

**Bring Your
Science to a
K-12 Classroom**

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Careers**

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In Memoriam Heinz Herrmann, 1911-2009



Heinz Herrmann

Heinz Herrmann built a distinguished career in developmental biology, cell biology, and muscle development. He was a founding member of the ASCB (1961). His research achievements are honored annually through the Heinz Herrmann Symposium held every year at the ASCB Annual Meeting.

Herrmann's intellectual life can be divided into three periods: 1) his formative years in Vienna and Copenhagen (from his birth in 1911 to approximately 1939); 2) his research years in Baltimore, New Haven, Denver, and Storrs (CT) (1939-1980); and 3) the years in which he synthesized his life's scientific work and expanded it into the sociopolitical arena (1980-2009).

Formative Years

Herrmann received an MD from the University of Vienna Medical School in 1936. He found haven from Nazism at the Carlsberg Biological Institute in Copenhagen. He trained in biochemistry. During this early period there were three formative environments that shaped his life's work, and he returned to them full circle in his last decades.

Herrmann, continued on page 6

ASCB Ambassadors Wanted Small Effort, Big Impact

Has ASCB helped you in your career? Is the ASCB Annual Meeting where you made your first presentation? Found a critical postdoc opportunity or collaborator? Learned about how to negotiate your start-up package? Explored and found a new position? Won't you be an ASCB Ambassador at your institution/company or in your region to share such information with others?

ASCB is your international community, dedicated to advancing the field of cell biology, improving science education, and furthering the careers of minorities, women, early-stage scientists, and others. Spread the word locally about:

- ASCB membership benefits—including product discounts
- ASCB meetings
- ASCB awards—travel, childcare, and more
- ASCB leadership opportunities
- ASCB career resources

Whether you choose to host meetings, post flyers, forward emails, or answer questions, you'll be serving the needs of colleagues. The ASCB Ambassador time requirement is small, but the impact can be large. To volunteer, write to ascbinfo@ascb.org and use the subject line: ASCB Ambassador. Thank you! ■

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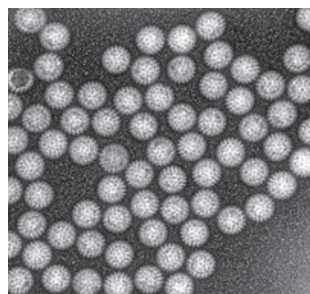
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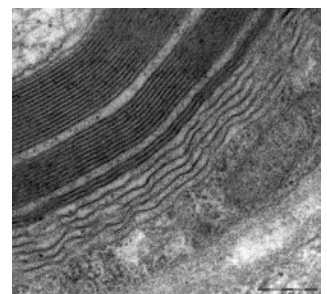
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A Magical Teaching Moment

Have you ever had one of those wonderful classroom experiences when everything just clicks? The students get really excited, start bouncing great ideas off each other, and everyone learns something they will remember? I had this experience a couple of weeks ago; not in a graduate cell biology class (alas), but with a group of 7th graders (12- to 13-year-olds), talking about cell division.

Like many scientist-parents, I had visited my own children's classroom a few times. I fondly remember taking a microscope to my son's kindergarten class and looking at water from the class goldfish tank. The teacher had to drag me away after we found a spectacular amoeba in the gravel.



Tim Mitchison

Mitosis as Muse

My slightly more serious engagement with K–12 education started a few years ago when I was visiting the Harvard Medical School (HMS) computer lab. I noticed a note on the board that read, "Mitosis projects must be finished by Friday." My immediate thought was: I need a note like that in my lab! The computer science teacher, David Youkilis, explained that he had developed an exercise for 7th graders. They research mitosis on the Internet and assemble presentations, mainly as an exercise in research and computer skills. The biology enrichment was a bonus. His choice of this topic reflected his own enthusiasm for biology.

We decided it would be interesting for these students to hear from a professional scientist who studies mitosis. Over the last few years this has evolved into a two-part process, where I and a couple of students or postdocs from my group listen to individual students' mitosis presentations at their school. We discuss what they learned. Then I, or my student or postdoc, tell the students what we are doing in our lab at HMS, and why. We talk about basic questions and my increasing interest in developing improved cancer drugs that target mitosis. Sometimes we vary it by bringing in some frog and fish embryos to look at; this is a challenge in the computer lab, but a lot of fun. This has

become an annual event for my lab, something I, and others in my lab, look forward to doing.

This year, one of the mitosis discussions was especially memorable, to the point of being perhaps the most rewarding teaching experience of my career to date. I think it's helped that the science teacher has extended her 7th grade unit on cells, partly in response to the computer lab exercise. We were discussing cancer drugs that target cell division—I like to challenge the students to come up with ideas for better cancer treatments—and the class just took off on its own; students were asking questions and other students were answering them. They all

participated, and I was thrilled to hear some of them use simple evolutionary concepts to try and explain the behavior of cells in the human body.

I could tell this discussion had a big impact on the students as well as on me. Still it was gratifying to have a parent I didn't know come up to me in a pizza place the following weekend and tell me her daughter had come home that day all excited about cells and mitosis. In fact, she lectured her parents on the topic over dinner. Cells are something even a fairly young child can get excited, and curious, about, especially if they see them moving in a video. Helping a child explore what I believe is an innate interest in science is one of the most satisfying experiences an educator or parent could have.

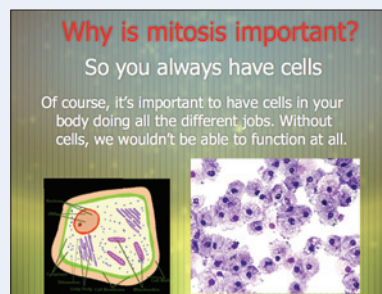
Engaging K–12 Students

Probably every ASCB member is concerned about science education, though our personal experience may focus our interests at different levels. As parents of an 11- and 13-year-old, my wife (Christine Field) and I are particularly interested in K–12 science at the moment. And I should say that my participation has been largely driven by her commitment. My message is, it's not so hard to get involved in some informal science enrichment at local schools, especially if you are a parent, and it's very rewarding. Even one classroom visit is enough for children to have met a real scientist, often for the first time. Bringing something (safe) from your lab that

Today's 7th graders will be deciding on careers in 10 years' time, or less, which isn't so far off.... [W]e need some of the brightest among them to choose research careers.



7th grade Mitosis Presentation Slides. Devotion School, Brookline, MA



children can look at, and preferably touch, will help engage them. Those one-piece plastic Pasteur pipettes work great for younger children, for example. It's also been eye-opening for children to meet with students in my group, who have told personal stories of how they started on a science career track. This helps dispel the myth that scientists are all old and scary-looking.

There is a national consensus that K–12 science education in the U.S. needs improvement. While writing this column, I read a thoughtful article on science education reform by David Bower (Cal Tech) that we re-printed in the Oct 2009 *ASCB Newsletter*. Bower discussed the many ways professional scientists make mistakes when they try to contribute to science education in their local schools. Often it's by taking an elitist attitude, he noted, concluding his article with some practical advice. A lot of his points ring true to my own limited experience. In particular, my participation enhanced a curriculum that talented and committed teachers had already developed; I didn't come in as an "expert" telling them how to do their jobs.

ASCB is involved in promoting science education at all levels, and we are always looking for new ideas. (ASCB Executive Director Joan Goldberg noted ASCB efforts in science education in the October 2009 *ASCB Newsletter*.) Our Education Committee (EdComm) brings cell biology educators together and organizes events at the ASCB Annual Meeting, including extending complimentary invitations to local high school teachers and classes to attend the annual High School Program planned by the Committee. (See the January/February 2010 *ASCB Newsletter* for an overview of the 2009 program.) ASCB (with grant support from Howard Hughes Medical Institute) provides another educational resource through its highly respected education journal, *CBE—Life Sciences Education*. Under the able leadership of Editor-in-Chief Bill

Wood and the Editorial Board, the free, online journal (www.lifescied.org) has published articles on K–12 science education partnerships (click on "Search," then type "K–12" or "K–12 partnership" in the text search box).

