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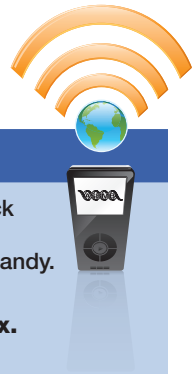

podcast summary

Check out ASBMB's special companion rock star podcast featuring an interview with ASBMB member and "Rock Doc" Sam E. Gandy.

To hear this and other podcasts, go to www.asbmb.org/Interactive.aspx.

ASBMB today

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2008 APEX AWARDS FOR PUBLICATION EXCELLENCE

letters to the editor

Helicopter Parenting

Dear Dr. Petsko,

I am a member of the American Society for Biochemistry and Molecular Biology, even though I left academia (for the automotive industry, if you can believe that) a few years ago, largely due to the issues you raised in your "President's Message" in the September issue of ASBMB Today.

I taught and did research at two different primarily undergraduate institutions over a nine-year period. What you mentioned is right on the mark, in terms of what John Dewey described in his philosophy of experimentalism. He emphasized "experience" as the interaction of a person with the environment and "knowing" as a process connecting the learner to the environment. Both of these notions require many attempts as well as more than a few corresponding failures.

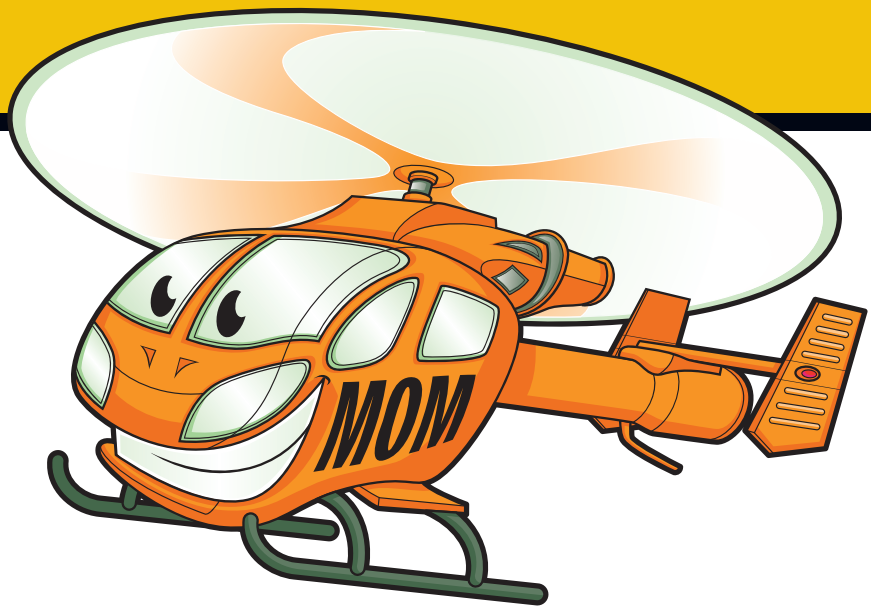
Although it is true that "helicopter parenting" is a problem, in my experience, it is less "the" problem than the beginning of the problem. In my opinion, the problem began with the notion that an education is a commercial commodity to be bought and sold, rather than an elusive aspiration or a goal toward which one strives and happily never reaches. In business, commodities continually are shaped by the forces of customer need and cost. This model has been disastrous for education at all levels, with the possible exception of graduate education, as you pointed out.

In my estimate, the problem begins in K-12 education, where it is largely driven by parents with great hopes of their son/daughter amassing the necessary grades and standardized test scores required for entry into college. This, of course, coincides with the notions that parents are failures if their kids do not go to college and the absolute necessity of college for fear that no job or future could be possible without it.

My experience teaching showed me that many students lacked even the most basic knowledge of chemistry, despite resplendent grades and far higher course selections than I had at their age. This was clearly coming from a lack of requirements and/or consequences in their K-12 education.

Let's face it: The delivery of education has not changed much from when you and I were in school. I matriculated through the same boring, canned experiments and lectures that are perpetrated upon the current generation. My only saving grace was that I showed an aptitude for memorization, which seemed to be a substitute for knowledge and understanding. Of course, I had little knowledge and almost no understanding, but this was unimportant because the instruments used to measure these quantities were wholly fitted to regurgitation. I was, therefore, placed in a "special" group that had to read ahead on its own and set up experiments from the often-cryptic directions given in basic science textbooks. As it turns out, this is the kind of environment to which all students, whether destined for great science or otherwise, should be exposed.

