THE AMERICAN SOCIETY FOR CELL BIOLOGY

NEWS LETTER

VOLUME 27, NUMBER 12 December 2004

CONTENTS

Federal Science Policy, Funding Uncertain in Second Bush Term

President Bush's election to a second term leaves the future of Federal biomedical research policy in doubt. With increasing deficits, mounting costs for the war in Iraq, and campaign pledges to provide more tax cuts, funding for the National Institutes of Health (NIH) and the National Science Foundation (NSF) will become tighter.

After funding the final year of a five-year plan to double the NIH budget in FY2003, the Bush Administration has requested 2-3% budget increases for the NIH each year since. In addition, the Administration has not made an effort to double the budget of the NSF despite signing legislation that calls for the doubling of the NSF budget over five years.

Continued on page 27

Newsletter News

Starting next month: new look, same great content

Villa-Komaroff to Succeed Wilson as MAC Chair

Lydia Villa-Komaroff

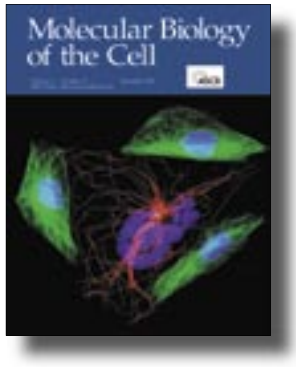
Donella Wilson

ASCB President-Elect Zena Werb has announced the appointment of Lydia Villa-Komaroff as Chair of the ASCB Minorities Affairs Committee, effective 2005.

Villa-Komaroff, an ASCB member since 1976, has served on the Society's Council. She is at MIT's Whitehead Institute. Villa-Komaroff was the 2000 E.E. Just Lecturer, in recognition of outstanding achievement by a minority scientist.

Villa-Komaroff succeeds Donella Wilson, who has served on the MAC since 1992, and as Vice Chair or Chair since 2000. ■

Molecular Biology of the Cell: It's *Our* Journal



This commentary is summarized from an article to be published in the January 2005 issue Molecular Biology of the Cell *by incoming Editor-in-Chief Sandra L. Schmid.*

A vital part of the philosophy of the *Molecular Biology of the Cell* is that, "the reporting of science is an integral part of research itself and scientific journals should be instruments in which scientists are at the controls. Hence, *MBC* serves as an instrument of the ASCB membership and as such advocates the interests of both contributors and readers." In other words, *MBC* is *our* journal. We are active participants—as editors, reviewers, authors and readers—in determining how *MBC* impacts research and researchers in cell biology. As stewards of *MBC*, what are our responsibilities and how do we exercise them?

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Harvey Lodish

PRESIDENT'S COLUMN

Private Philanthropy and the Biomedical Sciences

The original title of this piece was to be "Reflections on the ASCB Presidency: 1500 E-mails and Counting." My plan was to review the education gained, disappointments endured and satisfactions enjoyed over this exhilarating year: helping to convince members of the Ohio State School Board not to insert Creationism into tenth grade biology curricula; reminding the NIH Director that the first Pioneer Awards suggest that science is still not gender blind; defending public access to the scientific literature that it funds; developing plans to create the ASCB Image Library.

> The re-elected Administration has made it clear that increasing Federal support of biomedical research is a "luxury" that the country cannot afford when it's dealing with the expense of the war in Iraq and the Federal deficit it has helped create.

But the events of November 2 brought more important issues to the surface. The re-elected Administration has made it clear that increasing Federal support of biomedical research is a "luxury" that the country cannot afford when it's dealing with the expense of the war in Iraq and the Federal deficit it has helped create. It is projected that budgets for the NIH and NSF over the next years will not keep up with inflation; in fact monies for almost all discretionary Federal programs will be reduced to pay for our military activity and to compensate for tax cuts. The chances of Federal support for research on new embryonic stem cell lines are sadly close to zero.

> "This is not the way any rational nation should organize its support of scientific research. Ideally, the National Institutes of Health…would award grants to the best scientists and research proposals wherever they might be."

Voices of science and reason will continue to struggle to be heard in Washington. It is not just that the President's Council on Bioethics lacks scientists who are expert in embryonic stem cell research. Potential members of advisory boards in areas such as global warming, oil exploration, health care delivery, and drug approval likely will continue to be subjected to political questioning (do you support the President and did you vote for him?) and persons opposed to current dogmas will be systematically excluded.

But all is not gloom and doom in the biomedical sciences. The citizens of California had the sense to rise above concerns about the state's fiscal solvency and support Proposition 71. The addition of $300 million in annual support for research on human embryonic stem cells over the next ten years will be a fantastic boost to the field and may go a long way toward compensating for the refusal of the Federal government to support significant work in this area. The problem, of course, is that one has to work in California to have access to this pool of money. An intent of the Proposition was to make California the epicenter of stem cell research; undoubtedly scientists at many levels will leave institutions in other states or countries to work in California universities, research institutes, and biotechnology companies.

But to quote the *New York Times*[1],"This is not the way any rational nation should organize its support of scientific research. Ideally, the National Institutes of Health…would award grants to the best scientists and research proposals wherever they might be. Only Mr. Bush's

reluctance to support this research and his opposition to therapeutic cloning can justify a state-by-state approach." Where does this leave ES cell work in the rest of the country?

This brings me to my major point—the historical importance of private funding for the biomedical sciences in the United States, and the exceptional need for such funding now. Among all nations, the United States —and to a lesser extent the United Kingdom—uniquely enjoys extensive support from private philanthropy for innovation and career development in the sciences, especially the biomedical sciences. Many of the buildings in which we work and the equipment we use in our research have been donated by private individuals or charitable foundations. Endowed chairs give colleges and universities the ability to hire and retain distinguished faculty.

Perhaps most importantly, private philanthropy provides institutions the incentive, the flexibility, and the wherewithal to start new initiatives and develop new research areas in the absence of government interest or support. Foundations such as the American Cancer Society, Helen Hay Whitney, and many others support promising postdoctoral fellows and provide "starter" grants for young independent investigators. Disease-focused foundations provide support for work on less-studied problems. In these ways, United States institutions—and thus the science that is done in them—are at a tremendous advantage over those in other countries, where little if any nongovernmental funding is available. In all too many countries the ignorance or idiosyncrasies of individual governmental ministers have had disastrous long-term effects on the research enterprise. Changes in government priorities can turn research funding on its head.

Tax laws in the United States encourage individuals of wealth to donate money to non-profit institutions—not only colleges and universities, but also museums and religious, charitable, and social service institutions. Roughly speaking, for every $100,000 contribution made by an individual in the top (35%) tax bracket, he or she gets a reduction of about $35,000 in Federal taxes. Put another way, the actual cost to the donor of the $100,000 gift is $65,000. The Federal

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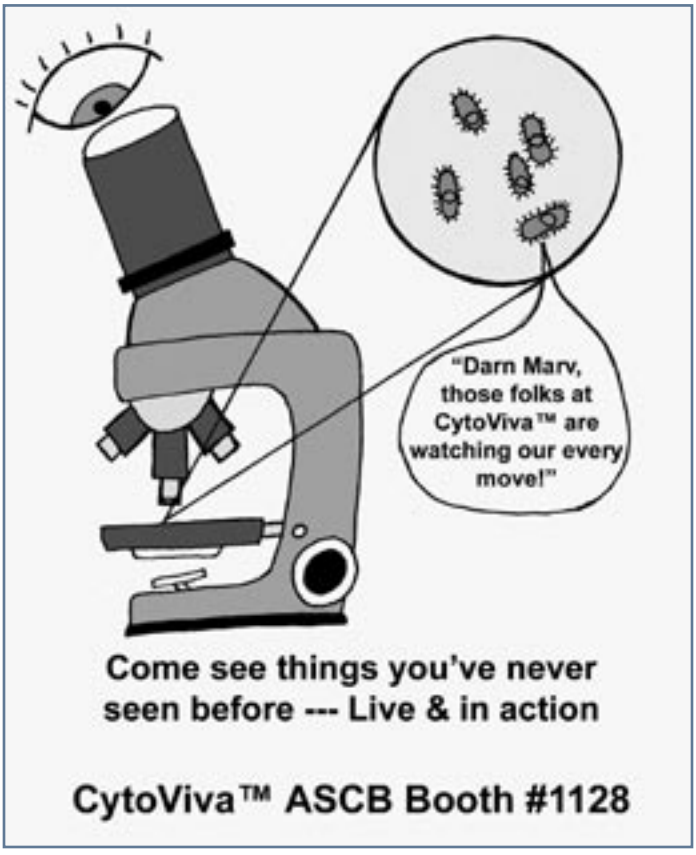

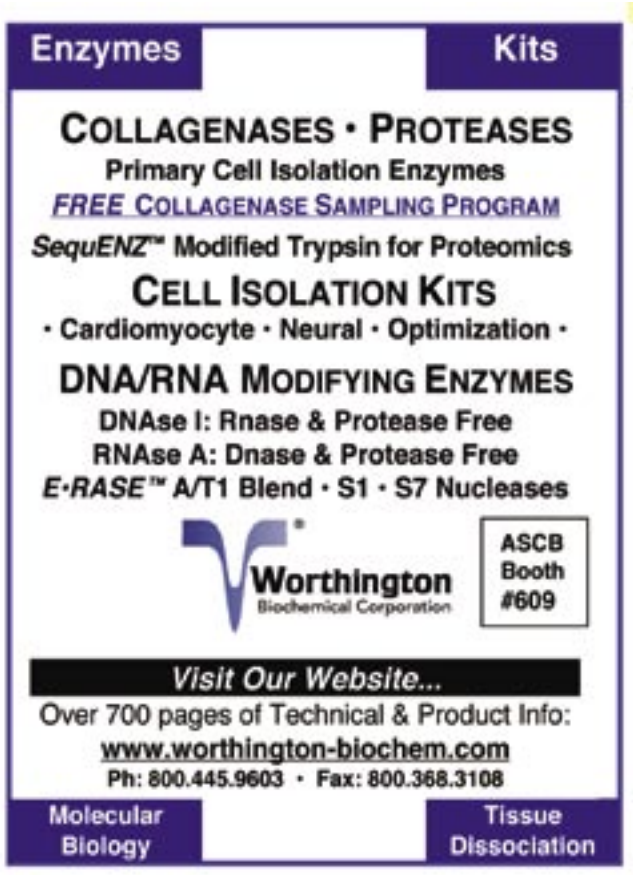

government, in essence, kicks in the other $35,000 whether or not the donor's wishes are in line with current government tenets.

Private support has been crucial in funding human ES cell research in this country and undoubtedly will continue to be in the foreseeable future. The Juvenile Diabetes Research Foundation and the Howard Hughes Medical Institute, as well as legions of private donors, are to be commended for their foresight in funding this research in the face of government opposition. This is real democracy in action—individuals or small groups of dedicated volunteers raise money to support research projects they passionately believe in.

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Private support is not limited to ES cell research. Research on malaria and other tropical diseases, despite their huge impact on Third World countries, has never been a priority for the Federal government. Simply put, there are no advocacy organizations that are dedicated to ensuring large-scale funding for research or training for diseases that affect few Americans. Without support from the Gates Foundation and other farsighted groups, there would be no possibility of developing a drug or vaccine against the malaria or Leishmania parasites, or field-testing them in African or South Asian villages.

Both as a cell biology society and as individuals, we must continue to push for Federal support of basic research. ES cell research, therapeutic cloning, and basic work in molecular and cellular biology in particular need our continued support. But we should not neglect the private sector. Many universities and research institutions already have groups of supporters who, over time, become educated about research projects currently underway and help finance innovative projects and people. We must do more to educate individuals with the means to help us—tell them our stories and get them excited about the importance of what we are doing and our dreams for the future. ■

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

[1]*The New York Times*, November 5, 2004.

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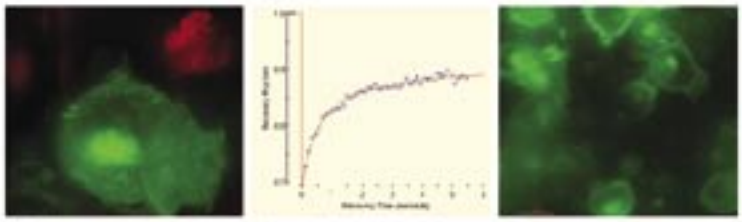

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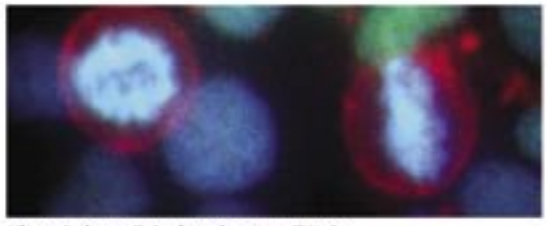

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ASCB PROFILE

William Wood

It was Bruce Alberts who indirectly introduced Bill Wood to the revolutionary idea that the best way to improve the teaching of science is to apply a little science to teaching. "Bruce asked me in 1999 if I would join a National Research Council committee that was looking at advanced placement science courses in high schools. About half the members of the committee were educators, and quite frankly when I joined the committee I didn't have a lot of respect for people in education schools. But it was a revelation. I discovered that over the last 30 years, [educational researchers] had been systematically validating all these notions that had been flying around since the 1960s about student-centered approaches and inquiry-based learning. I didn't realize that educators were doing things that I would be interested in."