In addition there are two science-focused events planned for this year to increase outreach to children. National Lab Day (www.nationallabday.org) might offer one useful way to get your lab involved in outreach to local students. I'm also particularly excited about the educational impact of a new ASCB initiative, the National Institute for General Medical Sciences–funded The Cell: An Image Library. This project, now under development and led by EdComm Chair Caroline Kane in her role as grant PI, is aimed primarily at the needs of researchers. But it will be a great source of images and movies for Mr. Youkili's 7th graders. And I can imagine high school classes using it in creative ways—especially if some of us get into their classrooms and encourage them! Another way to do that is at ASCB's booth this October at the National Science & Engineering Fair. This huge, family-oriented event will be held on the Washington, DC, National Mall October 23–24. ASCB plans to offer opportunities to see cells under microscopes and in videos, along with a hands-on exercise. This sounds like a great family activity if you live in the DC area, or plan to visit.

Inspiring the Brightest

Today's 7th graders will be deciding on careers in 10 years' time, or less, which isn't so far off. If we are to continue the rapid progress in biomedical research of the last decades, we need some of the brightest among them to choose research careers. Despite challenges I discussed in my last column, I believe this is still one of the most exciting and fulfilling directions a young person could take in life. I also believe that an appreciation of the approaches and lessons of science will enrich any career direction. Bringing some of your own science into a classroom is a lot of fun, and could make a real difference in opening young people's eyes to these possibilities. ■

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

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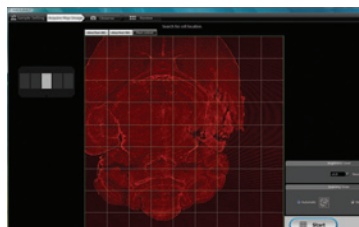


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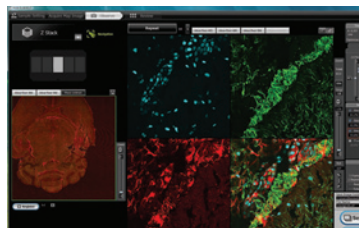
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Herrmann, continued from page 1

The first was the Third Reich's governance, which treated the complexities of society as a simple system in which social discontinuities were considered irreconcilable.

The other two stemmed from his Copenhagen experience. In the 1920s and 1930s Niels Bohr's Institute of Theoretical Physics was the intellectual center of debates in which there was palpable tension between the discontinuities of the wave-particle duality and the innate human desire for unified theories.

Finally, his training was at the Carlsberg Biological Institute, where pioneering work on pH and protein characterization was being done. There Herrmann developed the confidence that one could tackle the overriding biological question of how to bridge the gap between the complexities of macromolecular structures and the complex functions that define life.

Fundamental Discoveries

His research career started in Copenhagen, where he carried out protein ionization experiments (approximately 1936–1939). Avoiding the Nazi occupation of Denmark, he moved to Johns Hopkins University Medical School. There he worked on lens development (and secretly for the defense department on antidotes to the effects of mustard gas on the lens). Initially at Hopkins, and later at Yale (in the 1940s), he developed a research program in embryonic development. His focus was on skeletal muscle.

He continued this work at the University of Colorado Medical School (approximately 1952–1959). He also established the Laboratory of Chemical Embryology there. He then joined the Institute for Cell Biology at the University of Connecticut in Storrs in 1959, became its Maude K. Irving American Cancer Society Professor of Biology in 1960, and was Institute Director for 10 years.

During his 20-year career in Connecticut he continuously expanded the boundaries of our understanding of macromolecular synthesis and structure. This was exemplified by his series of "Studies of Muscle Development" (1967–1971). In 1971 he was awarded a NATO visiting

professorship at the University of Milan. He retired from active research in 1980, with over 100 journal articles and 150 technical reports.

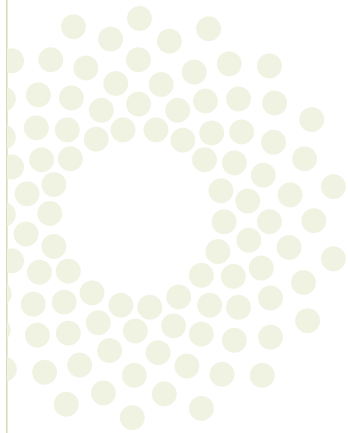
Years of Intellectual Synthesis

After retirement from active research Herrmann concentrated first on synthesizing his understanding of the cell as the basic unit of life, one that distinguishes living from nonliving associations of macromolecules. His textbook, *Cell Biology: An Inquiry into the Nature of the Living State* (HarperCollins, 1989), organized the cell concept around three attributes of the living state: the cell surface as boundary and mediator, the cell as an information processing system, and the cell as an energy transduction system.

Herrmann's next work, *From Biology to Sociopolitics: Conceptual Continuity in Complex Systems* (Yale, 1998), brought him full circle to the major influences of his formative years in Vienna and Copenhagen; namely, the tension between the comfortable continuities of ideal systems and the need for resolution of the seeming discontinuities of complex societies. Here he used the successes of biology in finding the conceptual continuities between the complexities of macromolecular structures and those of life's biological functions as a paradigm. He applied that paradigm to finding conceptual continuities in complex sociopolitical systems that have seemingly discontinuous needs and concerns.

As with Herrmann's research endeavors pursuing continuity between macromolecular structure and function, he also actively pursued continuity at the sociopolitical level. In 2006 he and his wife Virginia endowed the Heinz and Virginia Herrmann Distinguished Lecture Series on Human Rights and the Life Sciences in connection with the Human Rights Institute at the University of Connecticut. Herrmann died October 18, 2009, at age 98. Donations in his name to continue support for the ASCB's Heinz Herrmann Symposium may be sent to the ASCB, Attn: Heinz Herrmann, ASCB, 8120 Woodmont Ave, Suite 750, Bethesda, MD 20814, USA, or made online at <https://www.ascb.org/ascbsec/donation.cfm>. ■

—Tom Doetschman, University of Arizona



The American Society for Cell Biology

2010 Call for Nominations

Bruce Alberts Award for Excellence in Science Education

Who is Eligible: An individual who has demonstrated innovative and sustained contributions to science education, with particular emphasis on the local, regional, and/or national impact of the nominee's activities. The primary nominator must be a member of the ASCB, but the candidate and support letter authors need not be.

How to Apply: Provide a letter of nomination, a maximum of three letters of support, and CV.

Awards: The winner is presented a plaque and will give remarks at the Annual Meeting. Expenses to attend the Annual Meeting are paid.

Deadline: March 31

Early Career Life Scientist Award

Who is Eligible: An outstanding scientist who has served as an independent investigator for no more than seven years as of March 31.

How to Apply: Provide a nominating package that includes CV, brief research statement, nominating letter, and no more than three letters of support (at least one of which must come from outside the nominee's institution).

Awards: The winner is presented a plaque and an honorarium and will speak in a Minisymposium at the Annual Meeting. Expenses to attend the Annual Meeting are paid.

Deadline: March 31

E.E. Just Lectureship

Who is Eligible: A minority scientist who has demonstrated outstanding scientific achievement. The primary nominator must be a member of the ASCB, but the candidate need not be.

How to Apply: Provide a nomination package that includes a CV and a letter describing the nominee's scientific achievement and mentoring support of underrepresented minority students and scientists.

Awards: The winner gives the E.E. Just Lecture at the Annual Meeting and receives a plaque and a medal. Expenses to attend the Annual Meeting are paid.

Deadline: March 31

WICB Career Recognition Awards

Who is Eligible: For the Junior Award, a woman in an early stage of her career (generally less than five years in an independent position at the time of nomination) who is making exceptional scientific contributions to cell biology and exhibits the potential for continuing a high level of scientific endeavor and leadership; for the Senior Award, a woman or man in a later career stage (generally full professor or equivalent) whose outstanding scientific achievements are coupled with a long-standing record of support for women in science, and by mentorship of both men and women in scientific careers.

How to Apply: For the Junior Award, provide a letter of nomination, CV, and no more than three letters of support, at least one of which must come from outside the nominee's institution. For the Senior Award, provide a letter of nomination, CV, and no more than five letters of support, at least one of which must come from outside the nominee's institution, to include two letters from those who have been mentored by the candidate, mentioning specifics of the nominee's mentoring history.

Awards: The winners are presented an honorarium and plaque at the Annual Meeting. Expenses to attend the Annual Meeting are paid.