The difference between what the current generation and what my generation experienced is that we had real failures and real consequences. Does anyone remember the "weed out" course? It was so named by students for what it did, but, in actuality, it was the kind of tough course that showed what you



could mentally lift and what you could endure. Another major difference is that we know more today, and we continue to believe that we need to cram it all into this short time frame currently embodied in what we define as an "education." Correct me if I am wrong, but I believe the number of hours actually spent in K-12 and in college has decreased, making content overload ridiculous. The need to cover more content results in a surface skimming of what I call the "white noise" of knowledge. As Hara Estroff Marano points out, and as I argued to no avail with "educated" colleagues, we need to fail to learn how to succeed. This requires time, which is in shorter supply than ever, and it has little to do with most of the "white noise." The truth is that learning and education are lifelong processes, and this preparation period should illuminate the path rather than contain its bounds.

It turns out that our primarily undergraduate universities and, I would argue, many large universities have pandered to the business model described above. I can tell you unequivocally, from a junior faculty perspective, that there is little or no room for the creation of an educational environment, let alone a curriculum, based on the core scientific skills of questioning, hypothesizing, designing, critical evaluation and perseverance. How can we produce the next generation of scientists or educated consumers of technology without paying at least some attention to these much-needed skills?

I did not receive tenure in my first academic position because I stuck to my guns and designed and carried out an educational environment similar to the one described above. This, of course, did not go over well with students, whose notion of an education was one in which the instructor tells you what you need to know. It turns out that, these days, the deans of our institutions take the complaints of students (warranted or otherwise) quite seriously. And why shouldn't they? It would not be good business to ignore the "customer." (At least a National Science Foundation education chair recognized what I was doing and invited me to review science-education grants during my third year of teaching.)

I left my second position because I could see that, although it appeared that I was hired for my course development/ideas (all the right buzz words regarding students and hands-on labs/research), it was never intended that I would actually implement them. To add insult to injury, I offended my colleagues by suggesting forcefully that the curriculum needed real emphasis on core scientific skills, as opposed to the lip service one finds in the wonderful assessment plans required of all academia these days. It also didn't help that student complaints were again showing that the customer wasn't happy with the product, which is to say that they felt overburdened by actually having to understand concepts rather than just memorizing.

I believe that, in the future, we will have fewer and fewer new students showing up at research universities/institutions, and, of the ones that do, the vast majority will not have the drive, perseverance and moxie required to be successful. Indeed, the false sense of confidence bestowed upon them by an educational system designed to make them feel good, rather than experience the failure required to build true self-esteem, will be shattered as they are introduced to the experiential learning that is the hallmark of our graduate/post-graduate institutions. Those who do make it through will conclude, as I did, that paying attention to serious science education isn't worth it, and they will give it far less time, if any, than I did. Academia will have difficulty continuing to fill its research pipeline and virtually no chance to reform the educational system causing the problem. In sum, I would say that our current educational model has enabled the "helicopter parent" and is largely responsible for the demise of experiential learning and the subsequent rise of the wimp.

Best regards,
Richard W. Frazee
Dexter, Mich.

Letters to the Editor
continues on page 8

Not Playing Devil's Advocate

BY GREGORY A. PETSKO

The theme of this issue of ASBMB Today is advocacy, and that's one subject about which I feel strongly. (OK, I admit I feel strongly about lots of subjects, but, trust me, this is one of them.) My feelings, however, are ambivalent, so I think I should explain them.

I always have been deeply suspicious of what are often referred to as "activists." It's not because I don't admire their passion. I do. It's also not necessarily because I don't share their views. I often do. What I'm suspicious of is what their advocacy does to their judgment on other issues. It's been my experience that people who devote most of their time and effort to one thing frequently view all things through the lens of that single issue. And I don't think that you can get a clear view of the whole world through one, possibly distorting, lens.

It's sort of like being a knee-jerk liberal or a knee-jerk conservative. If your first reaction to any problem or question is driven by a set of values or beliefs that may not apply in that particular situation, you are unlikely to come up with a good answer or make a good decision.

> **"...any organization that is as heterogeneous as ASBMB cannot focus all of its advocacy efforts in one direction."**

Now, as it happens, these considerations are of some importance to a scientific society. It's pretty easy for an organization devoted to furthering the interests of a group of professionals to focus on the topic on which the group itself is most concerned. In the case of a society whose membership is composed largely of academic biochemists, that one issue would be federal support for basic research.

