resulted in exemplary teacher-preparation programs. The granted funds are used to offer generous scholarships to STEM professionals (defined as anyone already holding a STEM degree at whatever level) to become trained in the appropriate pedagogy and classroom management strategies to bring

excellent STEM education to students, particularly those in high-need schools.

For further information I refer you to a feature I wrote for the current issue of CBE—Life Sciences Education.[1] A complete description of the program, including scholarships for undergraduates and programs to develop master teachers, can be found at www.nsfnoyce.org.

Thanks to Ron for using his "bully pulpit" to encourage ASCB members' interest in all facets of education. ■

—Mary Lee S. Ledbetter, College of the Holy Cross (emerita) (formerly on assignment to the National Science Foundation)

Reference

[1]Ledbetter MLS (2012). Teacher preparation: one key to unlocking the gate to STEM literacy. *CBE Life Sci Educ* 11, 216–220. www.lifescied.org/content/11/3/216.full.

GRANTS & OPPORTUNITIES

A list of current grant and other opportunities can be found at www.ascb.org/GandO.html. The following items were added since the last issue of the *Newsletter*:

National Institutes of Health Common Fund Extracellular RNA Communication (ERC) Program. Five funding opportunities have been announced through the ERC program, which aims to discover fundamental biological principles about the mechanisms of extracellular RNA (exRNA) generation, secretion, and transport; to identify and develop a catalogue of exRNA in normal human body fluids; and to investigate the potential for using exRNAs as therapeutic molecules or biomarkers of disease. Letters of intent due: October 12, 2012. Applications due: November 13, 2012. http://commonfund.nih.gov/exrna.

New Innovator (DP2) Awards. This initiative by the National Institutes of Health supports a small number of early-stage investigators of exceptional creativity who propose bold and highly innovative new research approaches that have the potential to produce a major impact on broad, important problems in biomedical and behavioral research. Applications due: October 17, 2012. http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-12-016.html. ■

Members in the News

Martin Chalfie

Roger Tsien

Martin Chalfie, of Columbia University, an ASCB member since 1980, and **Roger Tsien**, of the University of California, San Francisco, an ASCB member since 1987, both of whom received the E.B. Wilson Medal and the Nobel Prize for their studies in 2008, were recently presented the "Golden Goose Award." The Award was created and jointly launched by a coalition of organizations that believe that federally funded basic scientific research is the cornerstone of American innovation and essential to our economic growth, health, global competitiveness, and national security.

Are You Getting *ASCB Pathways*?

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

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*:

October 11, 2012. New York, NY
New York Academy of Sciences: Dynamics of Immune Cell Communication Networks. www.nyas.org/ImmuneCells.

April 3, 2013. New Haven, CT
StemCONN 2013: Realizing the Promise. www.stemconn.org.

May 17–22, 2013. Philadelphia, PA
2013 American Thoracic Society International Conference. http://conference.thoracic.org.

May 26–30, 2013. Paris, France
18th International Congress of Cytology. www.cytologyparis2013.com.

June 23-28, 2013. Niagara Falls, NY
FASEB Conference: Biology of Cilia & Flagella. www.faseb.org/src/Home.aspx.

ASCB Annual Meetings

December 15–19, 2012. San Francisco

December 14–18, 2013. New Orleans

December 6–10, 2014. Philadelphia

December 12–16, 2015. San Diego

December 3–7, 2016. San Francisco

In MEMORIAM

Daniel S. Friend

Daniel S. Friend, who died at age 78 in August, earned his MD from the State University of New York Downstate Medical Center but fell under the spell of cell biology during postdoctoral fellowships with Don W. Fawcett at Harvard Medical School (HMS) and Marilyn Farquhar at the University of California, San Francisco (UCSF). Friend was among the ASCB's earliest members, joining in 1964. In his long research career in the Pathology Department at UCSF Medical Center and then in Pathology and Immunology at Brigham and Women's Hospital, HMS, Friend collaborated widely. He brought his electron and light microscopy skills to the study of membrane domains, liposomes, sperm maturation, and mast cells before retiring in 2006.