William Wood

Wood's interest in "evidence-based pedagogy" led to his chairmanship of the biology panel for that NRC committee, which produced the 2002 report, "Learning & Understanding." His new objective is nothing less than the transformation of undergraduate biology teaching at large research universities. Wood explains, "We need to learn how to do a better job of educating our undergraduates. We should approach our pedagogy the same way that we approach science, trying to get evidence for which techniques work better. Before, people teaching innovation would report anecdotally that students liked it better if you did this or that. But now in physics and to a growing extent in biology, people are trying to really assess how much students have learned and to test different pedagogical approaches on the basis of that assay."

His new objective is nothing less than the transformation of undergraduate biology teaching at large research universities.

With major support from the Howard Hughes Medical Institute, the first National Academies Summer Institute for Undergraduate Education in Biology convened in Madison, Wisconsin, last summer. "The idea is to reach junior faculty who are under tremendous pressure to produce research and at the same time are obligated to teach these large introductory classes," says Wood. "Our model was Cold Spring Harbor or Woods Hole where you go for a week and immerse yourself in science. Here you eat and sleep science pedagogy for a week."

Bill Wood will receive the ASCB Bruce Alberts Award this month in recognition of his extraordinary contributions to science education. Alberts says that being the living namesake of a major award can be daunting. Bill Wood, says Alberts, is the perfect choice. "It honors the Award," says Alberts, "just to have Bill Wood's name associated with it. Bill has been an innovator in biology education from the time he started at Caltech [in 1965]. The book that he wrote in 1974, *Biochemistry: A Problems Approach*, was revolutionary in its day, especially in biology. Bill showed us a way to teach kids how to think instead of just memorizing. This was at a time when all of us, including myself, took it for granted that the best way to teach was the way we had been taught. Bill was way ahead of everyone then."

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Alberts continues, "Of course, we know from studies now that people learn in different ways and arrive on campus with different levels of preparation. By and large, we don't give them much of chance to catch up. As a result, we discourage a lot of people who could become good scientists and we also turn off a large number of future leaders of our society who come away from these

classes disillusioned with science in ways that will become a problem for us later."

Jim Gentile, Dean of Natural Sciences at Hope College in Michigan, served as co-chair with Wood at the first Summer Institute. Gentile says, "When you're a stellar scholar like Bill, no one is ever going to question your research credentials. So it's a critical thing for someone like Bill Wood to step to the plate and talk about the integration of research and teaching. It sets up a role model particularly for junior scientists on how to integrate what they do in the lab with what they do in the classroom without jeopardizing their careers."

Wood, who trained with Paul Berg at Stanford, brought a biochemistry perspective to his collaboration with geneticist Bob Edgar at Caltech on the development of T4 bacteriophage. Says Wood's University of Colorado colleague and former ASCB President Dick McIntosh, "Together Edgar and Wood established a new kind of union between genetics and biochemistry with a technique they invented called *in vitro* complementation." Edgar had isolated phage mutants with defects that left them unable to carry through to the production of infectious phage particles. Edgar and Wood combined extracts of cells infected with different defective alleles to see which combinations could produce complete phage. "It gave them a way of looking at the mutants that were blocking the phage's assembly of infectious particles," says McIntosh, "and as a result, they were able to put a whole series of mutants into phage formation pathways. Edgar and Wood were the first to work out the pathway for the assembly of a complex bacteriophage.

"This was a tremendous advance," McIntosh recalls. "It allowed people to understand, at least in basic terms, how a viral particle assembles as a series of protein biochemical steps. It was the reason that Bill was elected to the National Academy of Sciences as a very young man." Wood was 34.

Wood would change methodologies in 1978 when he left Caltech for the University of Colorado, Boulder, where he'd already learned *C. elegans* genetics during a sabbatical with David Hirsh. In recent years, Wood and his nematodes have pursued the developmental question of handedness or embryonic asymmetry. That's as basic a question as you can find, says McIntosh. "How does an organism that is developing symmetrically from a single fertilized egg develop asymmetry? What is the earliest moment when symmetry is broken? It's a very fundamental question and just the sort of thing that has always fascinated Bill Wood."

William Barry Wood grew up with a tough act to follow. His father, also William Barry Wood, was a legend in medicine, clinical research and sports. Arguably the greatest Ivy League scholar-athlete of the 20th century, his father lettered ten times at Harvard, captained the football team and was named the 1931 All-American quarterback. The eldest of five, Bill Wood shared his father's passion for science but lacked his father's build for football or his interest in clinical medicine. But the younger Wood had other passions, particularly for folk music. As a Harvard

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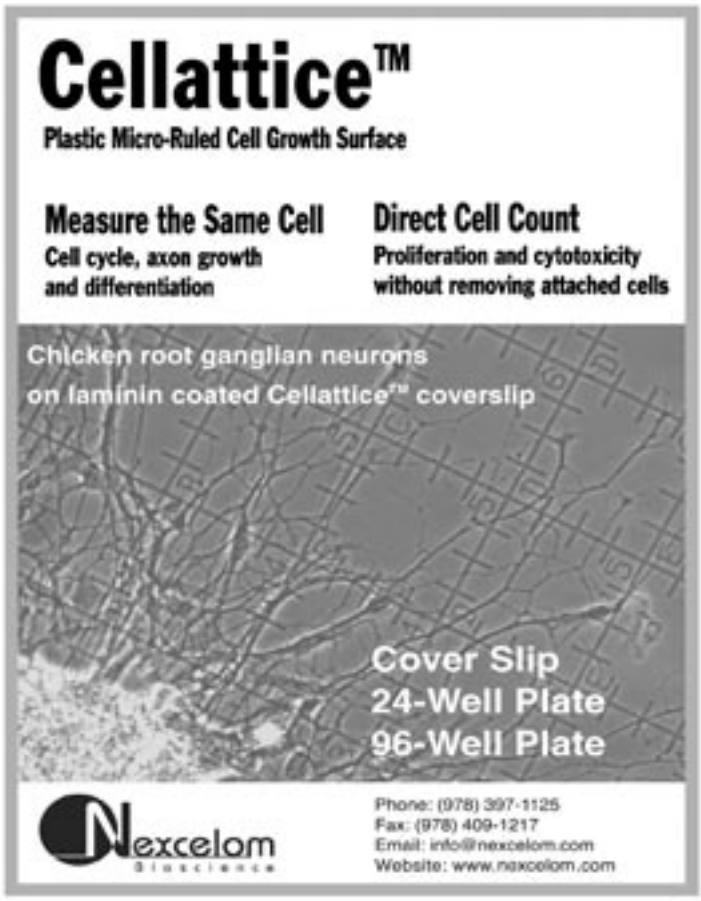

undergraduate, he became known as a virtuoso guitar player with an encyclopedic repertoire and a folk music radio show on the student station. One of his studio guests was an unknown singer named Joan Baez who liked Wood's playing. They did a series of Cambridge folk club gigs together and even made a record in 1959.

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Wood's father had attended medical school at Johns Hopkins before joining the faculty at Washington University and then returning to Hopkins as Vice President. His father suggested that Bill talk to his old friend, Arthur Kornberg, in St. Louis about graduate school. Kornberg was delighted but he too was on the move. "Stanford had lured away Kornberg's department including Paul Berg," Wood recalls. That year, Kornberg won the Nobel Prize, as did later Wood's post-doc supervisor at the University of Geneva, Werner Arber.

Wood's European post-doc stint led to an even more important introduction, to a German graduate student living in France. Renate and Bill Wood married in 1961 and moved in 1965 to Pasadena and Caltech. After a dozen years in the US, Renate Wood became a poet in English. Wood says his wife never seriously wrote poetry in any language before she started writing in English about the nightmarish world of her WWII childhood in Germany. Renate Wood is a frequent contributor to poetry journals and the author of two published collections, *The Patience of Ice* and *Raised Underground.*

One of their most successful innovations was "Krebs Cycle Poker," based on the citric acid cycle... Students quickly learned never to bet on an apparent straight unless they were certain about all the intermediates.

The Woods have two sons who are both successful, professional musicians. Oliver plays lead guitar in a blues/pop band, and Chris is the bass player in the "jam band," Medeski, Martin and Wood. Says their proud father, "I may secretly have wanted to do that, but I never seriously considered it as a career. I have to laugh now because they're both doing so well, I think Chris is making more money than I do." Oliver lives in Atlanta and Chris in upstate New York with his wife Sirkka and Wood's first grandchild, Nissa.

His sons contributed to Wood's original interest in education reform. When they were little, the boys were enrolled in a Pasadena experimental nursery school that expected parents to be highly involved. Inspired by the writings of education critics such as John Holt and Jonathan Kozol, Wood challenged teaching traditions at Caltech. He inherited an 8 a.m. "Intro to Biochem" lecture course, and began by moving it to a more civilized hour. Then he tried a series of experiments to coax his glassy-eyed students out of their rote learning expectations. It was a long struggle. Along the way, Wood enlisted grad student John Wilson (who would later become his co-author on the *Problems* textbook and a professor at Baylor), one of Caltech's first women undergrads, Sharon Long (who became a noted plant physiologist and then Stanford dean), and another junior faculty member, Lee Hood. One of their most successful innovations was "Krebs Cycle Poker," based on the citric acid cycle, says Wood. Students quickly learned never to bet on an apparent straight unless they were certain about all the intermediates.

His return to the challenge of overhauling biology education hasn't slowed Wood's research. Currently he is using sabbatical time to work with Tony Hyman at the new Max Planck Institute in Dresden on the origin of handedness. Wood's Boulder lab had some success last year with a gene encoding G-alpha protein GPA-16 in *C. elegans*, whose loss disrupted asymmetry. Wood now thinks that this protein is involved downstream in maintaining asymmetry through early development, but it's not the starting point.

"I'm interested in finding the initial cue that tells the embryo to break left-right symmetry and which way to do it," says Wood. "You start with an embryo that's left-right symmetrical and it becomes left-right asymmetrical and it always does so with the same handedness. Once that cue is given, you have to maintain the handedness. We did find a gene that seemed to involved in maintaining that," says Wood. "But I'm looking for the prime mover. We've got ideas but we're not there yet." ■

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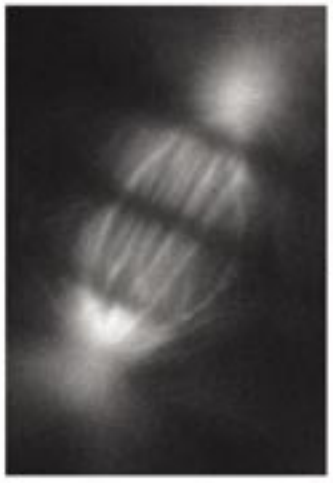

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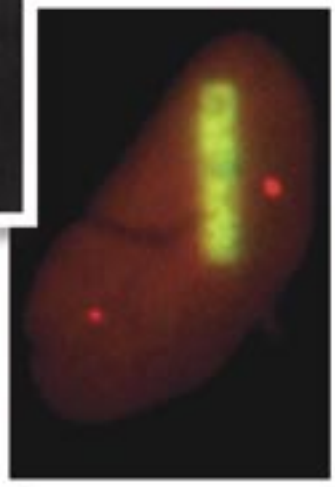

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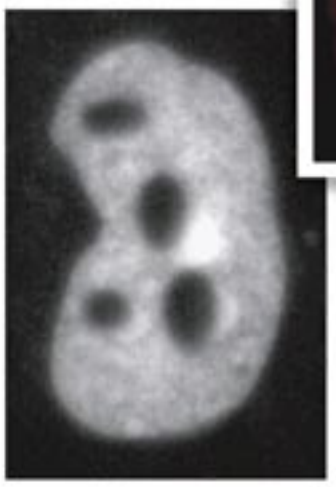

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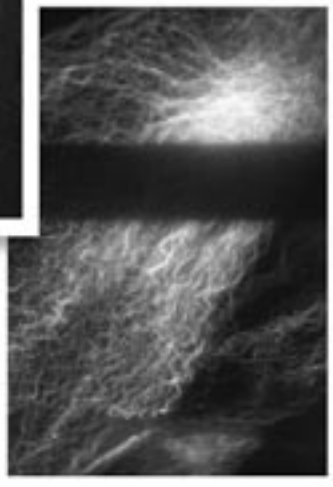