Before I go on, let me make something clear: Increasing federal support for basic research is very important to me personally, and I believe it is an issue that must be important to the American Society for Biochemistry and Molecular Biology as well. And, of course, it is.

But it cannot be the only issue. If that were the case, we would be in danger of seeing everything through that particular distorting lens: If it increases federal support for basic research, it must be good, and we must advocate for it; if it threatens that support in any way, it must be bad, and we must oppose it. That sort of thinking can turn us into very bad advocates for the interests of our members — or devil's advocates, if you will.

For a concrete example, consider the question of evaluating and possibly discontinuing some federally funded scientific programs. If our primary mission was to increase funding, we should be against any such quality control because it might send a message to Congress that not all research dollars are well spent, and that could hurt the chances for increases. Yet, I believe, in the name of good science and responsible scientific citizenship, there may be times when we need to support the critical evaluation and possible termination of some programs because spending scientific research funds wisely ought to be just as important to us as getting more of them. If we don't feel that way, we are just a group of lobbyists with questionable integrity.

That's a pretty severe example, but there are subtler ones that are worth pointing out. If the be-all and end-all of this organization is to increase grant dollars, where is the time and attention we should be devoting to our industrial members, whose concerns are likely to be very different? Advocating with the public on behalf of the biotech or pharmaceutical industries, when the cause is right, might be seen as threatening our "pure" academic reputation and thereby weakening our effectiveness in getting those basic research funds increased. But, if it's the right thing to do, I think we have to do it.

What I'm trying to say is that any organization that is as heterogeneous as ASBMB cannot focus all of its advocacy efforts in one direction. If we are to be engaged with the world, we need to take a broad view. We need to worry about all of the things that concern our members. We must not become knee-jerk supporters, or apologists, for any cause or position. We have to think things through.

At ASBMB, that process of deliberation and debate is the chief responsibility of the Public Affairs Advisory

Committee, although other committees certainly can play significant roles. Matters may be brought before that committee by members of ASBMB staff, by members of the committee itself, by the ASBMB president and by regular members of the society. Once the committee has decided on a position or course of action, what happens next depends on the timing. If urgent action is not required, we will ask the ASBMB Council to give its views on the committee's recommendation. If something has to be done quickly, I may need to approve — or, rarely, veto — immediate action as president and seek the approval (or possibly the forgiveness) of the Council later. In cases where plenty of time is available, we may want to put the cases to the entire society by canvassing members for their views.

The purpose of these policies is, as I have said, to prevent us from making bad decisions because we are focused too narrowly. I think it has worked pretty well for the most part. But, I worry that, even with our good intentions, we may not be effective advocates for many of the things that matter to our membership if that membership is silent.

This brings me to the other side of my ambivalent attitude toward advocacy: my passionate belief that it's really important. But, it can't just be important to me, or to the Council or to our staff or to our various committees. It has to be important to you, too.

I know that disengaging from the turmoil, politics and strident bickering of the "real world" is one of the attractions that a life in science has for many of our members. I used to feel that way myself. But I came to believe that it's a mistake for that detachment to be the hallmark of a scientist. In the Declaration of Independence are words that always have resonated with me:

"Prudence, indeed, will dictate that Governments long established should not be changed for light and transient causes; and accordingly all experience hath shewn, that mankind are more disposed to suffer, while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed. But when a long train of abuses and usurpations, pursuing invariably the same Object evinces a design to reduce them under absolute Despotism, it is their right, it is their duty, to throw off such Government, and to provide new Guards for their future security."

What the Founding Fathers of the United States were saying is that, when something needs to be changed, those who have the ability to do something about it also have the responsibility to do something about it. And scientists are, as a group, among the most able citizens of any country. So, when scientists hide in their ivory towers, society becomes robbed of some of its best advocates.

So, I want to urge all of you not just to get involved in local institutions, like your school boards and your town governments (but I really hope you are or will), but also to help us be effective advocates for you by telling us what you think are the important national and international issues that ASBMB needs to worry about. It isn't so much that we need you to tell us what to do — although we certainly welcome such advice — but what we do need, desperately, is for you to tell us what things in the world of science and scientists matter to you. And if you want to be engaged at the national level, to have your advocacy playing out on a larger stage, as it were, then consider making ASBMB the vehicle for that engagement. Run for Council, or tell us of your interest in being on our committees or work with us when we visit the National Institutes of Health or the Hill. The first step in a greater involvement with science and society could be a greater evolvement with this society. We'd love that. XOXO

Remembering Ruth L. Kirschstein

BY PETER F. FARNHAM

One of the truly great characteristics of a life well lived is knowing that one's time on Earth has made a difference. In the case of Ruth L. Kirschstein, it is clear that hers did.