Deadline: March 31: Send *electronic submissions only* to Cheryl Lehr at clehr@ascb.org.

Merton Bernfield Memorial Award

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

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

Awards: The winner is presented a plaque an honorarium and will speak at a Minisymposium at the Annual Meeting. Expenses to attend the Annual Meeting are paid.

Deadline: July 15

Norton B. Gilula Memorial Award

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

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

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

Deadline: July 15

Public Service Award

Who is Eligible: An individual who has demonstrated outstanding national leadership in support of biomedical research. Any ASCB member may submit a nomination. The award winner may, but need not, be a scientist.

How to Apply: Provide a letter of nomination with a description of the nominee's advocacy for, and promotion of, scientific research.

Awards: The winner gives the Public Service Award Lecture at the ASCB Annual Meeting and receives a certificate. Expenses to attend the Annual Meeting are paid.

Deadline: March 31

E.B. Wilson Medal

Who is Eligible: An individual who has demonstrated significant and far-reaching contributions to cell biology over a lifetime in science. The primary nominator must be a member of the ASCB, but the candidate need not be.

How to Apply: Provide the candidate's CV and no fewer than three, and no more than five, letters of support.

Awards: The winner of the ASCB's highest honor for science gives the E.B. Wilson Lecture at the Annual Meeting and receives the E.B. Wilson Medal. Expenses to attend the Annual Meeting are paid.

Deadline: March 31

All applications and nominations should be submitted to:

The American Society for Cell Biology
8120 Woodmont Avenue, Suite 750
Bethesda, MD 20814-2762, USA
ascbinfo@ascb.org

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

ASCB Weighs in on Public Access

When the FY08 budget was signed into law by President George W. Bush, it included a provision that would require that any scientific manuscript based on U.S. National Institutes of Health (NIH)-funded research be submitted to the NIH's PubMed Central upon acceptance by a journal. One year later, the FY09 federal budget made the access provision permanent.

The ASCB has been a longtime supporter of public access and worked to educate members of Congress about the importance of the public access provision to the scientific community.

Now, the Obama Administration would like to extend the NIH policy to include any research funded by federal science and technology agencies. In response to a request for comment by the White House Office of Science and Technology Policy, ASCB President Tim Mitchison and Public Policy Chair Tom Pollard

sent a letter expressing the ASCB's support for the proposed policy.

In their letter on behalf of the ASCB, Mitchison and Pollard wrote, "The ASCB believes strongly that barriers to scientific communication slow scientific progress. The more widely scientific results are disseminated, the more readily they can be understood, applied, and built upon. The sooner findings are shared, the faster they will lead to new scientific insights and breakthroughs."

The proposed public access policy is part of a larger White House Open Government Initiative aimed at making the work of the federal government more accessible to the public.

To read the ASCB's letter, go to www.ascb.org/files/ASCB_Access_Policy.pdf. ■

—Kevin M. Wilson

He Meant What He Said

First as a candidate and then as president, Barack Obama committed to increasing federal spending for research and development (R&D). In Obama's FY11 federal budget request, his first budget as president, he backed up those words by proposing to spend \$61.6 billion for civilian research and development. The \$61.6 billion in proposed spending is an increase of \$3.7 billion or 6.4% over the FY10 federal budget.

The overall FY11 R&D budget proposal includes a continued commitment to doubling the budgets of the U.S. National Science Foundation (NSF), the U.S. Department of Energy's Office of Science, and the U.S. National Institute of Science and Technology.

The proposal also calls for a \$1 billion (3.2%) increase for the U.S. National Institutes of Health (NIH). This request is the largest presidential budget request for the NIH since the conclusion of the five-year doubling of the NIH budget in 2003. It also equals the

projected rate of Biomedical Research and Development Price Index (BRDPI) for FY11.

Obama's NIH budget also includes a 6% increase in training stipends. Despite the overall increase in the NIH's budget, the proposal would fund only 9,052 competing Research Project Grants (RPGs), 199 fewer than estimated for FY10.

Not all NIH Institutes and programs received proportional increases. In a budget briefing for representatives of the NIH community, including the ASCB, NIH Director Francis Collins said that funding levels for the various Institutes were determined by comparing Institute FY08 portfolios against Collins' "Five Themes."¹

The NSF continues to receive budget increases. The overall NSF request is \$551.89 million or 8% more than the FY10 NSF budget. Within the NSF, the Directorate for Biological Sciences would receive \$53.2 million or 7.5% more than its FY10 final budget. The request

for the Division of Molecular and Cellular Biosciences (MCB) is \$8.1 million or 6.4% more than FY10.

To read more about President Obama's FY11 budget request for the NIH, go to <http://officeofbudget.od.nih.gov/pdfs/FY11/Summary%20of%20the%20FY%202011%20Presidents%20Budget.pdf>.

To read more about President Obama's FY11 budget request for the NSF, go to www.nsf.gov/about/budget/fy2011/index.jsp. ■

—Kevin M. Wilson

References

¹ Collins FS (2010). Opportunities for Research and NIH. *Science* 327, 36.

NATIONAL INSTITUTES OF HEALTH FY 2011 President's Budget Request (\$000s)

Appropriation	FY 2009 Omnibus	FY 2009 Recovery Act ^{1/}	FY 2010 Enacted	FY 2011 President's Budget	2011 PB. +/- 2010 Enacted
NCI	4,967,714	\$1,256,517	5,101,666 ^{2/}	5,264,643	\$162,977
NHLBI	3,014,873	762,584	3,095,812	3,187,516	91,704
NIDCR	402,531	101,819	413,076	423,511	10,435
NIDDK ^{3/}	1,910,151	445,393	1,957,364	2,007,589	50,225
NINDS	1,592,851	402,912	1,635,721	1,681,333	45,612
NIAID ^{4/}	4,701,456	1,113,288	4,816,726	4,977,070	160,344
NIGMS	1,997,172	505,188	2,050,972	2,125,090	74,118
NICHD	1,294,519	327,443	1,329,027	1,368,894	39,867
NEI	688,276	174,097	706,765	724,360	17,595
NIEHS	662,667	168,057	689,565	707,339	17,774
NIA	1,080,472	273,303	1,109,800	1,142,337	32,537
NIAMS	524,696	132,726	538,854	555,715	16,861
NIDCD	407,125	102,984	418,657	429,007	10,350
NIMH	1,451,053	366,789	1,489,792	1,540,345	50,553
NIDA	1,032,457	261,156	1,059,446	1,094,078	34,632
NIAAA	450,095	113,851	462,167	474,649	12,482
NINR	141,834	35,877	145,600	150,198	4,598
NHGRI	502,261	127,035	515,876	533,959	18,083
NIBIB	308,108	77,937	316,452	325,925	9,473
NCRR	1,226,000	1,610,088	1,268,519	1,308,741	40,222
NCCAM	125,431	31,728	128,791	132,004	3,213
NCMHD	205,912	52,081	211,506	219,046	7,540
FIC	68,655	17,370	70,007	73,027	3,020
NLM	338,842	83,643	350,607	364,802	14,195
OD	1,247,292	1,336,837	1,177,020	1,220,478	43,458
B&F	125,581	500,000	100,000	125,581	25,581
Type 1 Diabetes ^{3/}	-150,000	0	-150,000	-150,000	0
Subtotal, Labor/HHS	30,318,024	10,380,703	31,009,788	32,007,237	997,449
Interior/Superfund Research Program	78,074	19,297	79,212	81,763	2,551
Total, NIH Discretionary B.A.	30,396,098	10,400,000	31,089,000	32,089,000	1,000,000
Type 1 Diabetes	150,000	0	150,000	150,000	0
Total, NIH Budget Authority	30,546,098	10,400,000	31,239,000	32,239,000	1,000,000
NLM Program Evaluation	8,200	0	8,200	8,200	0
Total, Prog. Level	30,554,298	10,400,000	31,247,200	32,247,200	1,000,000

^{1/} Funds are appropriated from the American Recovery and Reinvestment Act, 2009 (P.L. 111-5) and are available until September 30, 2010.

^{2/} Includes \$8,000,000 for facilities repairs and improvements at the NCI Frederick Federally Funded Research and Development Center in Frederick, MD.