The ASCB expresses its condolences to his family, friends, and colleagues. ■

ASCB 2012 Member Gifts

The ASCB is grateful to the following donors* whose contributions support Society activities:

Gold ($1,000 and up)

Don Cleveland
Anne Cress
Susan Gerbi
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William Saxton
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Kathleen Green
Daniel Lew
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Keith Yamamoto

*As of Sept 17, 2012. Please note that both Half-Century donations and other Member Gifts have been merged into one list.

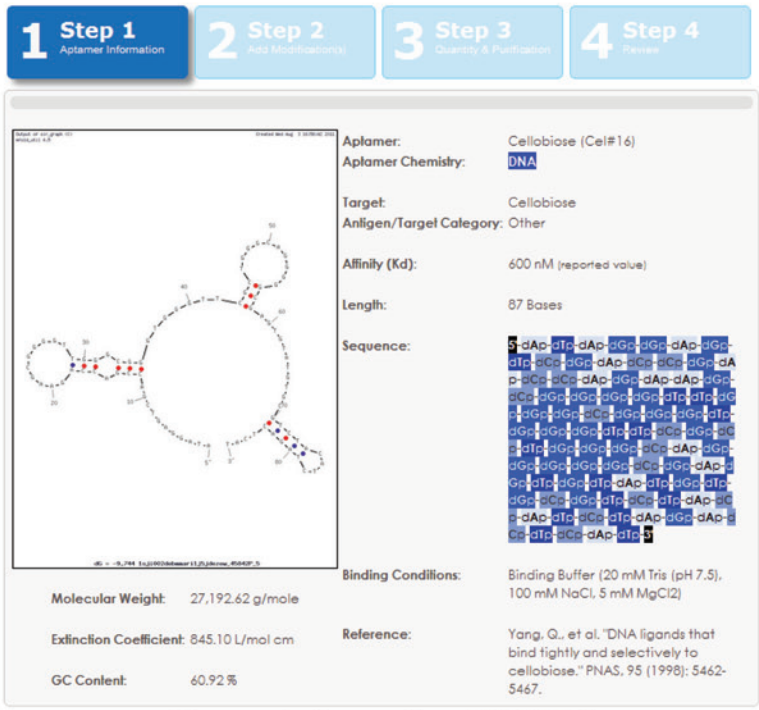
ASCB Member Comments

We welcome your comments and suggestions at **ascbinfo@ascb.org** ■

"Forget Antibodies. Use Aptamers." ™

What is an Aptamer?

- Aptamers are stable, single-stranded RNA, DNA, or peptide oligos capable of binding to a target antigen with high affinity and specificity.
- Aptamers have been developed against a wide variety of targets including small organics, peptides, proteins, tissues, and cells.
- **For Example:** Aptamers have been generated that exhibit greater than 10,000-fold binding affinity for theophylline over caffeine, which differ from one another in structure by only a single methyl group.



[*Easy ordering, online* **CATALOG**]

Benefits of Using Aptamer Oligos

- Manufacturing costs and time are all lower compared to that of monoclonal antibody production.
- Once the aptamer sequence is known, the aptamer can be produced on the fly using an oligo synthesizer to meet one's immediate needs.
- Easy to label with reporters, enzymes, or fluorescent tags.

Currently Available Aptamers

- Abrin Toxin
- Adenine
- Adenosine/ATP
- Amyloid Peptide Beta
- ATP
- Bovine Thrombin
- cAMP
- CCRF-CEM
- Cellobiose
- Cholic Acid
- Colicin E3
- Cyanocobalamin
- Dopamine
- D-Tryptophan
- E. Coli 5S RNA
- Ethanolamine
- GnRH
- Hematoporphyrin
- Hepatitis C Virus RdRp
- HER3
- HGF
- HIV-1 RT
- Human Interleukin-17A/F
- IgE
- IgG
- Insulin Receptor Antibody
- Interferon-γ
- Kanamycin B
- L-Arginine
- L-Citrulline
- L-Histidine
- L-Isoleucine
- L-Tyrosinamide
- MCP-1
- Methylenedianiline
- Moenomycin A
- Nickel
- ppERK2/ERK2
- Protein Kinase C-d
- PrP Fibrils
- PSMA Aptamer
- Ricin Toxin
- RNase H1
- Sialyllactose
- Sialyl Lewis X
- Streptavidin
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An *MBoC* 20th Anniversary Favorite