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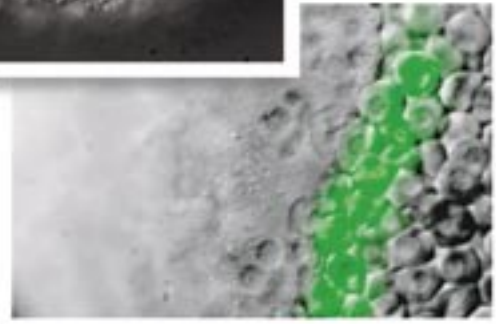

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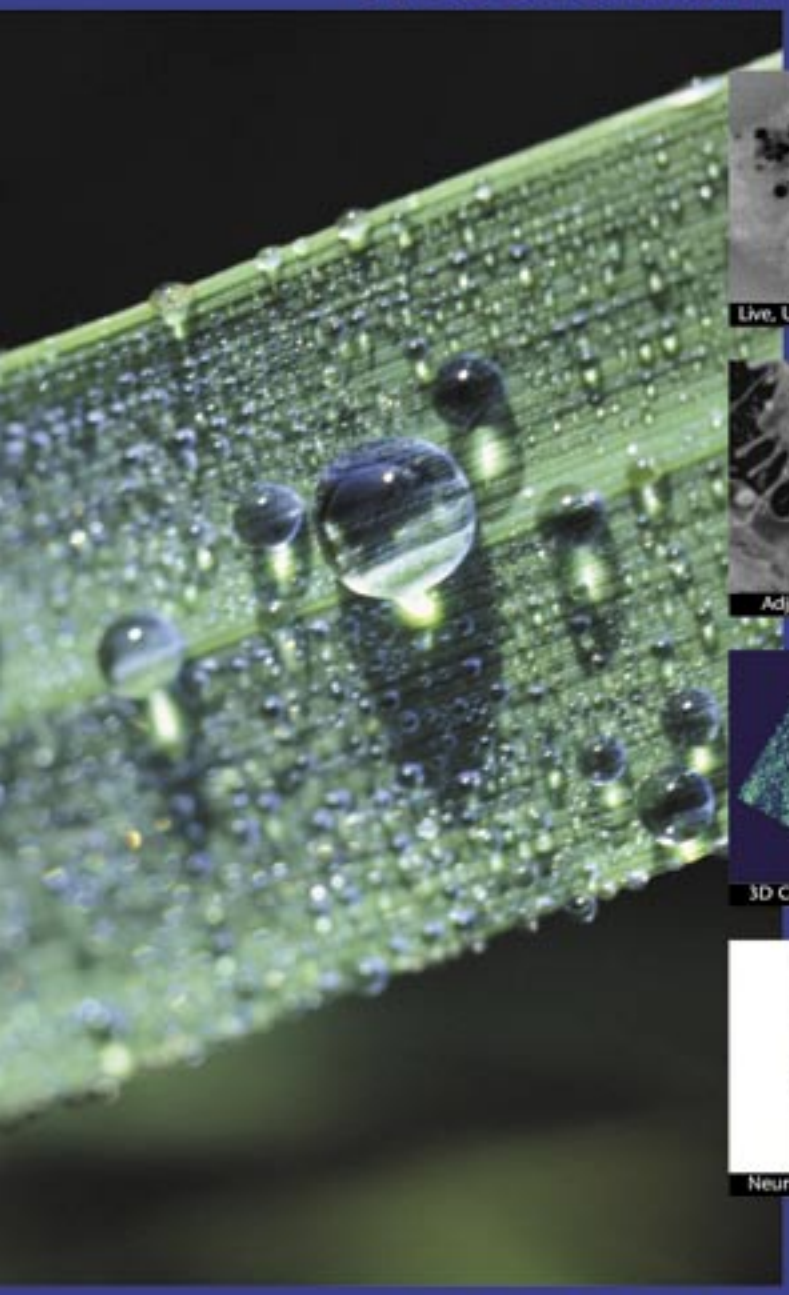
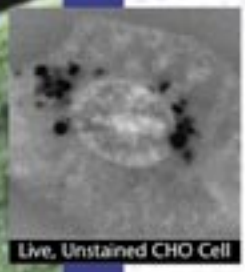
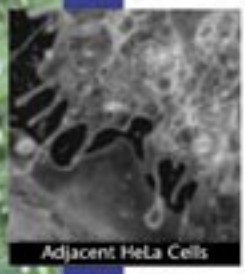
Cell Biology at Nature's Resolution

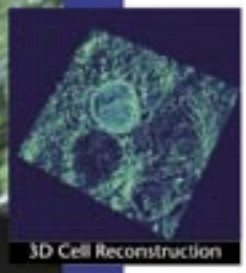




Live, Unstained CHO Cell



Adjacent HeLa Cells



3D Cell Reconstruction

Neurotrophin Receptor

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3D Cell Reconstruction image courtesy of Roger Wepf, Research Brand, Beiersdorf AG, Hamburg, Germany.

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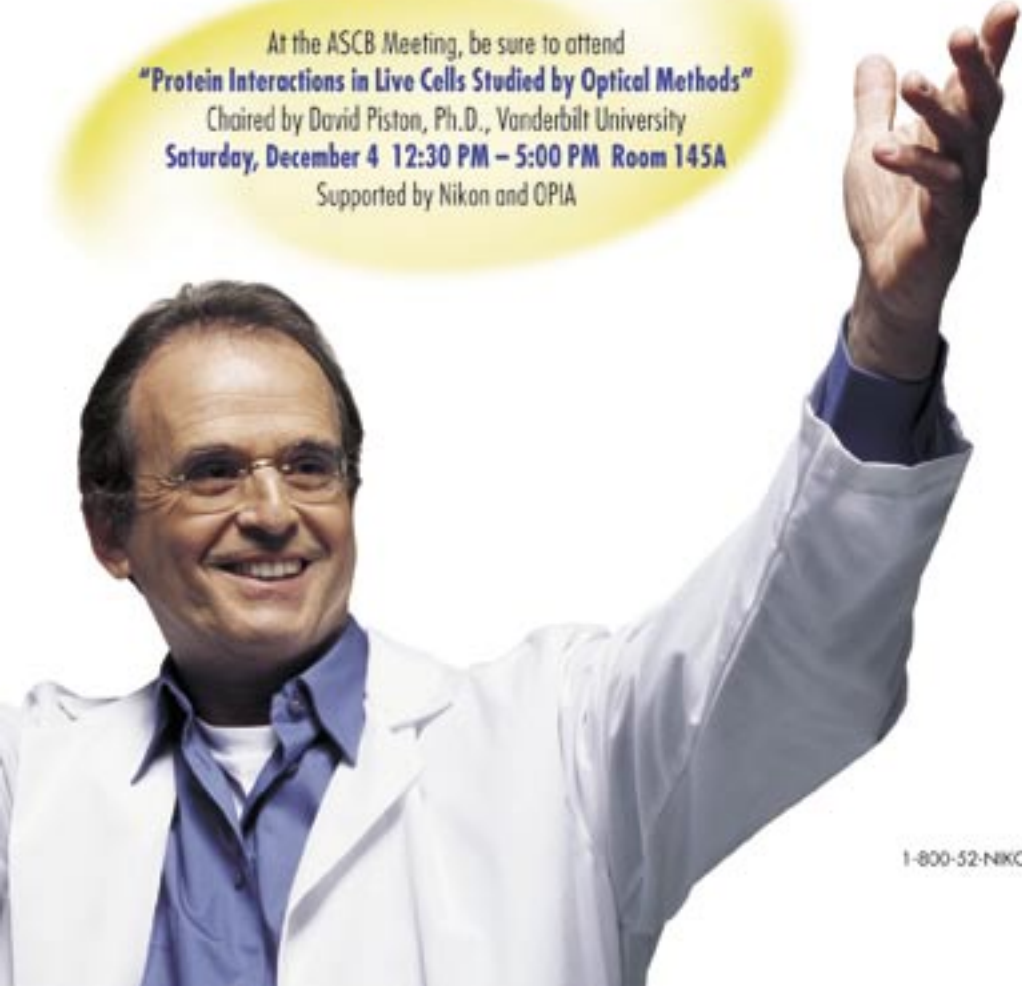

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Nominating Committee Chair Announced

Mina Bissell

ASCB President-Elect Zena Werb has announced the appointment of Mina Bissell as Chair of the ASCB Nominating Committee for 2005.

Bissell is at Lawrence Berkeley National Laboratories. She served as Society President in 1997. The Nominating Committee will recruit candidates for ASCB Council, Treasurer and for candidates to serve as President in 2007. ■

MEMBERS IN THE NEWS

Joseph Ecker of the Salk Institute, an ASCB member since 2001, and **Douglas Melton** of Harvard University, an ASCB member since 1989, were named two of the *Scientific American* 50.

Jeff Errington of the University of Oxford, an ASCB member since 2003, **Jonathon Howard** of the Max Planck Institute of Molecular and Cell Biology, an ASCB member since 1995, **Sergio Moreno** of the Cancer Research Institute, Spain, an ASCB member since 2003, and **Pernille Rørth** of the European Molecular Biology Laboratory, an ASCB member since 2004, were elected members of the European Molecular Biology Organization. **Peter Walter** of the University of California, San Francisco/HHMI, an ASCB member since 1984, was named an associate member of EMBO.

R. Scott Hawley of the Stowers Institute for Medical Research, an ASCB member since 2002, has been named an American Cancer Research Professor. ■

Joseph Ecker

Jeff Errington

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Scott Hawley

Jonathon Howard

Douglas Melton

Sergio Moreno

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DEAR LABBY

Dear Labby:

I am a third-year post-doc in a moderate-sized university research lab. It happens that I am the sole native speaker of English among the students and post-docs. As such, it has become standard practice for lab members to refer all manuscripts (and other miscellany including their correspondence) to me for editing, whether I am an author on them or not. This was never a negotiated responsibility: it just, understandably, evolved.

In principle, I don't mind helping my labmates in this way. But I have found that they have come to depend on me to an extent that is a serious burden on my time. There is rarely a moment when a paper isn't in the queue waiting for some stage of revision by me. And of course, while most people are grateful for my help, they are at the same time anxious for a speedy turnaround, which makes the demand on me yet greater.

I feel partly responsible because I have allowed myself to be called upon in this way for so long. On the other hand, enough may be enough. How can I extract myself from this situation without disaffecting my colleagues and PI?

—"E.B. White"

Dear "E.B.",

Your colleagues are lucky to have had your help as long as they have. But I agree that enough is enough. Go to your PI and explain as you have to me that the time you are spending on editing services is detracting from your work, and that you can no longer take responsibility for it. If your PI seems hesitant to take over personally, suggest to her or him that your university may have an office that provides this service to faculty and staff, or that it may be worthwhile to use fungible lab money to pay a contract science copyeditor to perform these services (the National Association of Science Writers, www.nasw.org, can help you find one). Then ask your PI to communicate the change to everyone at the next lab meeting. If s/he is smart and diplomatic, s/he will indicate profound gratitude for your contributions to-date, and not necessarily reveal to your colleagues that the change emanates from a request on your part (amazing how effective a stray copy of the *ASCB Newsletter* opened to Labby's page and discretely left on your PI's chair can get the message across.)

I suggest you make an exception for papers on which you are an author, because improving the draft will be in your interest: one cannot overstate the different receptions to a well- versus poorly-written paper by reviewers and editors.

—Labby

Dear Labby:

My baymate and I often talk about science, but more than once he has told our advisor my ideas but "forgets" to tell her that I thought of them. How can I prevent him from taking credit for my ideas? Or should I not expect to get credit for my ideas? Is the burden on me to be more proactive and/or distrustful?

—Wanting Credit Where it's Due

Dear Credit,

You have hit on an important issue in cell biology: Do ideas count?

Ideas are often bandied about, then forgotten, only to come back months later when a new result or brainstorming resurfaces it. Ideas need context to make them testable. After generating new data, the idea may make sense from a different person than the one who originated it. The person may genuinely have come up with the idea independently, not remembering that someone else brought it up earlier. Then the issue is whether the ownership resides with the first person who suggested it or the prepared mind that puts it in a realistic context.

What your baymate is doing is wrong, if he realizes that he is doing it. However, you should take charge of your own ideas. Be more proactive in telling your advisor about them. In the meantime, don't stop talking to your baymate. It seems that he is a good sounding board for you and he helps you come up with new ideas. Tell him to check with you before telling your advisor about the idea, or perhaps you should talk to her together.

In most part, cell biology is an empirical science. In a sense, ideas are free. What counts more is what you do with the idea. If your baymate takes the idea and validates it experimentally, and it's the only idea he had, then that is a problem for him. If it's the only idea you ever had, then it is a problem for you!

—Labby

Dear Labby:

I got a very interesting preliminary result a few weeks ago—but I can't reproduce it! My advisor was really, really excited about it ("It'll get you an article in *Cell*!") He wants to include it in his next grant application and in his talk at a meeting next month. I am a little uneasy about this. How do you suggest that I handle it? What if I never am able to reproduce it?