^{3/} Type 1 Diabetes Initiative mandatory funds provided through P.L. 110-173 and P.L. 110-275 in FY 2009 and FY 2010, respectively, are included in NIDDK and subtracted in Type 1 Diabetes to ensure non-duplicative counting.

^{4/} Includes funds for transfer to the Global Fund for HIV/AIDS, Malaria, and Tuberculosis (FY 2008 - \$294,759,000; FY 2009 - \$300,000,000; and FY 2010 - \$300,000,000).



Dear Labby,
I used to work as a postdoc at a research institute. I am working in a biotech company now.

I have an authorship dispute with my former boss. Here is some background on it. I started and executed this project solely, from literature search, gene cloning and optimization, cell culture growth and optimization in search of the best condition for membrane transport protein expression, to protein purification, protein crystallization, data collection, and data processing. Before I left the lab we had very nice data sets for this project, but not enough to solve the protein structure. I had worked on this project for approximately 4 years. The structure was solved recently, and the boss submitted the paper for publication without my knowledge.

After I found out, the boss agreed to put my name only in the acknowledgments. I disagree and wrote two emails to him, to the authors on the manuscript, and to a couple of key members of the department. It seems not easy to persuade the boss to change his mind on my authorship.

Here I would like to have your advice for how to pursue and resolve this issue with the boss and/or have a third party involved. Is there any committee or organization responsible for resolving such authorship disputes? Do *Science* and *Nature* magazines have some rules on authorship disputes in terms of publication? Can I have somebody to represent me to deal with this issue if I feel necessary? Your advice would be invaluable to me.

—Yong Yin, PhD

Dear Dr. Yin,

Unfortunately, authorship disputes are all too common. Often it is a matter of miscommunication and/or misperceptions. A postdoc might underestimate what constitutes authorship (or at least what constitutes it for the lab head). At the same time, a lab head might—for whatever reasons—not be fully aware of how scientifically original and critical a postdoc's contribution has been. Under ideal circumstances, these issues are not left to vague perceptions or inadequately defined (or unstated) policies. Instead they are clearly and candidly laid out.

Regular lab meetings alone should help a postdoc see his or her work in the context of that of all other players in the lab. Do you have a sense that the same kinds of contributions you made to this project resulted in nonauthorship by other postdocs in the lab working on previous projects? Or do you see previous publications from this lab where authorship was granted for comparable contributions?

Regarding process, it is unclear from your query whether or not your former lab head replied to your emails. It is important to know her/his reasoning. Do you think your communications with the lab head and others at the institution reached administrative officials? If not, you might contact the Research Integrity Officer. It is certain that the appropriate officials would take an interest in your complaint.

As to journal policies, many of the better journals now require a signed statement from all authors that they have seen the submitted manuscript. (In some cases they are asked to state further that they are in agreement with its content.) Several leading journals have now gone a step further and require that the contributions of each author (conceptualization, design, execution, data analysis, manuscript preparation, etc.) be stated in a footnote. Obviously, these policies only cover those who are authors upon submission. It would be best for you to communicate first with the institution's Research Integrity Officer before contacting the journal where this paper has been submitted or has been published.

Your query is painful for Labby and most readers of the *ASCB Newsletter* because it reminds so many of us of what wonderful mentors we had, and that others were not so fortunate. While it is possible that your former lab head had entirely valid reasons not to make you an author, these should have been presented to you clearly.

However this turns out, your willingness to communicate your experience provides a service in emphasizing to us the responsibilities of both lab heads and postdocs in coming to a shared understanding of what constitutes authorship. Many of the postdoc organizations have realized the importance of this issue (see this column in the November 2009 *ASCB Newsletter*). Thank you for helping us all to visualize this important issue, albeit through the lens of your unfortunate difficulty. ■

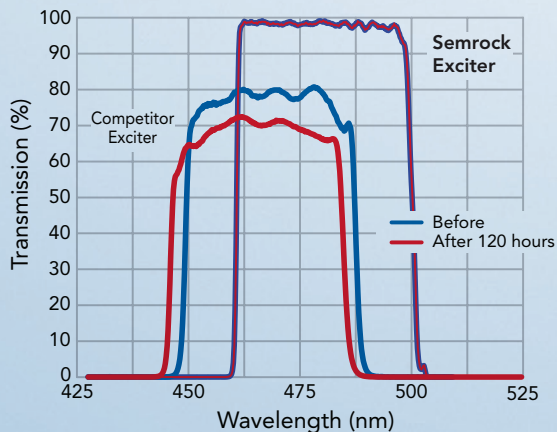
—Labby

Direct your questions to labby@ascb.org. Authors of questions chosen for publication may indicate whether or not they wish to be identified. Submissions may be edited for space and style.

The Weakest Link in Your Fluorescence Imaging System May be Your Filters.

Until recently, virtually all fluorescence filters for microscopy were produced using a technology that is subject to degradation over time.

Filters, in conjunction with your light source, objective and detector, dictate the quality of your fluorescence images. Yet, the majority of filters sold today are still based on previous generation "soft coating" technology. These coatings are subject to photon damage, environmental degradation and mechanical damage from handling. This damage causes reduced transmission, reduced blocking and shifts in the transmission spectra.



Semrock filters do not change even after extended exposure to intense light.

Unfortunately, this change generally occurs gradually and is often difficult to recognize until performance has been significantly compromised.

In 2003 Semrock introduced hard-coated, ion-beam-sputtered filters to the microscopy community. These filters represented a break-through technology originally developed for the laser and telecom industries to withstand the most demanding optical conditions. They are unaffected by environmental conditions and intense



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illumination systems including high powered lasers, and they can be handled and cleaned without fear of damage. More important than their durability, Semrock filters lead the industry in transmission efficiency, edge steepness, wavelength accuracy and carefully optimized blocking.

With a virtually unlimited lifetime and superior performance, Semrock filters make good financial sense and help ensure the best possible images. They may be the easiest and least expensive way to improve the performance of your microscope when compared to upgrading cameras and objectives.

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Volume 9 Spring 2010

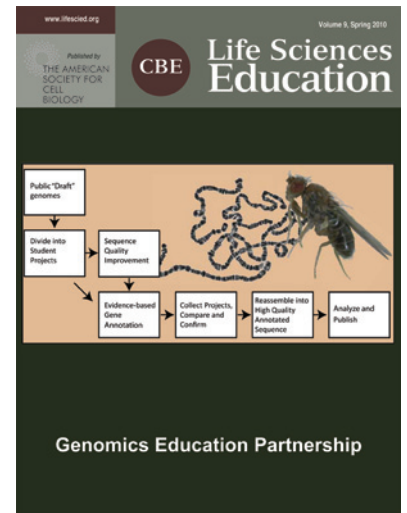


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NIH Efforts to Promote and Sustain the Careers of Women in Science

The National Institutes of Health (NIH) is strongly committed to correcting the underrepresentation of women in science. Although women make up half of the trainees in many science, technology, engineering, and medicine (STEM) fields, there is a well-documented drop-off in the number of women at the junior faculty level. The number of women continues to decline further up the academic ladder.



Vivian W. Pinn

The NIH Working Group on Women in Biomedical Careers (WG), the NIH Office of Research on Women's Health (ORWH), and other offices, Institutes, and Centers throughout the NIH are participating in efforts to confront this important problem. Their activities address the challenges faced by women both within the NIH intramural community (scientists working at the NIH) and throughout the extramural community (universities, academic health centers, research institutions, etc.).

Tangible Actions and Innovative Programs

The WG was established as the result of a 2007 National Academies report that examined the reasons for women's continued underrepresentation in STEM fields.¹ The report called for universities, professional societies, and government funding agencies to change the climate of academia. The chair of the committee that prepared the report, former Secretary of the U.S. Department of Health and Human Services Donna Shalala, issued a personal challenge to then-Director of the NIH Elias Zerhouni to respond to the report and not to let it just sit on a shelf. In response, Zerhouni established and co-chaired the WG with one of us—Vivian W. Pinn, Director of the ORWH. The new NIH Director, Francis Collins, has expressed his commitment to the continuation of the WG and has offered his leadership as co-chair.