Kirschstein, a legendary scientist and administrator at the National Institutes of Health, died peacefully on Oct. 6 at the Clinical Center on the NIH campus that she loved and was a part of for so many years. Her husband, Al Rabson, and son, Arnold Rabson, both biomedical researchers, were at her side when she passed.

"With the passing of Ruth Kirschstein, science has lost one of its greatest champions for the advancement of women and minorities in biomedical research," said American Society for Biochemistry and Molecular Biology President Gregory A. Petsko. "Many of us knew Ruth as the first woman to head an NIH institute (National Institute of General Medical Sciences, 1974) and long admired her tireless efforts on behalf of diversity. It was sometimes easy to forget that she also made pioneering contributions to the development of safe vaccines against many of the scourges of the 20th century, including polio. She probably would ask for no more fitting a memorial than for others to continue to take up the causes that meant so much to her."

Scientist and NIH Administrator

In the 1950s, the Salk vaccine for polio was blamed for causing more than 200 cases of the disease. Kirschstein led the search for a safer alternative and ended up advocating use of the Sabin oral vaccine, which eventually came into worldwide use. In 1971, she was given the Department of Health, Education and Welfare's Superior Service Award in recognition of her work on the Sabin vaccine. Thanks to the vaccine, polio has been eradicated in the Unites States. In the 1980s, Kirschstein became a leader in the public health response to the emerging AIDS epidemic, organizing funding and mobilizing a team of NIH researchers.

Kirschstein graduated magna cum laude from Long Island University in 1947, earned her M.D. from Tulane University School of Medicine in 1951 and went on to an internship in medicine and surgery at Kings County Hospital in Brooklyn. Kirschstein then focused on pathology, serving residencies at Providence Hospital in Detroit; Tulane University School of Medicine; and Warren G. Magnuson Clinical Center at the NIH.

From 1957 to 1972, she worked as a researcher in experimental pathology at what is now the Food and Drug Administration, where she tested the safety of vaccines for polio, measles and rubella. She also did consulting work for the World Health Organization. She left the FDA in 1974 to join the staff at NIH, where she was appointed director of NIGMS.

She served in that capacity until 1993, when she

became the NIH acting director, until Harold Varmus arrived that fall. She returned to the acting directorship when Varmus left and served from January 2000 to May 2003, which was when Elias Zerhouni took over. Congress recognized her service to NIH with the Ruth L. Kirschstein National Research Service Awards, which provide funding for postdoctoral and predoctoral fellows.

Kirschstein received many honors and awards during her career, including ASBMB's Howard K. Schachman Public Service Award in 2002. The award itself was an antique brass microscope, but, with the rectitude that characterized her approach to public service, she donated the microscope to the NIH for permanent display on the campus.

The garden in front of the Beaumont House, the ASBMB headquarters in Bethesda, Md., is named for her, and a large granite boulder with a bronze plaque dedicates the garden in her name. The plaque reads in part, "This garden commemorates the contributions of Ruth L. Kirschstein…[to] cultivating the careers of many trainees in the biomedical sciences and guiding the foremost biomedical institute in the world during a critical period."

The following are a sampling of comments from Kirschstein's friends and colleagues:

The loss of Dr. Kirschstein is felt throughout the research community. Her leadership and commitment to science and public service were inspirational, and she is sorely missed.

John Edward Porter, chairman,
Research!America

We were all very sad to learn of the death of Ruth Kirschstein. She will be deeply missed here at NIGMS, NIH and beyond.

Dr. Kirschstein truly represented the best of NIH: public service, wisdom and deep knowledge and analysis of important problems. She was so profoundly modest that Congress had to surprise her when they acknowledged her contributions and commitment to research training with the naming of the Ruth L. Kirschstein National Research Service Awards.

Jeremy M. Berg, director, NIGMS

With her passing, we have lost a great scientist and an extraordinary public servant. Her distinguished career in public service spanned over five decades, and her legacy includes outstanding achievements in science and in public policy… Those of us fortunate enough to have known Ruth Kirschstein will always remember her for generously sharing her time and talent with those who needed help. She was a great leader who inspired thousands with her intelligence, commitment and compassion. FASEB will miss her, and we extend our sympathy to her family.