—Preliminary Finder

Dear Prelim,

Reproducibility is the ground spring of science. The field can build on findings only if the result can be reproduced by others. However, it is also true that some results are meaningful even if they are not immediately reproduced.

The first time *in vitro* fertilization worked was after years of not working and even then it did not work immediately thereafter for others. Mangold and Spemann's transplants of frog tissue to find the developmental organizer worked only 1 out of 100 times, but Spemann got the Nobel Prize for it. Experiments done at "room temperature" in the Cavendish Laboratory in Cambridge, England on electrical conductivity in the 1930s could not be reproduced until someone discovered that the British idea of room temperature at the time was 2-3° C! However, in most cases, failure to reproduce results owes to mistakes or random fluctuation. In rare cases, sabotage or fraud may be involved (e.g., deliberately putting the wrong reagent into a bottle). The skill in science is to recognize into which category your experiments fall.

First, go talk to your advisor. Tell him your concerns. He should be receptive, but, if he is not, probe why he believes the first experiment, but not the follow-up. By the same token, you should also analyze if anything was different between the first time you did the experiment and subsequent times. Different batches of serum, other reagents, common solutions, old oxidized reagents versus fresh unoxidized, different sources of water, different brands or batches of culture dishes or pipette tips, different PCR machines, all can produce different results. The vigor with which you sleuth out these differences can give insight into new or unexpected cell biological processes.

It may take some time to find the truth behind your results or whether you can ever reproduce the initial finding. If your advisor really believes the results, then should he talk or write in his grant about it? Many prudent scientists would choose to wait. However, the result may be important for your advisor's career development, too, so he may want to take the risk. How do you talk about such a very preliminary result? You must tell the truth. Say that you have had an interesting finding in one experiment, but have not yet been able to reproduce it. You should also explain the implications if it is true, and if it is not. If it does not reproduce in time, you need to own up to it.

You have obviously figured out an important lesson in science: that reproducibility is important, and that not all leads are true, but if you are lucky enough to get results that excite you and make you think, you will come out a better scientist for it.

—Labby

Dear Labby:
I asked for some constructs containing my favorite gene from my colleague/competitor, but when I tried to use the constructs, they clearly weren't the right constructs—the DNA did not give digests of the right size. Also, when I tried transfecting the constructs into cells, the cells died—but the construct was supposed to have an anti-apoptotic factor in it. How do you suggest that I handle this problem? Is it possible that this professor (or his postdoc) sent me the wrong construct on purpose?

—Connie Struct

Dear Connie,
The NIH and many journals have a policy of sharing renewable reagents. Scientists are obliged to share such materials with others to prevent expensive duplication of effort.

Always assume first that the problem was a human error, either yours or theirs. Did they send you something in an old vector like pBR322 that has tetracycline resistance for the insert, whereas you assumed it was ampicillin resistant and thus grew some garbage? Did you have a problem eluting the cDNA and what you got was garbage? Did they send the clone in good faith, but make a mistake because their freezer box code was flawed after the person who made the clone left?

Ask for another sample of the clone, telling them what the problem was. You should expect them to send you another aliquot. If it happens again, it still may be sloppy science on their part—did they check what they sent before then sent it out?

At this point try to get the clone from someone else. Alternatively, it may be simpler to put together your own clone by PCR from a library.

In some cases, scientists try to undermine sharing out of a misguided desire to save the field for themselves. So they "comply" by sending out the wrong material. If this is the case, what should you do?

If you are convinced that this is genuine fraud and you can prove it, then you should report it to the journal in which their work was published and/or the NIH. This is a serious accusation so you should consult your advisor and then together your institutional legal office before doing so. It goes without saying that this action will not get you the clone in any reasonable time.

—Labby ■

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

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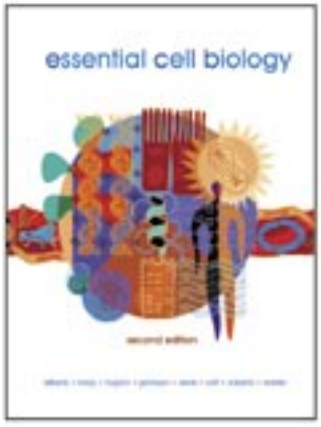

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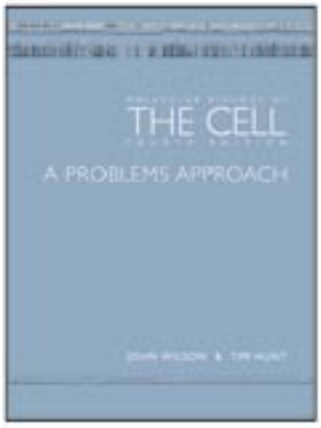

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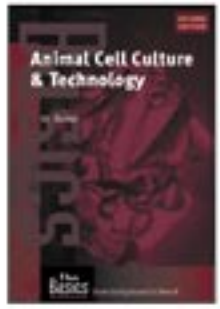

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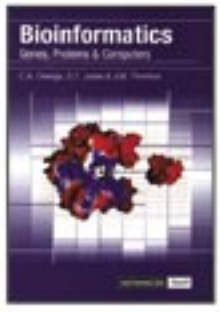

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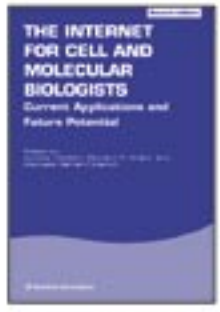

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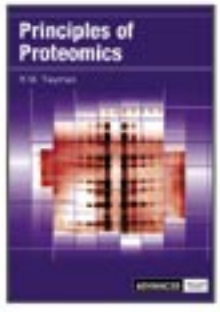

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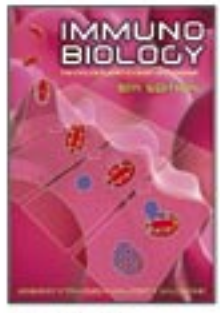

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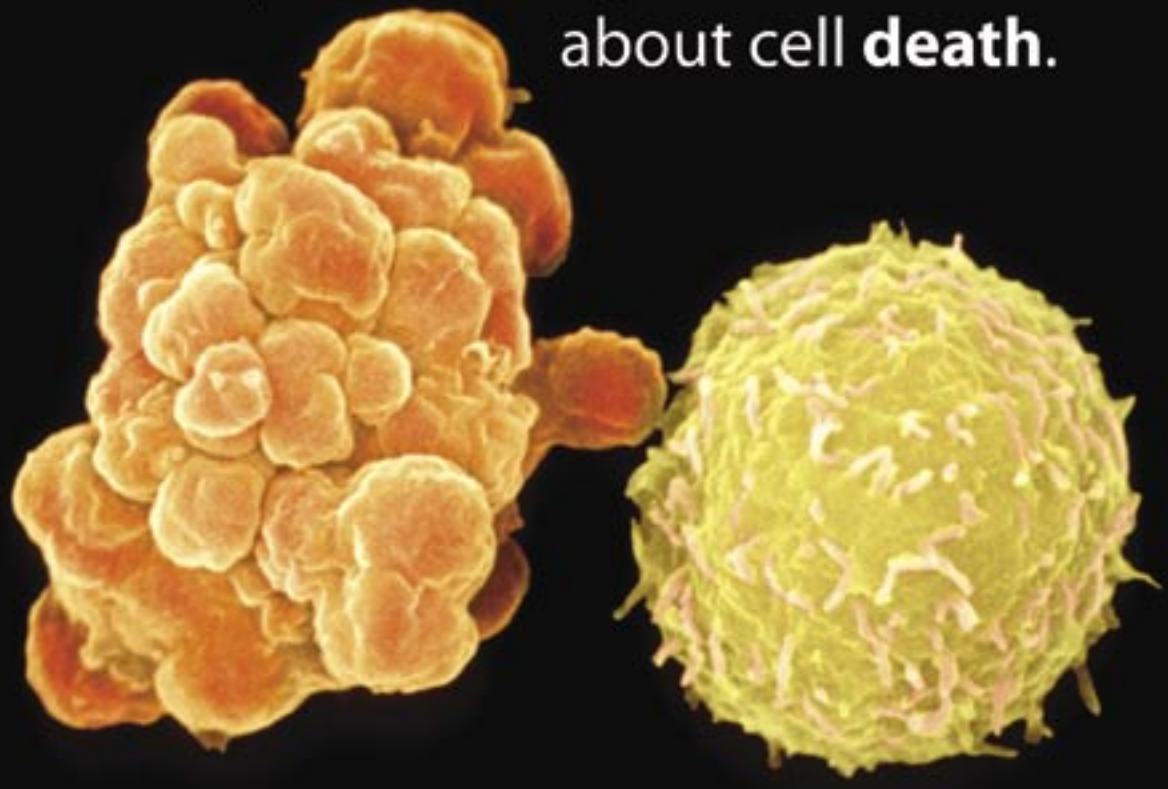

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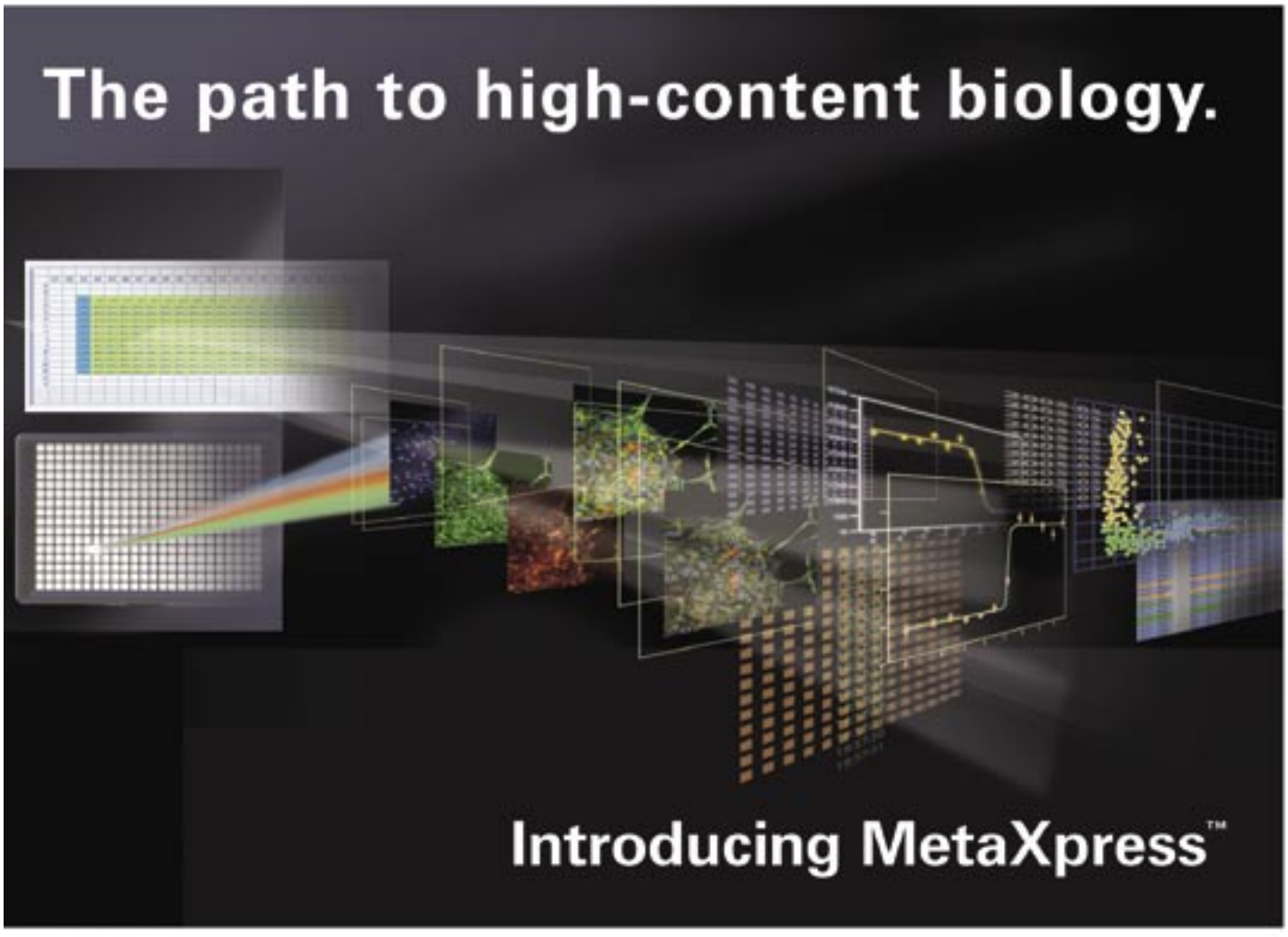