In celebration of the first 20 years of Molecular Biology of the Cell (MBoC)*, members of the Editorial Board, members of the ASCB Council, and others comment on their favorite* MBoC *papers from the past two decades.*

Here ***Sandra L. Schmid****, University of Texas Southwestern Medical Center, comments on:*

Tyska MJ, Mackey AT, Huang J-D, Copeland NG, Jenkins NA, Mooseker MS (2005). Myosin-1a is critical for normal brush border structure and composition. Mol. Biol. Cell 16:2443–2457

Figure 2B of the paper by Tyska *et al.* shows two Eppendorf tubes containing mouse feces that illustrate the unexpectedly normal functionality of the intestinal tract of knockout mice lacking brush border myosin (myosin-1a). The authors used a variety of cell biological and biochemical methods to identify profound structural defects in brush border microvilli. However, their resilient subject animal compensated structurally by redistributing intermediate filaments and the normally basolateral myosin-1c to the apical microvilli, and functionally by up-regulating normal mucosal repair mechanisms. This paper illustrates the perseverance and ingenuity of both the scientist and the subject.

This and other MBoC *20th Anniversary Favorites will appear in the journal throughout 2012.* ■

DEAR Labby

The Ethos of the Storyline

Dear Labby,

I am a fourth-year graduate student and am writing up my first paper. It had been going well, but my adviser has recently taken a strong position on how the project should be laid out in the introduction. She wants to portray the research as having logically ensued from a foundational idea, which in fact we never had. In contrast, I contend that our work arose from an unanticipated finding I made and that we should not make it look like the results came about as a linear extension of earlier work or ideas in her lab. At our most recent meeting to go over the manuscript, she got really aggressive about this. I was surprised to see how strongly she felt but held my ground. Am I being too conservative?

—Storyteller

Dear Storyteller,

You are not being too conservative! Bravo for holding your ground. Making a project look like it was a logical sequella from earlier work is a ruse that many scientists attempt. It draws attention away from the truth, namely that many important projects and enabling findings arise as unexpected clues, not as predictable outcomes of a laboratory's *gestalt* belief system.

One familiar form of this deceptive practice is when speakers say in a talk, "So it occurred to us that it should be the case that…." Maybe they were that prescient, but usually this is hindsight, a deliberate reconstruction of how the findings were obtained. There are many cases, to be sure, when an experiment can be presented honestly for what it was in its inception. The Meselson-Stahl experiment, one of the most elegant in the history of biology,[1] needed no grander posit in the publication than it had when the idea first occurred to the investigators. But most of the time our research progress is far less a matter of Cartesian logic.

When our results do handsomely emerge from a hypothesis posed, that happy outcome can of course be presented. But when this is not the case, to try and trick readers into believing that there was more of a design than there was is veering on dishonesty. So stick to your guns and present the genesis of your project as it really happened. If you need further ammunition with your adviser, you can remind her that much important science did not arise from anticipated findings, so you are in good company. The instinct to tell a story is what our profession is all about. But we don't need to fabricate how a project got started. The real reasons are always more interesting. ■

—Labby

Reference

[1]Holmes FL (2001). *Meselson, Stahl, and the Replication of DNA: A History of 'The Most Beautiful Experiment in Biology.'* Yale University Press.

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.

ASCB²

Art and Science of Cell Biology

A prototype gallery of cell and molecular landscapes to inspire & immerse new audiences in the wonder of biology

ASCB 2012 Moscone Center Esplanade foyer & Lower concourse

Bacteriophage lambda capsid
by Graham Johnson with Gabe Lander ©2008

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