Mark O. Lively, president,
Federation of American Societies
for Experimental Biology

I'm particularly saddened by Ruth Kirschstein's passing, since I had the privilege of serving on the advisory committee to the director of NIH while she was interim director, and it was during my ASBMB presidency that she received the Howard K. Schachman Award, of which she was immensely proud because of her association with Howard… She was, indeed, a pioneer in biomedical research, and it is fitting that the NRSA bear her name due to her contribution toward the establishment of fellowship training awards during her career as NIGMS director. She was sharp of wit and very active throughout her career, not even letting a bout with breast cancer slow her down.

Bettie Sue Siler Masters,
Robert A. Welch distinguished professor
in chemistry, University of Texas Health
Sciences Center at San Antonio, and
ASBMB past president

Dr. Ruth Kirschstein's death is a tremendous loss to patients, researchers and all Americans who value medical research and NIH. The first woman to ever head an NIH institute, Dr. Kirschstein devoted her life to advancing medical progress, promoting diversity and scientific excellence, training future generations of scientists and serving as a mentor to scores of researchers and scientific administrators.

From her work on the Sabin vaccine to her many leadership positions at the NIH, she maintained a singular focus on scientific excellence, while demonstrating a steadfast devotion to public service. Dr. Kirschstein leaves a legacy that will continue to enrich the scientific enterprise and the health of the American people for generations to come.

On behalf of the leaders and faculty of the nation's medical schools and teaching hospitals, I extend our deepest sympathies to Dr. Kirschstein's devoted husband, Dr. Al Rabson; their son, Dr. Arnold Rabson; and other family members.

Darrell G. Kirch, president and CEO,
Association of American Medical Colleges

Peter F. Farnham is director of public affairs at ASBMB. He can be reached at pfarnham@asbmb.org.

Collins Reflects on Kirschstein

National Institutes of Health Director Francis Collins issued the following statement on the death of Ruth Kirschstein.

"Ruth embodied the spirit of the NIH. She was an icon. She was loved and admired by so many at the NIH, across the medical research community, among hundreds of members of Congress and around the world. Knowing Ruth, she would cringe if she heard us praise her — modesty was one of her strongest suits. Dr. Kirschstein couldn't, however, argue with the facts about her service to the NIH that spanned more than 50 years. She was the first female director of an NIH institute, NIGMS. She was the deputy director of the NIH, acting NIH director and senior advisor to multiple NIH directors. There are few at the NIH who have not been touched by her warmth, wisdom, interest and mentorship.

"She worked diligently on breaking the mystery of polio and developing the Sabin vaccine. Her many other accomplishments are too numerous to list. We will have an opportunity for the NIH family to pay tribute, reflecting upon the life and lessons of one of our greatest leaders, according to her and her family's wishes, at a future date.

"Ruth worked up to her last days. Last week, in fact, I was on a conference call with her, and her insightful contribution made it clear she had not missed a beat.

I know I speak for all of the NIH and our entire community when I say that the world has lost one of its dearest, most dedicated public servants, one with a huge heart and brilliant mind. We will miss her always." XXXX

Michel Receives Schachman Award

Robert H. Michel (center) receives the 2010 Howard K. Schachman Public Service Award at a ceremony on Sept. 21, in Bethesda, Md. Presenting the award on behalf of the society's Public Affairs Advisory Committee is ASBMB Director of Public Affairs Pete Farnham (left). Former ASBMB and FASEB President Robert D. Wells (right) introduced Michel. Michel was recognized for his staunch advocacy of biomedical research during his 38 years of service in Congress and in the years after his retirement in January 1995.

Dear Dr. Petsko,

I just read your "Wimps? What Wimps?" article and applaud you for it. Like you, I've been around a long time, and I worry about the (in)dependence of so many young people. As a supplier of high-end spectrophotometers, we need people who are not afraid of innovation and who embrace challenge. It is hard to find these people in the 40-year-old-and-under set.

I also have daily exposure to the assistant professor whose life is arguably too hard. Your point about publishing in "highly specialized journals" struck a chord with me. Not every good piece of work belongs in a monosyllabically titled journal. While my dad, Richard J. DeSa, had two back-to-back Science papers in 1963, the paper that changed his career path came out in Computers and Biomedical Research, which, in 1969, contained at least one word few people had occasion to know.