The WG strives to address major issues that may affect the retention and advancement of women in biomedical careers. Among these issues are childcare, family leave, and



Joslyn Yudenfreund Kravitz

mentoring. The WG is also focusing on the unique challenges faced by women in the physical sciences, including bioengineering, and by women of color.

The WG has sponsored U.S. workshops on

mentoring women in biomedical careers and best practices for sustaining career success. The recommendations generated at these workshops have been incorporated into the subsequent activities of the WG; they are also being considered in the design of future interventions and career programs. Some accomplishments include:

- Providing current information on the success of women in obtaining NIH grants
- Extending the tenure-clock for intramural NIH scientists by one year to accommodate family leave
- Extending the allowed period of paid parental leave to eight weeks for both intramural and NIH-funded extramural trainees
- Helping to develop, fund, and implement an NIH leave bank program that allows NIH employees to obtain needed leave to deal with family emergencies
- Helping to establish the Mid-Atlantic Higher Education Recruitment Consortium, which assists in the recruitment of dual-career couples by helping them find positions near each other
- Developing the Request for Applications (RFA) *Research on Causal Factors and Interventions that Promote and Support the Careers of Women in Biomedical and Behavioral Science and Engineering*

Information on the activities of the WG and other resources can be found at the Women in Biomedical Careers website, <http://womeninscience.nih.gov>. Viewers will find:



[The NIH Re-entry Program] helps... scientists, both women and men, re-establish careers that had been disrupted for family reasons such as illness, childcare, or relocation to accommodate a spouse or partner.

The NIH is committed to helping both women and men scientists successfully apply for its many grant programs.

- Data on grants success rates
- Reports from the workshops
- A list of the 14 projects funded under the RFA
- Links to over 200 articles and reports on women in STEM
- The archives and subscription link for the WG's monthly e-newsletter

The e-newsletter, *NIH Updates on Women in Science*, contains descriptions of relevant studies and events, highlights of best practices for sustaining women's careers, and profiles of junior women scientists.

Role Models and Re-entry

In addition to supporting the activities of the WG, the ORWH fulfills its mission of developing opportunities for—and supporting recruitment, retention, re-entry, and advancement of—women in biomedical careers in a number of ways. For example, in October 2009, ORWH published *Women in Science at the National Institutes of Health 2007–2008* in hard copy and on the ORWH website (http://womeninscience.nih.gov/women_science_book/index.asp). This publication profiles women in a wide range of positions and roles across the NIH. The profiles of these doctoral-level women scientists include:

- Their fascinating biographical information and research interests
- Thought-provoking descriptions of experiences that shaped their careers
- Insight on how they manage work/life balance
- Their thoughts on the importance of mentoring—both being mentored and mentoring others

Another ORWH initiative is the NIH Re-entry Program. This program helps biomedical and behavioral scientists, both women and men, re-establish careers that had been disrupted for family reasons such as illness, childcare, or relocation to accommodate a spouse or partner. The program provides supplements to existing NIH research grants to support the research and mentoring of the re-entering scientists. In 2008, the program was expanded to include candidates who were in postdoctoral positions when they left active research. Previously it was open only to those who had held faculty positions. Although this program is open to both women and men, the issue of career interruption

disproportionately affects women. Over 90% of the grantees have been women. Additional details can be found at <http://grants.nih.gov/grants/guide/pa-files/PA-08-191.html>.

Support for Grant Applicants

The NIH is committed to helping both women and men scientists successfully apply for its many grant programs. Toward that end, the Office of Extramural Research has posted a wealth of helpful information on its website (http://grants.nih.gov/grants/grant_basics.htm), including program descriptions, tips for applicants, and tutorials for new investigators. In addition, many of the NIH Institutes and Centers have prepared materials that are either specific to their own programs or are generally applicable. The National Library of Medicine has a helpful website that presents links to a number of these tutorials and tip sheets (www.nlm.nih.gov/ep/Tutorial.html). This includes the “All About Grants” webpage from the National Institute of Allergy and Infectious Diseases and the mock study section video created by the Center for Scientific Review.

In 2008, the NIH Director sent a message to every NIH employee reaffirming the commitment of the NIH leadership team “to making this Agency a model for other research institutions of how science can be done in a family-friendly environment.” Having such a message from top leadership helped sensitize the NIH community to the importance of family issues to both women and men. As efforts continue to improve the environment and enhance resources for women scientists, the collaboration of the Office of the Director, the Office of Intramural Research, the Office of Extramural Research, and the broader NIH community will set the tone. It will also serve as a model for sustained institutional commitment to addressing this very important issue. ■

—Vivian W. Pinn and Joslyn Yudenfreund Kravitz, Office of Research on Women's Health, National Institutes of Health

Reference

¹Committee on Maximizing the Potential of Women in Academic Science and Engineering, National Academy of Sciences, National Academy of Engineering, Institute of Medicine. (2007). *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering*. Washington, DC: National Academies Press.

[T]he NIH Director [reaffirmed] the commitment of the NIH leadership team “to making this Agency a model for other research institutions of how science can be done in a family-friendly environment.”

Lynne E. Maquat

In a science relentlessly driven by data, cell biologists still rely on the “story” to keep things straight. The story of messenger RNA (mRNA) was until recent years fairly straightforward, except for one glaring hole in the cellular plot. In organisms with a cell nucleus—e.g., humans—RNA is the go-between. It’s the molecule that assembles inside the nucleus as a mirror image of an unfolding DNA strand. That molecule, says the story, is pre-mRNA. It must undergo processing to cut out the noncoding stretches called introns. It must also splice together the parts called exons that specify useful proteins. Once spliced, mRNA is ready for dispatch through the gates of the nuclear pore complex and into the wider world of the cytoplasm. There, protein-assembling ribosomes await their instructions. A hole in the messenger RNA story was what happened to the nonsense. Lynne Maquat filled in that hole. A frame shift or nonsense mutation in mRNA is a mistake in the three-nucleotide code that causes the ribosome to read a premature stop codon. This yields a truncated, improperly working, and potentially dangerous protein. Given the vast number of cellular mRNA syntheses, many of which involve pre-mRNA splicing at alternative sites, why aren’t there more nonsense proteins floating around?

Tidying Up the Nonsense

Maquat demonstrated that in mRNA, the nonsense tidied up after itself through a process called nonsense-mediated mRNA decay (NMD). She is at the School of Medicine and Dentistry, University of Rochester, in upstate New York.

The problem goes “way back,” explains Joan Steitz of Yale. “But I consider Lynne the pioneer—and it took her a number of years—in figuring out this mysterious process called nonsense-mediated mRNA decay.” Nearly everyone working with mRNA realized that somehow cells can tell when a premature stop

codon has been inserted into an open reading frame. Yet no one had an explanation of what happened to these nonsense proteins. “There’s nothing different about a premature stop codon. It’s one of the three stop codons in an open reading frame, and there didn’t seem to be any sequence context that made a difference,” says Steitz.

Maquat demonstrated that in mRNA, the nonsense tidied up after itself through a process called nonsense-mediated mRNA decay (NMD).

According to Steitz, the big leap came when Maquat figured out that introns must leave a mark on newly synthesized mRNA. Working with Melissa Moore in the late 1990s and early 2000s, Maquat identified that mark—the exon junction complex (EJC). It is an RNA-binding protein tag that normally sits approximately 20–24 nucleotides upstream from the spot on the mRNA where the intron was cut out. After pre-mRNA splicing, mRNAs with EJCs marking the splice points will move out of the nucleus for protein synthesis. In the first or “pioneer” round, the ribosome machinery will literally knock off the EJC tag as it goes along.

EJC Marks the Spot

But if there is a mistake in the mRNA—either in the genome or acquired during pre-mRNA splicing—chances are that it will manifest as a premature stop codon upstream of an EJC. The ribosome’s surveillance complex will recognize the premature stop codon as aberrant because of the downstream EJC.

Anita Hopper of Ohio State remembers hearing for the first time about the pioneer round of translation when Maquat presented a talk at a 2001 RNA Society meeting. “When I heard that talk, I was just sitting there with my jaw open. Wow. It was really true that you could have heard a pin drop in that audience.”