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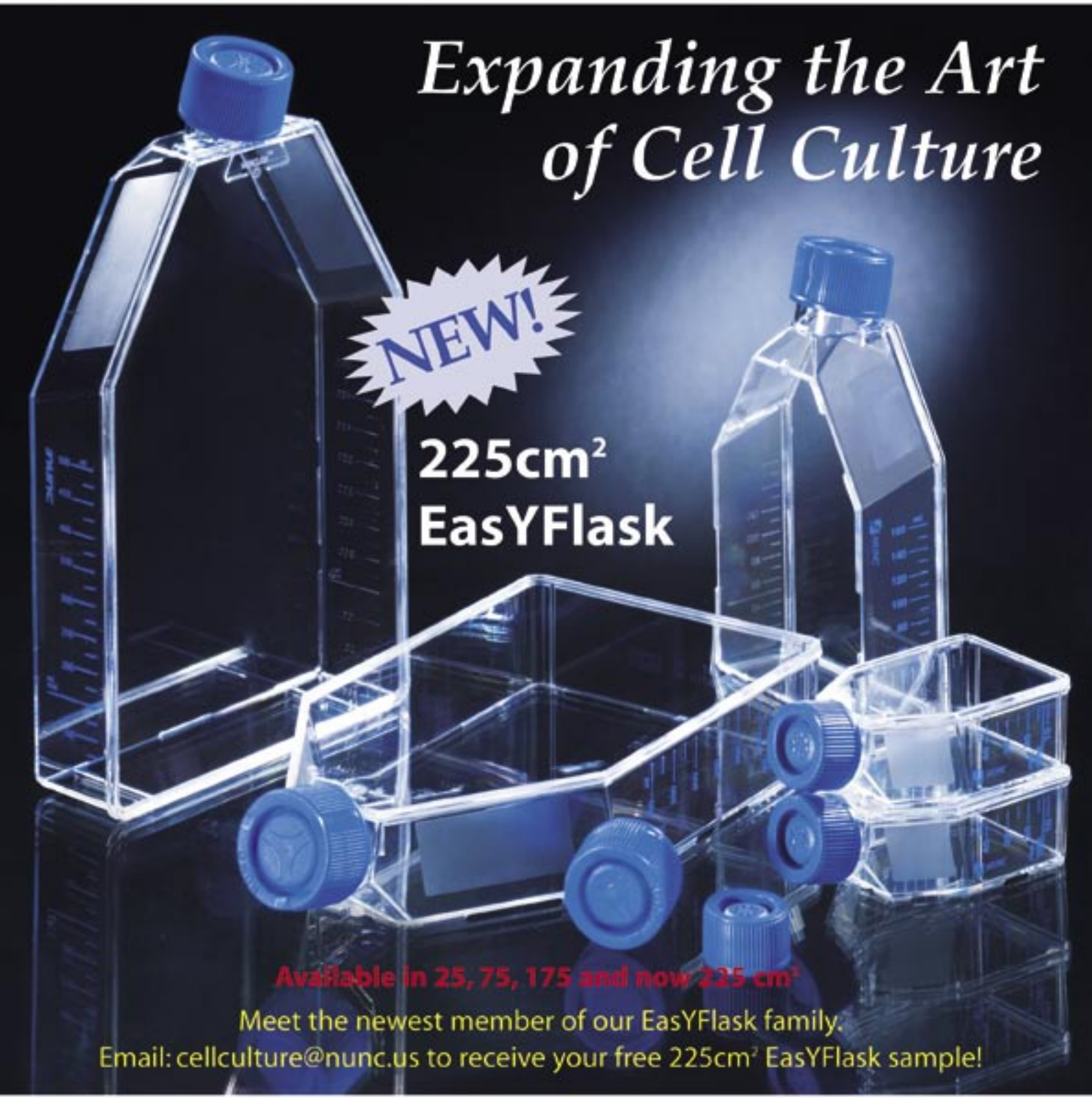

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PUBLIC POLICY BRIEFING

California Passes Historic Research Initiative

California voters adopted ballot initiative Proposition 71 which creates the California Institute for Regenerative Medicine and authorizes the State of California to spend up to $3 billion in stem cell research, including the construction of research space, over the next 10 years. The initiative passed with 59% of the vote. Approval of Proposition 71 marks the largest single commitment to embryonic stem cell research in the United States.

The initiative was supported by a wide coalition of patient advocacy organizations and biomedical researchers, including ASCB Public Policy Chair Larry Goldstein, who served as an advisor to proponents of the initiative, and former Chair Paul Berg, who was featured in a television spot supporting the measure. The campaign also attracted support from a number of celebrities; in the final days of the campaign, California Governor Arnold Schwarzenegger also announced his support for the initiative.

Previous action by the state establishing stem cell research guidelines and creating an anonymous embryo registry (see November 2003 *ASCB Newsletter*) was met with ambivalence by other states concerned that researchers would move to research-friendly California. Several states, including New Jersey, New York and Massachusetts, have modeled pro-stem cell research legislation after the successful bills in California. ■

Senate Democrats Name Research Advocates to Leadership Posts

Harry Reid (NV)

Richard J. Durbin (IL)

Debbie A. Stabenow (MI)

In the wake of the defeat of Democratic Leader Tom Daschle (SD), Senate Democrats have named Senator Harry Reid (NV) as their new leader. Sen. Richard J. Durbin (IL) will serve as Minority Whip and Sen. Debbie Stabenow (MI) will serve as secretary of the Democratic Caucus. All three have been strong supporters of biomedical research. ■

Congressional Turnover Impacts Science Policy

Some strong supporters of biomedical research will not return to Congress when the 109th Congress convenes next year.

The biggest loss in the Senate is the defeat of Minority Leader Tom Daschle (D-SD). A science supporter, he used his authority to block efforts to force Senate votes on anti-research cloning bills.

Biomedical research played an important role in several campaigns, none more critical than in the North Dakota Senate race between incumbent Senator Byron Dorgan (D-ND) and Republican challenger Mike Liffrig. Liffrig ran a controversial television commercial which falsely accused Sen. Dorgan of supporting the cloning of human beings. The ad met with firm opposition from both the public and the media in North Dakota, contributing to Dorgan's re-election with 68% of the vote.

The biggest loss in the Senate is the defeat of Minority Leader Tom Daschle (D-SD). A science supporter, he used his authority to block efforts to force Senate votes on anti-research cloning bills.

Newly-elected Senator Tom Coburn (R-OK) is a strong and vocal opponent of embryonic stem cell research; he is a family physician and religious conservative.

The 109th Congress will also see important changes in the leadership of both the House and Senate Appropriations Committees. In the Senate, NIH supporter Ted Stevens (R-AK) is expected to be succeeded by Sen. Thad Cochran (R-MS). In the House of Representatives, Rep. Bill Young (R-FL) is also stepping down as Chair. His successor has not been selected, but Ralph Regula of Ohio, Jerry Lewis of California and Harold Rogers of Kentucky all hope to succeed Young. ■

Creationism Monitor

Pennsylvania—At an October meeting, the Dover Area School Board revised the local science curriculum to include the teaching of "intelligent design." The new policy says, "Students will be made aware of gaps/problems in Darwin's Theory and of other theories of evolution including, but not limited to, intelligent design. Note: Origins of life will not be taught."

Maryland—Some members of the Charles County Board of Education feel the County should not use 10th grade science textbooks that are "biased toward evolution" and that books on Creationism should be provided to students. These opinions were part of a list of Board members' goals and objectives. The Board has formed committees to react to the complete list of suggestions but the committees have yet to take action.

Minnesota—The Grantsburg school board has adopted a policy stating that "when theories of origin are taught, students will study various scientific models or theories of origin and identify the scientific data supporting each." Originally, the board unanimously approved a motion directing the town's schools "to teach all theories of origin." The policy was changed after an outcry from citizens.

Georgia—A sticker that says, "evolution is a theory, not a fact" in Cobb County schools science textbooks was challenged in court as an unlawful promotion of religion. The stickers were added by the school district after it selected science textbooks that included coverage of evolution in an effort to blunt anticipated public concern that students were being taught evolution.

Source: The National Center for Science Education

Funding, continued from page 1

Earlier this year, a memo leaked to the *Washington Post* indicated that should President Bush be re-elected, his 2006 budget request would include significant domestic budget cuts (see September 2004 *ASCB Newsletter*). Included in the cuts is a reduction in NIH spending by over 2%.

In addition to critical questions regarding funding, science policy played a large role in the 2004 elections. Democratic presidential nominee Senator John Kerry (D-MA) declared his pro-science position and pledged to overturn Bush policy limitations on embryonic stem cell research. The Bush campaign responded by casting itself as supportive of stem cell research, citing the availability of a limited number of embryonic stem cell lines made available for research with Federal funds.

Despite post-election promises of bipartisanship by the President, in his first press conference after the election he made it clear that he would pursue the agenda he campaigned on. "I earned some capital," the President said, "and I'm going to spend it for what I told the people I'd spend it on."

In addition to policy issues, one of the first important decisions by President Bush may be the nomination of a new Secretary of Health & Human Services to succeed HHS Secretary Tommy Thompson, who had announced prior to the election that he will not to serve in a second Bush cabinet. ■

NIH and NSF Budgets in Jeopardy

Go To www.ascb.org/public policy and "Write To Congress"

Dr. Goldstein Goes to Washington

ASCB Public Policy Committee Chair Larry Goldstein spent a day in Washington last month meeting with the Administration and Congress on timely biomedical research issues. Goldstein and Jeff Rothstein from Johns Hopkins met with Secretary of Veteran's Affairs Anthony J. Principi to discuss ALS research. Goldstein also briefed Congressional staff on the implications on Federal science policy of California's recently passed Proposition 71. ■

James Battey, Director of the NIH Stem Cell Task Force (seated, front) and Goldstein brief the House of Representatives' Republican Main Street Partnership on stem cells.

Goldstein speaks to Congressional staff on the implications of Federal policy of California's Proposition 71.

Left to right: Goldstein, VA Secretary Anthony Principi and Jeff Rothstein, Director for ALS Research at Johns Hopkins.

Analysis of NIH Grants to Women Scientists

In 1994, the NIH published an extensive study, "Women in the NIH Extramural Grants Programs - Fiscal Years 1984-1993"[1]. Highlights from that study were published in the *ASCB Newsletter*[2]. No similar study has subsequently been conducted by the NIH. However, in response to a request from the ASCB for an update, a focused study covering FY1980-2003 has been conducted[3].

Research Project Grant (RPG) applications increased dramatically over the past two decades and through the recent doubling of the NIH budget in FY1999-2003 (Table 1). The percentage of RPG applications submitted by women increased almost linearly throughout the entire period of the study and has approximately doubled since 1980 (Figure 1). The number of RPG awards to women has thus also increased dramatically (Table 1). The success rate of applications from women has been similar to that of men, although a few percent below in most years (Figure 2).

Increases in numbers of Research Grant Awards to women and the amount of NIH funding for those awards have occurred in all budget categories (Figure 3 and Table 2). Increases in Career Awards to women, which are now approaching 35% of the total, may be a leading indicator of further growth. Women are increasingly serving as the leaders of both large multi-investigator center grants, small business research project grants, and other research projects.

The previous study examined RPG budgets which were and continue to be lower for women than for men (average award = $355,937 and $383,713 total costs in FY2003, respectively). Factors previously identified as contributing to this difference included smaller budget requests by women, greater use of the First Award (R29) than the R01 grant mechanism, lower frequency of women as PIs of program project grants, lower age and lower project longevity. The number of awards and the amounts of traditional individual research project awards (R01, R29, R37) to women have increased greatly during the study period (Table 3). Differences in the budgets for these awards ($5,000-$12,000 in 1980-1985) are much smaller than for all RPGs. Since 2000, the average award to women has been greater than the average award to men.

The age distribution of principal investigators was previously identified as a factor in some of the differences observed above. As earlier cohorts of women move through the academic pipeline, differences are expected to level out. Figure 4 shows the age distribution of the principal investigators

Table 1. NIH Competing Research Project Applications and Awards

	All Applicants		Female Applicants		Male Applicants	
Fiscal Year	Reviewed	Awarded	Reviewed	Awarded	Reviewed	Awarded
1980	16,744	5,468	2,180	654	13,661	4,645
1985	20,442	6,760	3,172	969	16,214	5,566
1990	21,509	5,267	4,048	1,023	16,557	4,119
1995	25,224	6,758	5,671	1,448	18,832	5,194
2000	27,798	8,765	6,359	1,938	19,165	6,364
2001	28,368	9,098	6,803	2,125	19,668	6,555
2002	30,068	9,396	7,363	2,127	20,717	6,782
2003	34,710	10,393	8,681	2,617	23,868	7,296

Table 2. NIH Research Grant Awards by Budget Category in FY2003

	All Applicants		Female Applicants		Male Applicants	
Mechanism	Number	Amount	Number	Amount	Number	Amount
RPG	36,530	$13,774,194,951	8,387	$2,985,243,827	26,579	$10,198,719,962
SBIR-STTR	2,034	$541,173,133	314	$83,290,131	1,425	$373,121,863
Center	1,340	$2,455,357,269	208	$258,014,912	1,071	$2,079,418,990
Career	3,917	$546,000,494	1,229	$162,146,152	2,160	$315,356,336
Other	2,284	$1,039,511,869	578	$203,586,582	1,517	$746,783,603
All Awards	46,105	$18,356,237,716	10,716	$3,692,281,604	32,752	$13,713,400,954

Table 3. NIH Traditional Research Project Awards (R01, R29 and R37)

	All Applications		Female Applicants		Male Applicants	
Fiscal year	Number	Average	Number	Average	Number	Average
1980	16,414	$84,538	1,808	$79,089	14,145	$84,829
1985	17,419	$134,516	2,285	$125,236	14,640	$136,083
1990	20,882	$170,122	3,698	$160,564	16,701	$172,131
1995	21,803	$216,294	4,545	$211,475	16,987	$217,705
2000	27,046	$280,971	5,856	$284,377	20,203	$281,318
2003	29,657	$339,900	6,684	$348,326	21,823	$338,482

of traditional research projects (R01, R29, R37) by gender in FY1980 and in FY2003. For both men and women, the distributions have shifted to higher ages (average age = 43 for men and 41 for women in 1980; 52 for men and 49 for women in 2003). A reflection of an increasingly large senior cohort is the increase in percentage of awards designated as Outstanding Investigator (R35) or MERIT Awards (R37). The percentage of these awarded to women has increased steadily from 8.6% in 1980 to 16.1% in 2003, although the total number of these awards to both men and women has decreased from its peak. The age of Research Center grant principal investigators is higher for both groups (average age = 49 for both groups in 1980; average age = 56 for men and 54 for women in 2003). ■

—Peter C. Preusch

References and Notes:

1 Women in NIH Extramural Grant Programs – Fiscal Years 1984-1993, NIH Publication No. 95-3876, Division of Research Grants, National Institutes of Health, December, 1984.

2 Women in Cell Biology – Analysis of NIH Grants to Women Scientists, Peter C. Preusch, National Institute of General Medical Sciences, NIH, *ASCB Newsletter,* Vol. 19, No. 6, p. 8, June, 1996.

3 All data was retrieved from the NIH Consolidated Grant Activities File (CGAF) on August 10, 2004. The grant mechanisms comprising each budget category vary with fiscal year. Research Project Grants include program project, AREA grant, and other mechanisms, as well as regular R01, R29, and R37 awards. Research Grant Awards include all grant and cooperative agreement mechanisms. Gender is linked to PI name in the CGAF based on the most frequently self-reported gender in the database. Age is similarly linked to the most frequently reported date of birth and the date of award. PI gender and age are then assigned to grants for which this data was not reported. Awards amounts are total cost (direct plus indirect costs). Interpretation of the data is tempered by the numbers of grants of unknown PI age and gender. The percent of RPGs with PI of unknown gender ranges from 3% in the early 1980s to a minimum of 1.5% in the early 1990s and increases to 4% in the most recent few years. The percent of RPGs with PI of unknown age decreases rapidly from around 30% in 1980 to around 4% in 2003 for both men and women. Data is less complete for other grant mechanisms. The author wishes to acknowledge Mr. Robert Moore of the Office of Reports and Analysis, Office of Extramural Research, NIH, for conducting searches of the CGAF database and creating very useful reports of the data.

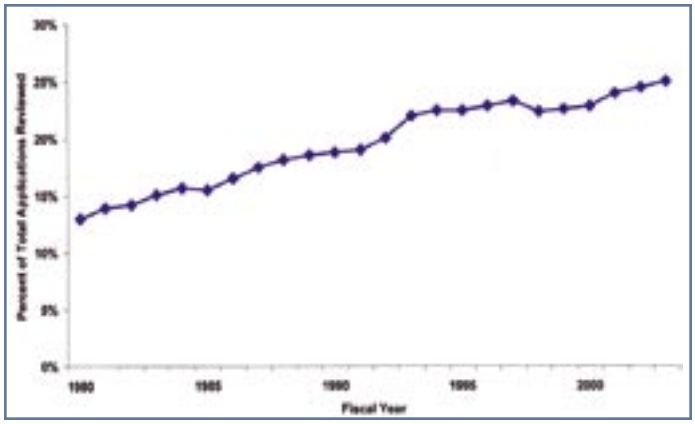

Figure 1. NIH Competing Research Project Grant Applications from Women as Percent of Total.

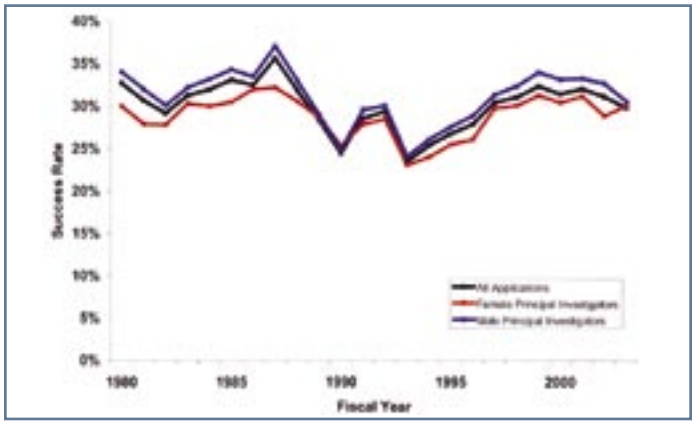

Figure 2. NIH Competing Research Project Applications by Gender of Applicant.

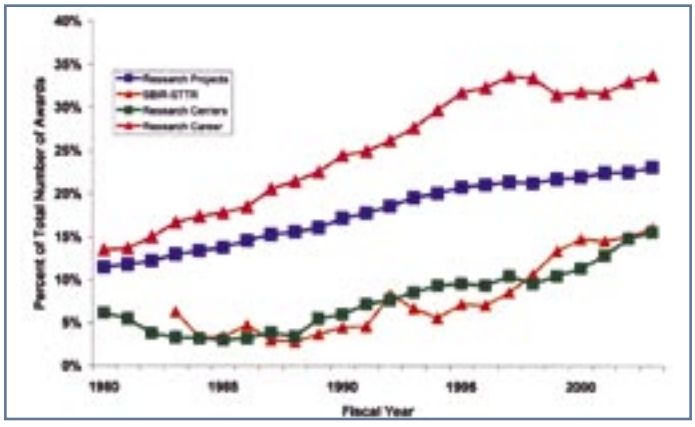

Figure 3. Female Investigators as Percent of Total by Award Mechanism.

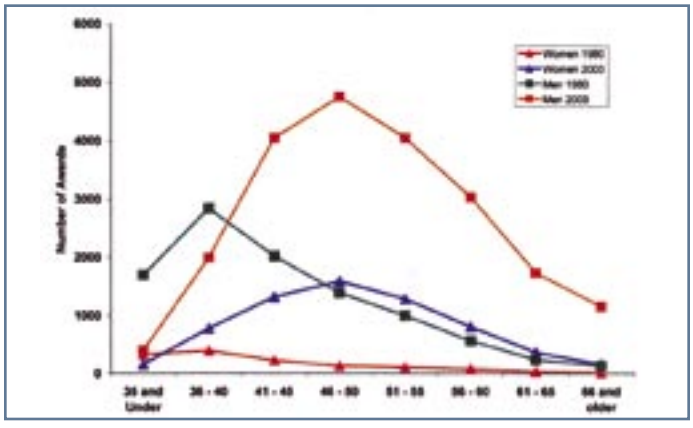

Figure 4. Age of Principal Investigator of RO1, R37, R29 Awards.

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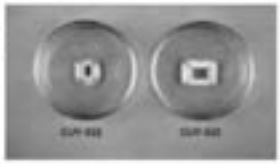

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MBC, *continued from page 1*

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Increasingly, professional editors rather than working scientists are charged with assessment and prioritization of science. While this may expedite the handling of papers, it sometimes comes at the expense of thoughtful and learned consideration of the importance and scope of work. Moreover, professional journalists must take into account the marketability of articles published and/or the cross-disciplinary nature of their publication's audience. Thus, more subjective criteria such as estimated impact factors, perceived global interest and the need for a simple take-home message are considered in making editorial decisions.

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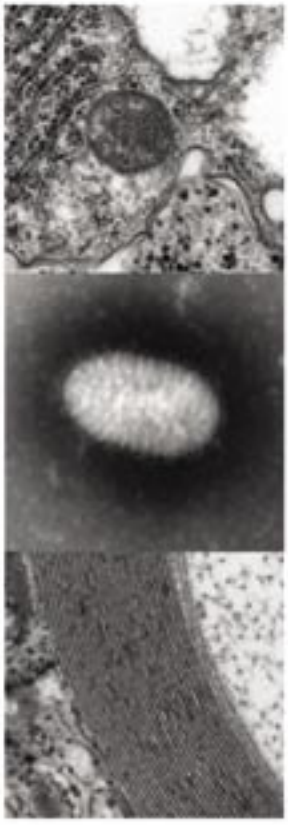

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ASCB Hosts Inter-Society Meeting on Minorities Initiatives

The ASCB Minorities Affairs Committee (MAC) hosted sixteen organizations (see box) to review the goals and accomplishments of the "SuperMAC," to enhance inter-society communications, particularly via the JustGarciaHill website, and to identify and discuss new collaborative projects. The SuperMAC (Minorities Action Committee) is a coalition of leaders among the underrepresented minority scientist community of the major biomedical professional societies, with the purpose of leveraging their combined influences on impacting common concerns across disciplines regarding underrepresented groups.

A primary goal of the meeting was to gather leaders of the each society's Minorities Affairs-like Committees to address the continuing needs of minority students and faculty in the biomedical sciences. Common concerns discussed included the following:

- Status of underrepresentation of the previously mentioned groups in the fields of various biomedical sciences;
- Lack of a critical mass of underrepresented groups in any one place to effect change;
- Disparities in salaries;
- The continued leaky pipeline;
- Inadequate developmental funding of underrepresented minority scientists; and
- Limited inclusion of underrepresented minority scientists at every level of professional society governance and activities, including networking and collaborative opportunities.

All of the concerns were noted to contribute to continued health disparities in this nation. The SuperMAC plans to reconvene in 2005. For further information, see www.justgarciahill or contact mac@ascb.org. ■

ASCB Members Mix it Up with Biology Teachers

A standing-room only crowd of high school and college biology teachers at the National Association of Biology Teachers annual meeting attended the ASCB presentation on chromosome segregation and cell motility by Gary Borisy and Daphne Preuss. While these topics are far removed from typical high school and introductory college biology, the teachers who attended were eager to learn about recent advances.

Former ASCB President Gary Borisy discussed cell motility at the NABT meeting

"Teachers want to be updated so they can communicate to their students about what's happening now in research," said Victoria May, director of science outreach at Washington University, and a member of the ASCB Education Committee. "These teachers also want to give their students an idea of the type of work they will encounter in graduate school, so they can paint a realistic picture of careers in research," explained May.

ASCB Councilor-elect Preuss, from the University of Chicago, described the relevance of her research in cell-cell interaction to allergy treatment and food production. Former ASCB President Borisy, from Northwestern University Medical School, discussed his research on the mechanism of cell division, and cell motility. He explained the applicability of his research to studies of cancer cells, and expressed hope that his findings could someday lead to nanotechnology to clear clogged arteries.