According to Hopper, Maquat’s NMD mechanism showed that a pioneer round of protein synthesis not only occurs but supports NMD. An mRNA gets used many times by ribosomes to make many proteins, Hopper explains. “Everyone assumed that when mRNA



Lynne E. Maquat

An mRNA gets used many times by ribosomes to make many proteins, Hopper explains. “Everyone assumed that when mRNA engaged with the ribosome, it would undergo exactly the same process. Lynne showed that wasn’t true.”

Facing down the unknown is a theme in her life. It was a factor in her turning toward Buddhism, Maquat says.

engaged with the ribosome, it would undergo exactly the same process. Lynne showed that wasn’t true. The first time the RNA message gets translated is different from all the subsequent rounds. The first time, the message is tested to see if it’s a good message. If it’s not, it gets destroyed. If it’s a good message, it gets changed—the proteins associated with it are altered—and it can be translated many, many times.”

NMD fills out the mRNA story, but it has wider biological implications, according to Steitz. Because premature stop codons are the cause of many human genetic disorders, NMD helps explain why heterozygous carriers of a genetic disease can survive with harmful nonsense codons that otherwise would be dominant. Says Steitz, “If these messages weren’t destroyed, they would cause a dominantly inherited disease.”

Of Maquat’s relentless pursuit of NMD, Steitz declares, “I consider it just a beautiful story of how persistence and always asking the right question and not giving up until you have the partial answers eventually gives you the real answer.”

Work in “A” Lab?

Giving up, though, was exactly what Maquat wanted to do in her first research lab experience. She was an undergraduate at the University of Connecticut (UConn) at Storrs. “I was terribly shy,” Maquat confesses. “I know that nobody who knows me today believes that, but I really was very shy.”

As a UConn sophomore, she’d desperately wanted to join the lab of her cell biology professor, Stu Heywood. She tells the story. “I approached him about working in ‘a’ lab. He said, ‘A lab?’ And I kind of squeaked out, ‘Your lab?’ And he said, ‘Sure.’”

Maquat loved the bench work on protein synthesis in embryonic chick muscle, but as the only undergraduate, she felt out of her depth. Finally she resolved to quit. Maquat waited outside the science building for Heywood to arrive, as usual, on his motorcycle. As they walked in together, Maquat was still fumbling with her resignation speech. Heywood suddenly said, “You know, Lynne, I think you’re doing among the best science in my lab.” Maquat laughs at the memory. “I burst out crying, and he was flabbergasted: ‘What did I say? What did I say?’”

Some of Maquat’s earliest experiences with science were also daunting. Her mother was an operating room supervisor and brought up

her eldest daughter with an inordinate fear of microbes. In high school, Maquat watched in horror as her biology teacher enthusiastically dissected road kill in front of the class. “With my overly hygienic background, what struck me most was how he kept putting his hands that were just in an opossum’s gut in his pockets.” And yet, Maquat remembers dissecting *Planaria* on her own in the family basement.

After UConn, Maquat chose a biochemistry doctoral program at the University of Wisconsin (UW), Madison, partly because she thought the program would be challenging. “And it was *rigorous*,” she concedes. Working with Bill Reznikoff on the lactose operon in *Escherichia coli* was Maquat’s initiation to RNA synthesis. Staying all night alone in the old and creepy UW biochemistry building to tend an experiment—while trying not to imagine building ghosts—is a lasting memory.

Buffalo to Rochester

After a postdoc at the McArdle Laboratory for Cancer Research in Madison, Maquat set out on her own in 1982 at the Roswell Park Cancer Institute (which Maquat points out is the oldest comprehensive cancer care center in the U.S., named for Dr. Roswell Park, and is not a park per se). In 2000, Maquat moved to a faculty post in biochemistry and biophysics at the University of Rochester.

Maquat’s interest in RNA metabolism had accelerated during her postdoc with Jeff Ross in Madison. Then she proved for the first time that a human disease, the hemolytic anemia β^+ -thalassemia, could be due to a pre-mRNA splicing defect. In Madison and then Buffalo and Rochester, Maquat began exploring the fundamentals of β^0 -thalassemia and another anemia called triosephosphate isomerase deficiency. The approach led Maquat to uncover the mechanism of NMD. Its importance as a means of quality control keeps growing as the Maquat lab identifies new molecular players and maps out competing RNA decay networks, she reports. “It turns out that a third of all alternatively spliced transcripts are targeted for NMD because they are mistakes. When you think about it, that’s amazing because conservatively 75% of human genes encode pre-mRNAs that undergo alternative splicing.”

Among her many scientific memberships is the ASCB, where Maquat is finishing a long term on the Public Information Committee (PIC). As an editor for the PIC’s ASCB Annual Meeting press book, Maquat is renowned for

her tactful persistence and her ability to get a corrected manuscript back from a dithering author in 24 hours or less.

Maquat is also extremely active in the RNA Society, having held every elective office from Director to Secretary-Treasurer to President. She is soon to begin organizing the 2011 International RNA Society meeting in Osaka, Japan. But first she has taken on organizing a 2010 Gordon Research Conference in Newport, RI.

Back in Rochester, Maquat has been a prime mover behind the university's "strategic commitment" to a new Center for RNA Biology. She directs the center. She also chairs the University of Rochester Graduate Women in Science program. And she is PI on a new NIH T32 graduate student training grant.

Facing down the unknown is a theme in her life. It was a factor in her turning toward Buddhism, Maquat says. In 1992, she volunteered as the team geneticist on a Children's Hospital of Buffalo "medical trek" to isolated Himalayan communities in northern India. There and on a later trip to the Tibetan capital, Lhasa, Maquat came face to face with the Wrathful Deities. They are demonic but protective figures in Buddhist art who are supposed to guide sentient beings toward enlightenment. Maquat had dabbled in Eastern philosophies before, but the Wrathful Deities drove her to serious study with Buddhist teachers back home.

The Lab Lab

Maquat was also taken by the sheer adventure of trekking in the Himalayas. It turned out to be something she had in common with Mark Spall, a technology development manager she met in Rochester. He'd also hiked over the Kanji-La Pass at 17,500 feet in Ladakh. They were married in 2005 while traveling in Vietnam and promptly set out for Cambodia. "We really like adventure travel," says Maquat. "The Himalayas and Andes are especially wonderful." The couple also shares a condo on Rochester's East Avenue with a black Labrador named Lily. Lily is listed on the Maquat lab site as the "Lab Lab."

Maquat's résumé is clearly that of a "world-class scientist," insists Greg Petsko of Brandeis University. But it omits one aspect of her career: Maquat as science friend. They first met by phone about 25 years ago when Maquat called to discuss an enzyme, triosephosphate isomerase,

that Petsko was no longer working on. The friendship continued even as their research diverged. Petsko explains, "If you're lucky in life, you have friends with whom it doesn't matter how frequent your contacts are, whenever you do see them, you pick up as if time hadn't passed. Lynne's been one of those people. We do talk science, but we're likely to talk about almost anything."

Then in the last five years, Petsko began to study the structure of proteins involved in neurodegenerative diseases. Working in yeast, Petsko identified the gene for an RNA-binding protein that was toxic when overexpressed and then a second gene whose protein suppressed that toxicity. When he went to look up the human homolog, Petsko recalls, "I laughed out loud. It was Lynne's protein. Within 24 hours, I had her clones for the human proteins sitting in my office."

So more than 25 years on, they are finally going to collaborate, says Petsko. "For me, RNA processing is a new field, and when you're going into a new field, the problem is always, 'What can you trust? What's really reliable? Who are the people who are just going on assumptions?' With Lynne, I know I can take anything that she's done to the bank." ■

—John Fleischman

Take Advantage of the ASCB Online Job Board

Since its launch in early November 2009, the ASCB's newly redesigned and expanded Online Job Board has received:

- Over 100 new job postings
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Take advantage of this great career resource today! Go to <http://jobboard.ascb.org> to post your job or CV, or for more information. ■

First 2010 Congressional Biomedical Research Caucus Planned



David J. Brenner of the Center for Radiological Research, Columbia University, will discuss “Airport Screening: The Science and Risks of Backscatter Imaging” on Wednesday, March 17, 2010. Brenner’s talk is the first in this year’s series of caucuses being offered on Capitol Hill by the Coalition for the Life Sciences (CLS), with a generous grant from the Howard Hughes Medical Institute.