The ASCB Education Committee works with the K-12 science education community through a variety of programs, including this annual "Current Topics" lecture at NABT. ■

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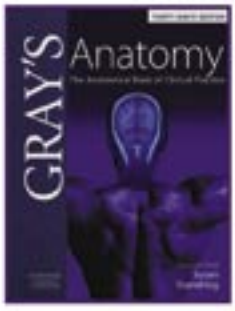

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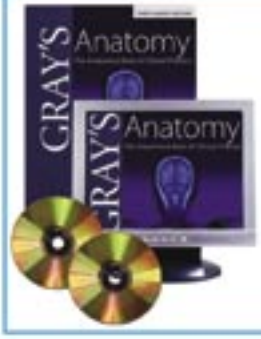

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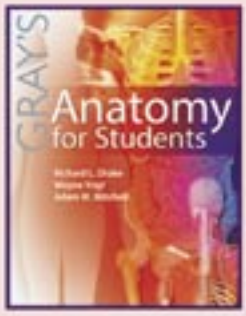

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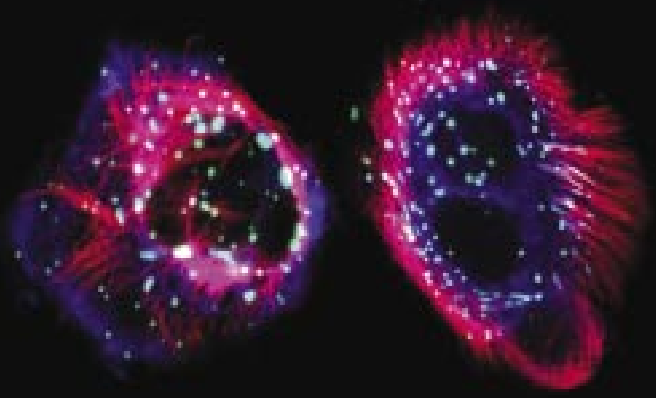

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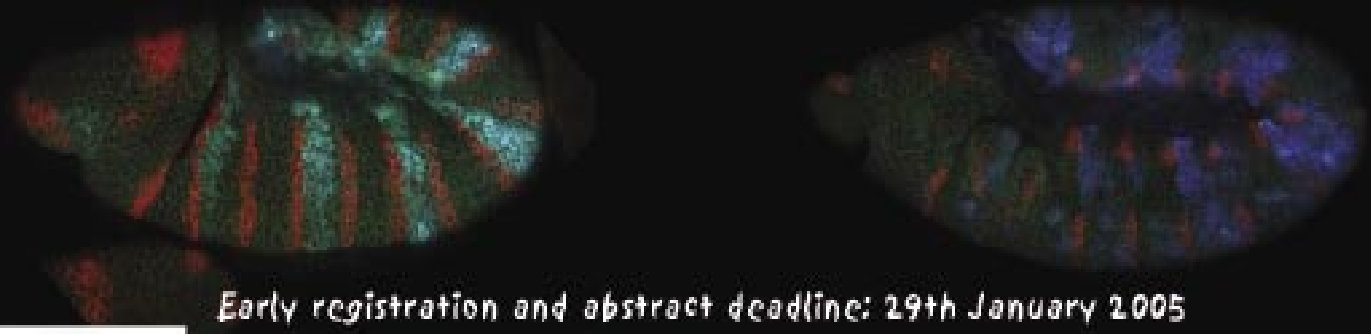

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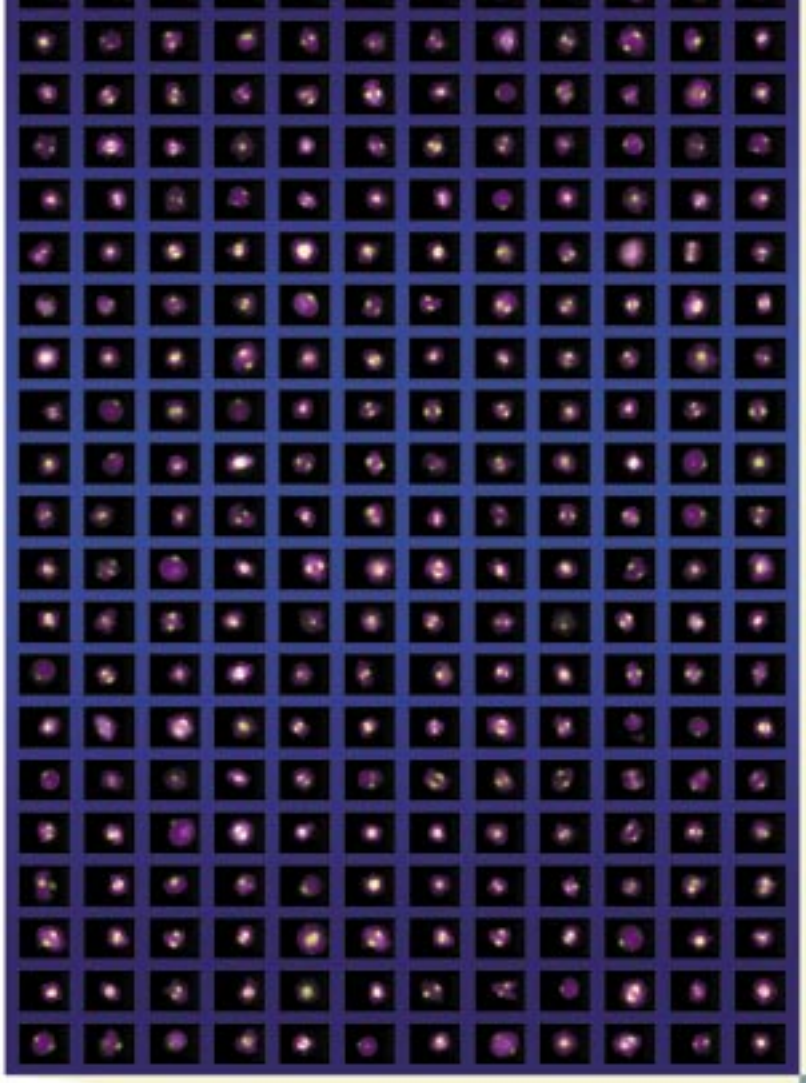

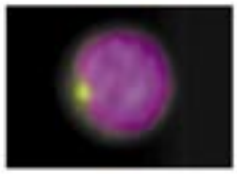

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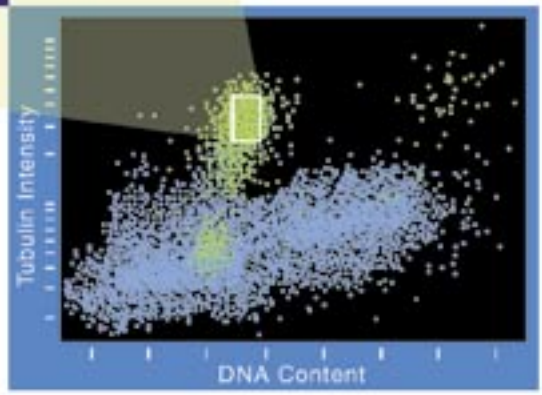

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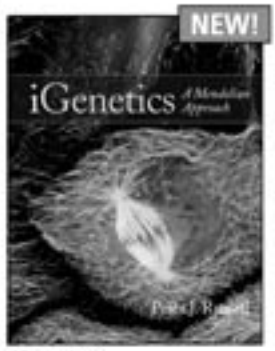

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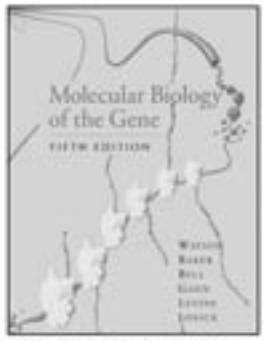

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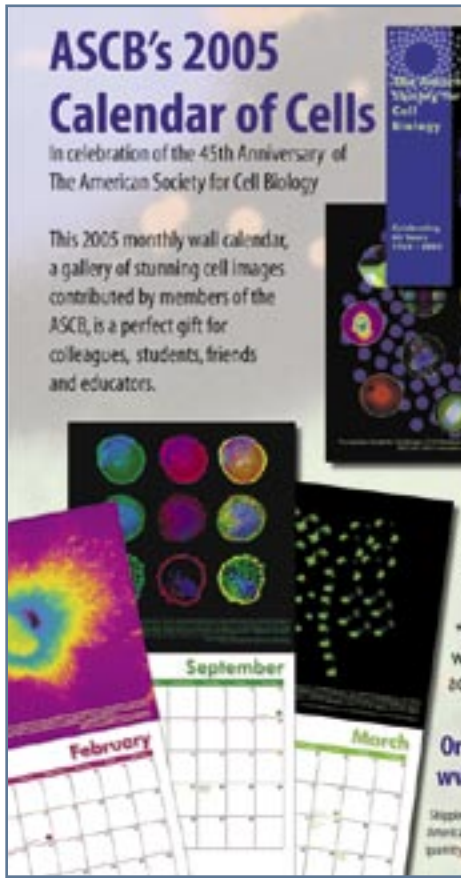

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ASCB MAC member Sandra Murray and ABRCMS Program Chair Cliff Houston

Minority Student Conference Held in Texas

The 2004 Annual Biomedical Research Conference for Minority Students (ABRCMS) was held in Dallas last month and hosted over 1,400 minority students (primarily undergraduates) and over 1,000 other participants. The ASCB Minorities Affairs Committee booth was frequented by students and faculty who learned about ASCB MAC summer research programs and Annual Meeting travel awards.

The ASCB MAC sponsored Baldomero Olivera, ASCB E.E. Just Lecturer in 1996, in a scientific session on *Conus Peptides: From Venom to Drugs* that emphasized the importance of research even in underresourced laboratories.

ASCB MAC member J.K. Haynes presented eight awards for posters in cell biology.

Other ASCB MAC members present were Laura Robles, Renato Aguilera, and Sandra Murray. ■

ASCB MAC Co-Chair J.K. Haynes, ASCB-sponsored Plenary Speaker Baldemero Olivera and MARC/NIH Director Aldophus Tolliver

Students at ASCB MAC booth

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ASCB Participates in Annual Meeting of Chicanos, Native Americans in Science

ASCB MAC member Laura Robles, ASCB MAC postdoc Kevin Davis and Shirley Malcom from AAAS at SACNAS

The annual meeting of the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) was held in Austin, Texas. Nearly 2,000 people were in attendance for scientific lectures, poster sessions, and workshops. ASCB MAC member Laura Robles from California State University, Dominquez Hills, won the 2004 Undergraduate Institution Mentor Award in recognition of service to the minority science community. The ASCB MAC sponsored a scientific session featuring a presentation by Wilfred Denetclaw on *Cell Behaviors in Growth and Development*.

The National Postdoctoral Association held a well-attended session on minority postdoctoral fellows and addressed issues of special concern to all postdocs, including tenure at research universities, the role of professional societies in career development, and employment opportunities for minority researchers in industry and government.

Other former and current ASCB MAC members in attendance at SACNAS were Renato Aguilera, David Burgess and Maria Elena Zavala. ■

ASCB MAC member and presenter Wilfred Denetclaw

Robles' students gather for her Award presentation

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Table 1: Knockdown efficiency of X-tremeGENE siRNA Reagent in eleven cell types. Cells were transfected with a HPRT-specific siRNA using X-tremeGENE siRNA Reagent. HPRT knockdown was determined using the LightCycler h-HPRT Housekeeping Gene Set† and the LightCycler Real-Time PCR System from Roche Applied Science.

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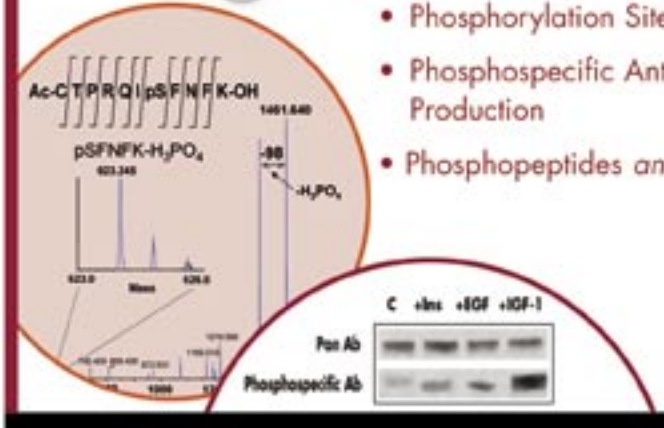

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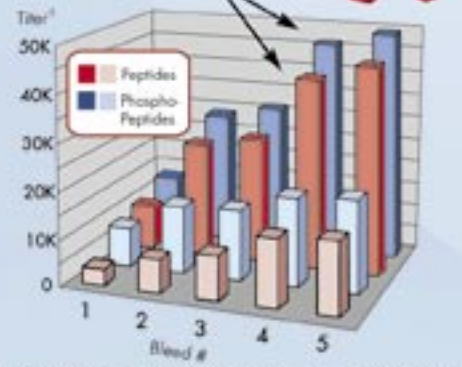

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NIH Virtual Career Center. The NIH Office of Education offers resources for exploring employment options and career development opportunities in health sciences. See www.training.nih.gov/careers/careercenter/index.html.

NIAID Biodefense Fellowships. The NIH National Institute of Allergy and Infectious Diseases solicits applications from biodefense training and development researchers of prevention, detection, diagnosis and treatment of diseases caused by potential bioterrorism agents. Grants, fellowships and career development awards. See www.niaid.nih.gov/biodefense/research/funding.htm.

NIH Re-entry Program. The NIH and Office of Research on Women's Health announce a continuing program for faculty who have taken time out for family responsibilities. See http://grants.nih.gov/grants/guide/pa-files/PA-04-126.html.

NIH Grants.

- Large-Scale Collaborative Project Awards, see http://grants2.nih.gov/grants/guide/pa-files/PAR-04-128.html. Deadlines: September 20, 2006 and June 21, 2007.
- Predoctoral Research Training in Biostatistics, see http://grants2.nih.gov/grants/guide/pa-files/PAR-04-132.html. Deadline: October 12, 2007.
- Tools for Genetic and Genomic Studies in Emerging Model Organisms, see http://grants2.nih.gov/grants/guide/pa-files/PA-04-135.html. Deadline: November 2, 2007.
- National Technology Centers for Networks and Pathways, see http://grants2.nih.gov/grants/guide/rfa-files/RFA-RM-04-019.html. Deadline: February 22, 2005.

NIH Funding Opportunities. National Institute of General Medical Sciences-led roadmap initiatives have recently issued requests for applications:

- Membrane Protein Production and Structure. Letters of intent deadline is December 23; application deadline is January 24. See http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-026.html.
- Novel Preclinical Tools for Predictive ADME-Toxicology. Letters Of Intent deadline is December 17; Application deadline is January 21. See http://grants1.nih.gov/grants/guide/rfa-files/RFA-RM-04-023.html. ■

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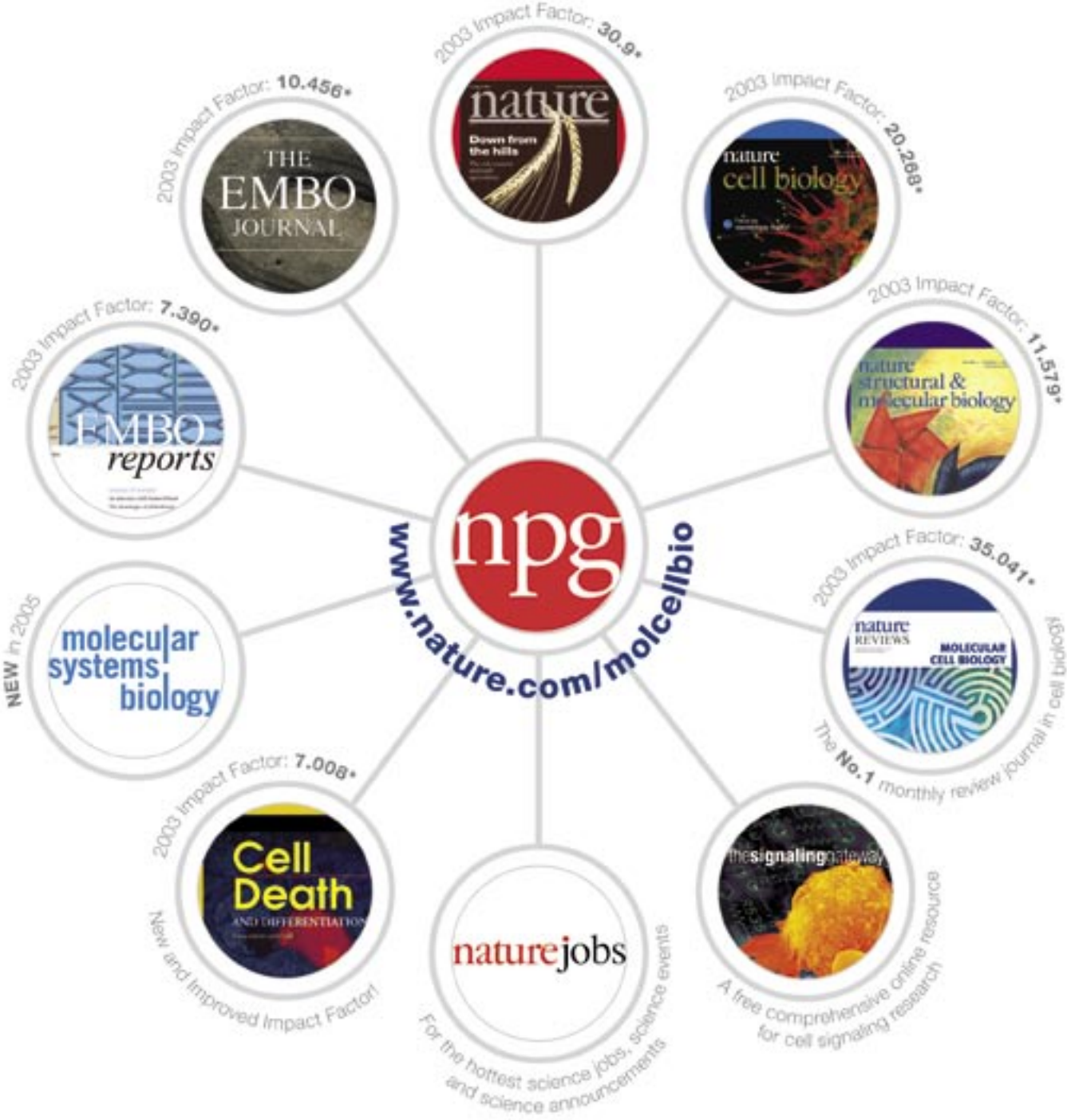

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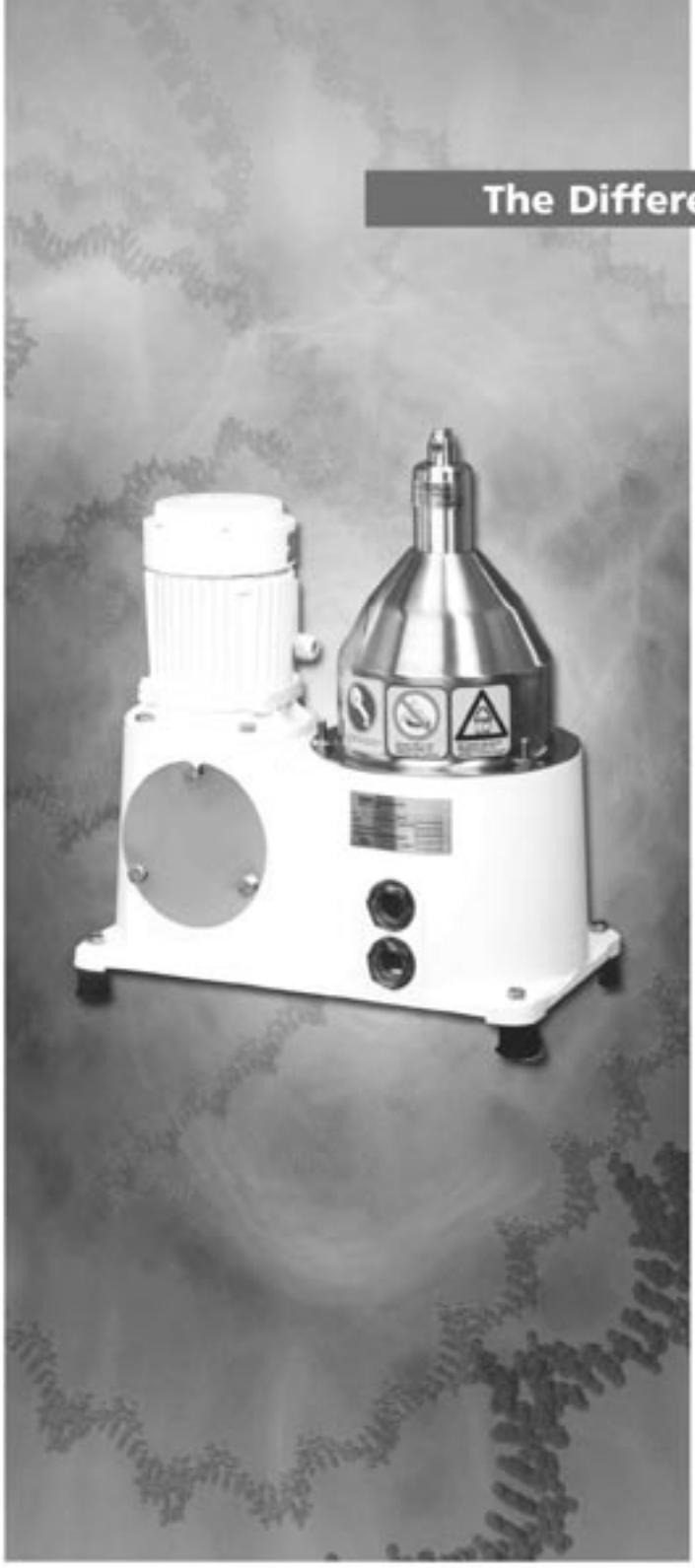

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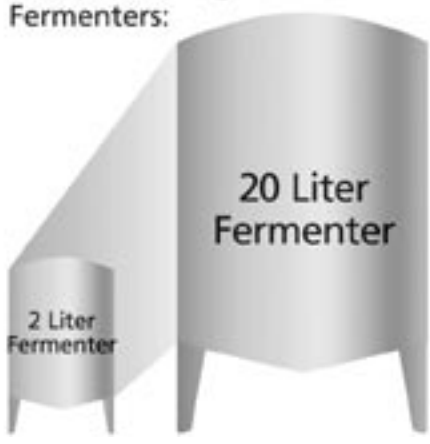

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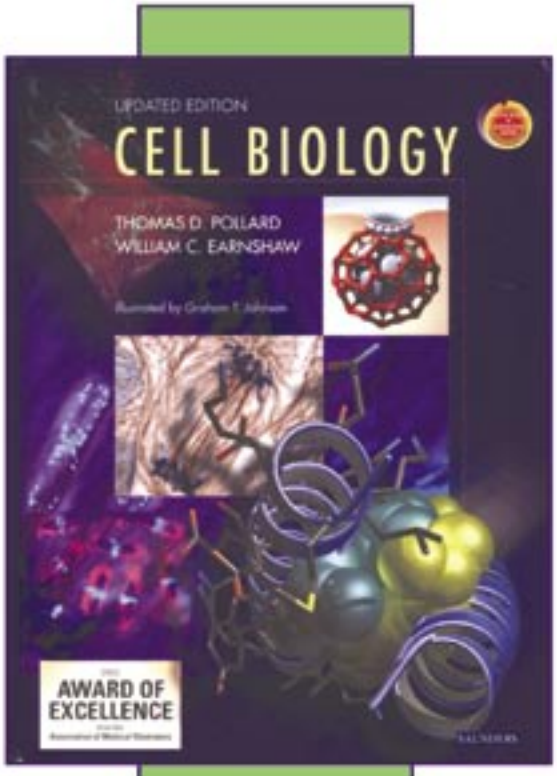

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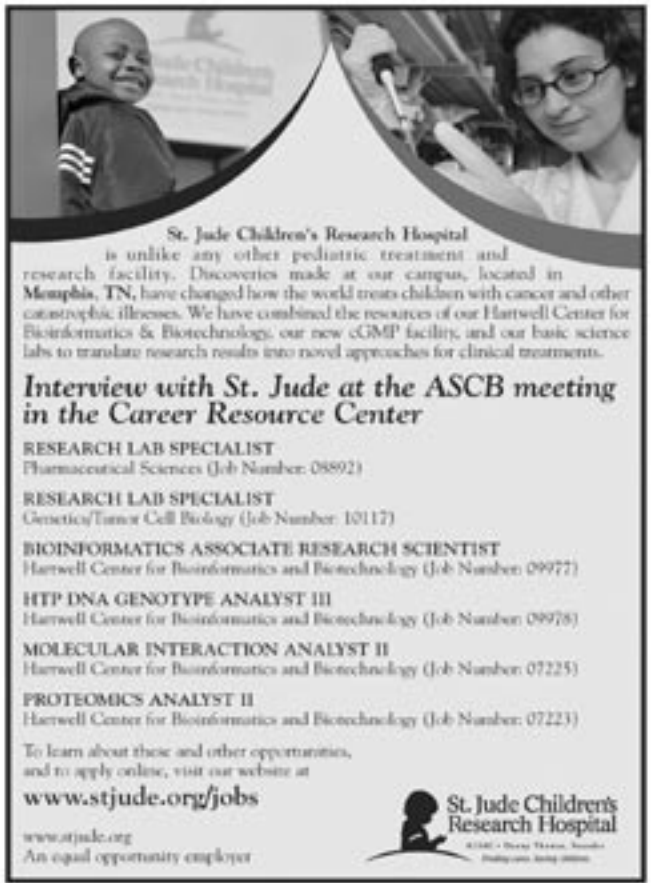

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Experimental Biology Annual Meeting. See www.faseb.org/meetings.

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Second International Symposium on Triglycerides, Metabolic Disorders and Cardiovascular Diseases. See www.lorenzinifoundation.org/.

August 9-18, 2005. Great Falls, MT.
Pan-American Studies Institute on Unconventional Myosins. First student application deadline: December 31. See www.mri.montana.edu/PASI.html.

September 1-5, 2005. Muensterschwarzach Abbey, Germany.
The Wilhelm Bernhard Workshop–19th International Workshop on the Cell Nucleus. See www.zeb.biozentrum.uni-wuerzburg.de/.

September 3-7. Dresden, Germany.
European Life Scientist Organization Annual Meeting. See www.elso.org.

September 7-11, 2005. Cambridge, England.
Strategies for Engineered Negligible Senescence (SENS), 2nd Conference. See www.gen.cam.ac.uk/sens2/.

September 25-29, 2005. Tomar, Portugal.
Second International Congress on Stress Responses in Biology and Medicine held by The Cell Stress Society International. See www.cellstress.uconn.edu. ■

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