The objective of the Congressional Biomedical Research Caucuses (CBRCs) is to foster an appreciation for and understanding of biomedical research. The CBRC provides a forum where Congressional Members and staff can interact directly with preeminent researchers responsible for important scientific discoveries. Many of the stunning advances, made possible by NIH funding, highlighted in these presentations have led to improved understanding of the cause, treatment, and prevention of human disease.

A schedule of the remaining speakers will be published in the next *ASCB Newsletter*. Anyone in the Washington, DC, area who is interested in attending should contact CLS National Director Lynne Marquis at lmарquis@jscpp.org. ■

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From Lipid Rafts to Vaccine Coolers

Sometimes cell biologists can take strange detours in their careers as they try to make a difference. The journey of one of us—Ken Jacobson—from research in lipid rafts and cell motility to addressing an obstacle to successful immunizations in Africa is just one example. This story suggests how scientists can follow new paths to make the world a better place. It also shows how cell biology training can be critical to addressing obstacles to improved public health.

The Problem

Recognizing the crucial role of vaccines in preventing childhood illness and death from infectious diseases, public agencies and private organizations are investing hundreds of millions of dollars to develop new vaccines. However, the full value of those investments, and their optimal impact on health, cannot be realized until vaccines can be delivered to consumers reliably and cost-effectively. One major reason for vaccine wastage is damage from heat or cold. To prevent this, a series of storage and transport links between vaccine manufacture and administration must be maintained. This keeps the vaccine within the World Health Organization (WHO) standard temperature range and is called the cold chain (see Figure 1). Vaccines that require temperature control to protect them against overheating or freezing in transit include those against measles, Diphtheria-Tetanus-Pertussis, yellow fever, Bacillus Calmette-Guérin (for tuberculosis), *Haemophilus influenzae* type b, Tetanus Toxoid, Hepatitis B, and oral polio vaccine.

In the less developed regions of the world, cold chain failure is a major problem. Vaccine wastage rates average up to 50% worldwide; in some countries cold chain failure results in vaccine wastage rates exceeding 75%, according to the WHO. That means that only 25 of every

100 doses shipped by the manufacturer will be safely and effectively administered to children who need them.

The economic impact of wasted vaccines, combined with the administration of sub-potent, ineffective vaccines, is nearly incalculable. Using subpotent vaccines puts recipients at risk of developing disease even after vaccination because they don't develop the necessary protective antibody levels. In such cases not only is health negatively affected, but public confidence and trust are undermined. It is difficult to convince individuals to travel long distances when they see vaccinations prove ineffective. Indeed, Bill and Melinda Gates, whose foundation funds malaria eradication efforts, mentioned the need for an efficient cold chain in a recent interview on National Public Radio in the U.S.

Currently, most vaccine transport at the end stage of the cold chain uses an insulated box with a tight lid. Ice packs are used to maintain the temperature between 2–8°C (see Figure 2). The boxes must be used for transport within one working day; and they can store small quantities of vaccine in emergency situations when, for example, power fails. This is the most vulnerable part of the cold chain, and sadly, this technology has gone unchanged for nearly 50 years.

Focusing on a Solution

How did we become involved in a potential solution? Almost two decades ago, one of us (Ken Jacobson) became interested in solar home power for the developing world. Together with individuals at North Carolina State University (NCSU), Jacobson formed the Solar Development Initiative as part of the North Carolina Solar Center. The then Director of the Center, Larry Shirley, suggested that we point our efforts toward global health. We thus contacted Jim Lea, who was developing



Figure 2. Most vaccine is transported in ice packs. Adapted from WHO/PATH brochure "Optimizing Immunization Systems and Technologies for Tomorrow" (2009)



Figure 1. The vaccine cold chain. The last step, from local health center to the recipient, is the most vulnerable (adapted from WHO/PATH documents).

the Center for Global Health at the University of North Carolina at Chapel Hill (UNC). Shortly thereafter, we discovered that Rama Venkatasubramanian at RTI International was leading an effort in semiconductor thermoelectrics and had recently published some of his work in *Nature*. The two of us (Jacobson and Lea) realized that this could provide an innovative technical solution for the pernicious problem of cold chain failure. We contacted Rama, who became quite interested in the project, especially as it met the mission of RTI to improve the human condition.

Improved semiconductor technology provides the basis of an economically viable portable vaccine carrier in which ice packs are replaced by a solid-state thermoelectric (TE) temperature regulator. In practical terms, a TE device is a heat pump that transfers heat with electrons instead of a fluid. Thermoelectrics have constant efficiency and a lifetime limited only by the life of the power source. Advances in semiconductor thin films now permit fabrication of very efficient TE elements that are durable and lightweight. The cooler/carrier envisaged is compact, has no moving parts, and provides constant, reliable temperature control. Internal temperature of 2–8°C is maintained in an ambient environment of 43°C. We envision adding photovoltaic cells on the outside of the carrier, providing an onboard source of power and thereby allowing for a smaller rechargeable battery pack. This will also help keep ambient heat out.

Facing Obstacles

However, developing an efficient, field trial-ready vaccine cooler, beyond an initial prototype constructed at RTI using limited resources, has required much greater than expected persistence. The major obstacle is funding. Although this concept appears to be a viable, cost-effective solution to the problem of cold chain vulnerability, we have thus far failed to attract support from major foundations and government agencies. This is despite an R&D team that includes a world leader in semiconductor TE cooling at the RTI and a NCSU engineering group with highly respected expertise in heat transfer measurement and simulation and insulation technology. The appeal to the idealism of university students interested in using appropriate technology to provide better access to healthcare around the world also should build momentum in furthering this approach. Drawing on their intellectual energy would surely aid the development process.

We have not given up. We still believe that by reducing vaccine wastage, this application of TE cooling technology to a global public health need will help significantly increase immunization coverage and decrease the incidence of vaccine-preventable diseases worldwide. ■

—Ken Jacobson and James Lea, University of North Carolina at Chapel Hill

Cell Biology Textbooks for Africa



U.S. Embassy Deputy Public Affairs Officer Karen Grissette (right) presented science textbooks to Academic Learning Project Marketing Officer Mercy M. Masuki (center) and Deputy Vice Chancellor David Ngassapa (left) of Muhimbili University of Health and Allied Sciences (MUHAS) in Dar es Salaam. The textbooks were provided by the ASCB on behalf of scientific textbook publishers to support the joint MUHAS-UCSF Academic Learning Project. (Photo courtesy of the American Embassy).

LETTER to the Editor

Dear Editor,

Some time ago I sent Labby my questions, using the pen name “seasoned.” The first one was published in the *ASCB Newsletter*. Labby kindly responded personally to subsequent queries. I want to thank Labby very much for the suggestions and encouragement.

I have secured a faculty position at the level of associate professor in the Department of Biochemistry, Kansas City University of Medicine and Biosciences. I now have my own lab. The “Dear Labby” corner is very valuable for everybody who works in life science. I found not only the wise responses to my personal questions very helpful but also reading about others’ questions. I collect the columns because, after all, who knows when someone may need a piece of advice sometimes. ■

—A. Baki Agbas

Kansas City University of Medicine and Biosciences

Dolan Appointed CBE-LSE Editor-in-Chief



Erin Dolan

Erin Dolan of Virginia Tech University has been appointed Editor-in-Chief of *CBE—Life Sciences Education (CBE-LSE)* effective August 1, 2010. She will succeed William B. Wood, whose five-year term ends July 31, 2010.

Dolan was appointed by the ASCB Council on the recommendation of a search committee chaired by Malcolm Campbell, former Co-Editor-in-Chief of the journal. In considering potential candidates for the position, the committee solicited nominations from ASCB members and *CBE-LSE* Editorial Board members. The other search committee members were Education Committee Chair Caroline Kane and current and former Editorial Board members Raquell Holmes, Nancy Moreno, Julio Turrens, and Chris Watters.

“*CBE-LSE* is very important in the effort to improve biology education, and I’m delighted Erin is willing to take on the challenge. She has been involved in the journal since its inception in 2002, and has the energy and vision to take the journal to the next level,” said 2009 President Brigid Hogan. ■

—Thea Clarke

MEMBER Gifts

The ASCB is grateful to the following members and applicants who have recently given a gift to support Society activities:

Lynne Cassimeris

Sandra K. Masur

2010 Half-Century Fund Donors

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

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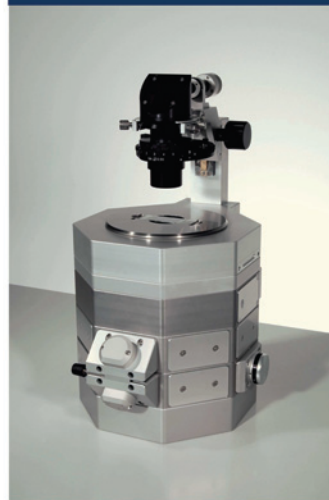
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Educational Opportunity Administrative Supplements. NIH announced that \$21 million of American Recovery and Reinvestment Act funding for administrative supplements to existing NIH grants over two years has been allocated for educational opportunities in NIH-funded laboratories for summer students and science educators. Applications may be submitted throughout FY09 and FY10, but some NIH Institutes and Centers may have specific deadlines. <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-09-060.html>.

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

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

National Centers for Biomedical Computing (R01). This funding opportunity is for projects from individual investigators or small groups to collaborate with the NIH Roadmap for Medical Research National Centers for Biomedical Computing (NCBCs). Collaborating projects are intended to engage researchers in building an excellent biomedical computing environment, using the computational tools and biological and behavioral application drivers of the funded NCBCs as foundation stones. Expiration: September 8, 2011. <http://grants.nih.gov/grants/guide/pa-files/PA-08-184.html>.

National Science Foundation Program for Innovations in Biological Imaging and Visualization. The goal of this activity is to identify opportunities for investment to advance state-of-the-art biological image analysis, data visualization, archiving, and dissemination. Participants selected through an open application process will engage in an intensive five-day residential workshop to generate project ideas through an innovative, real-time review process. Members of the biological research community, computational theorists and engineers, mathematicians, imaging specialists from other fields, educators involved in training the next generation of researchers, and a range of other specialists (artists, illustrators, etc.) are all strongly encouraged to participate. Deadline for submission of preliminary applications: April 12, 2010. www.nsf.gov/funding/pgm_summ.jsp?pims_id=503473&org=BIO&from=home.

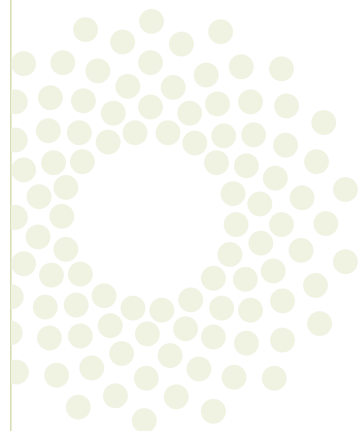
NIGMS Grants. The National Institute of General Medical Sciences is accepting applications for funding research in which several interdependent projects offer significant advantages over support of these same projects as individual research. Standard NIH application dates apply. <http://grants.nih.gov/grants/guide/pa-files/PA-07-030.html>.

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

Pathway to Independence Award. The primary purpose of the NIH Pathway to Independence Award (K99/R00) program is to increase and maintain a strong cohort of new and talented NIH-supported independent investigators. The program is designed to facilitate a timely transition from a mentored postdoctoral research position to a stable independent research position with independent NIH or other independent research support at an earlier stage than is currently the norm. Expiration: January 8, 2012. <http://grants.nih.gov/grants/guide/pa-files/PA-09-036.html>.

Research Supplements to Promote Diversity in Health-related Research. NIH and the Centers for Disease Control and Prevention (CDC) have announced to PIs holding specific types of NIH research grants that funds are available for administrative supplements to improve the diversity of the research workforce by supporting and recruiting students, postdoctoral researchers, and eligible investigators from groups that have been shown to be underrepresented. <http://grants.nih.gov/grants/guide/pa-files/PA-08-190.html>.

Research Supplements to Promote Re-entry into Biomedical and Behavioral Research Careers. These supplements are intended to encourage individuals to re-enter research careers within the missions of all NIH program areas. This program will provide administrative supplements to existing NIH research grants to support full-time or part-time research by individuals in a program geared to bring their existing research skills and knowledge up-to-date. Expiration: September 30, 2011. <http://grants.nih.gov/grants/guide/pa-files/PA-08-191.html>.



Ruth L. Kirschstein National Research Service Awards for Individual Predoctoral Fellows in PharmD/PhD

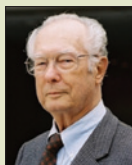
Programs. The objective of this NIH funding opportunity announcement is to help ensure that highly trained PharmD/PhD graduates will be available in adequate numbers and in appropriate research areas to carry out the U.S. biomedical, behavioral, and clinical research agenda. Expiration: January 8, 2012. <http://grants.nih.gov/grants/guide/pa-files/PA-09-029.html>.

SCORE Awards. The National Institute of General Medical Sciences is accepting applications for its Support of Competitive Research (SCORE) developmental awards designed to increase faculty research competitiveness at minority-serving institutions. Multiple deadlines through May 18, 2010. The program announcement, as well as three other program announcements (PAR-06-491, PAR-06-492, PAR-06-493), can be found at <http://grants1.nih.gov/grants/guide/pa-files/PAR-06-490.html#PartI>. ■

ASCB Idol...or Be a Star!

If you send the ASCB a video of yourself talking about what ASCB membership means to you, we may feature it on the ASCB website and in broadcast emails. So why not win fame—alas, no fortune—by telling the world what you value about ASCB membership? All submitters will be entered into a drawing for a free registration to the 50th ASCB Annual Meeting in Philadelphia. Video testimonials should be no more than 90 seconds in length, in .avi or .mov format. Contact Howie Berman at hberman@ascb.org for instructions on how to send one to us. Thank you! ■

MEMBERS in the News



Watt W. Webb, of Cornell University, who first became an ASCB member in 1980, is the recipient of the National Academy of Sciences' Alexander Hollaender Award in Biophysics. The award recognizes contributions from an outstanding biophysicist.



Susan Wente, of Vanderbilt University Medical Center, an ASCB member since 1992, was recently named Associate Vice Chancellor for Research and Senior Associate Dean for Biomedical Sciences. She had previously served as Chair of the Department of Cell and Developmental Biology.

In Memoriam

We note the recent passing of ASCB members Gary Bokoch, Adriel Johnson, and Robert Trelstad, and express our condolences to their families, friends, and colleagues. ■

The ASCB is Social



<http://tinyurl.com/yg8hfwg>



<http://twitter.com/AmerSocCellBio>

MEETINGS Calendar

A complete list of upcoming meetings can be found at <http://ascb.org/othermeetings.psp>. The following meeting has been added since the last issue of the *Newsletter*:

April 11–13, 2010. Boston, MA

Progeria Research Foundation 10th Anniversary Workshop on Progeria: From Bench to Bedside in a Decade. www.progeriaresearch.org/workshop-2010-announcement.html.

May 20–23, 2010. San Diego, CA

American Society for Microbiology 17th Annual Conference for Undergraduate Educators. www.asmcue.org.

ASCB Annual Meetings

December 11–15, 2010. Philadelphia

December 3–7, 2011. Denver

December 15–19, 2012. San Francisco

December 14–18, 2013. New Orleans

December 6–10, 2014. Philadelphia

December 12–16, 2015. San Diego

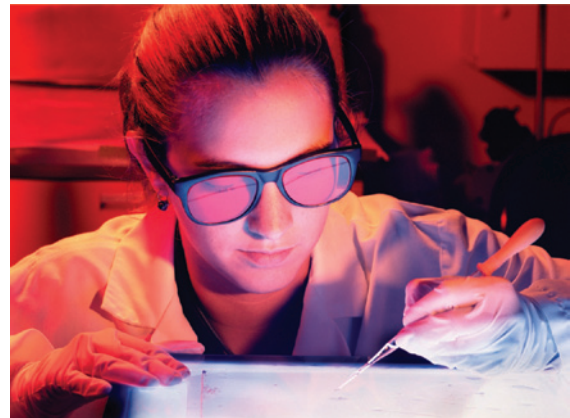


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