I hope your perspective is widely discussed and applauded, with the appropriate attitude adjustments made. "Overly ambitious" should be considered a virtue, not a flaw. Mentoring should be honored and encouraged. And senior faculty need to quiet their endless looking back to the easier funding days, etc., and recall their own unadulterated joy of making it to an academic position.

Julie Ann DeSa Lorenz
VP marketing & communications
Olis Inc., Bogart, Ga.

Everyone's Talking about Biosecurity

BY CARRIE D. WOLINETZ

Sens. Joseph Lieberman, I-Conn., and Susan Collins, R-Maine, have introduced the Weapons of Mass Destruction Preparedness and Prevention Act of 2009 (SB-1649). The bill is based on the Weapons of Mass Destruction Commission report, "World at Risk," and is focused on preventing a biological attack.

If enacted, the legislation would impose a new series of controlled pathogen regulations, in addition to the current select agent regulations, that would create a Tier 1 group of pathogens based on their likelihood of being weaponized. In addition, the bill would require containment labs and other facilities dealing with pathogens not on the select agent list to register with the federal government and would grant greater authority to the Department of Homeland Security in regulating pathogen control and laboratory biosecurity. Other portions of the WMD act relate to emergency response, public communication in the event of an attack and increasing biosecurity and biosafety internationally.

At a U.S. Senate Homeland Security and Government Affairs Committee hearing, WMD commission chairs and former Sens. Bob Graham and Jim Talent testified that the nation was in imminent danger of a biological attack and the most likely threat was that of a "rogue scientist" acting from within a U.S. laboratory. Another witness, from the Government Accountability Office, presented information from a July GAO report showing that only three of the five biosafety Level Four facilities described possessed 15 factors related to perimeter security.

The Federation of American Societies for Experimental Biology has provided informal comments on the legislation and is working to develop more formal comments through our Biosecurity Subcommittee of the Science Policy Committee. FASEB is concerned about both the proposed increased authority for DHS and the implementation of overlapping and potentially burdensome regulations, with little improvement in security. Currently, there is no House equivalent of the legislation.

However, Senate HSGAC members are not the only ones in Washington focused on biosecurity. Two additional hearings on high-containment labs and biosecurity were held the same day by the House Energy and Commerce Committee and the Senate Judiciary Committee. These hearings primarily were focused on a second GAO report on the proliferation of high-containment labs that took place after the influx of federal biodefense funding in response to the anthrax attacks of 2001. The GAO report recommended the federal government inventory and develop centralized oversight of all high-containment laboratories as well as develop standards for biosafety, design and operation of those labs.

In addition to the GAO report, several other high-profile communications related to pathogen control and laboratory biosafety and biosecurity have been or are expected to be released in the coming weeks: a trans-agency task force report on biosafety; the findings of the Executive Order Working Group on Strengthening the Biosecurity of the United States, on which FASEB and the Association of American Medical Colleges provided extensive input and a National Research Council report on pathogen control and laboratory biosecurity.

The NRC study, "Responsible Research with Biological Select Agents and Toxins," which cited FASEB's statements and recommendations on biosecurity, is more moderate in its proposed actions than the Lieberman-Collins bill. It suggests that the current level of screening is sufficient and does not warrant additional screening processes, although there is a recommendation to alter the current appeals process. In addition, the report recommends increased training in biosafety and bioethics for lab personnel with access to select agents. The report also calls for the creation of a national advisory board on select agents and toxins, made up primarily of scientists, to promulgate best practices, provide guidance on implementation of select agent regulations and promote harmonization of regulatory policies and practices. Other suggestions include revising the current inventory requirements, stratifying the select agent list and regulations, developing minimum physical security standards for high-containment laboratories and providing additional training for inspectors.

Carrie D. Wolinetz is director of scientific affairs and public relations for the Office of Public Affairs at FASEB. She can be reached at cwolinetz@faseb.org.

Two ASBMB Members Receive Nobel Prizes

BY NICK ZAGORSKI


GREIDER


STEITZ

The American Society for Biochemistry and Molecular Biology received a double dose of excitement last month when not one, but two of its members were honored with Nobel Prizes. The good news began with the announcement that Carol Greider, a professor in the department of molecular biology and genetics at the Johns Hopkins University School of Medicine, received one-third of the 2009 Nobel Prize in physiology or medicine, becoming one of 10 women to have won a Nobel in the category (and one of 40 overall). Just two days later, ASBMB member Thomas Steitz, the Sterling professor of molecular biophysics and biochemistry, a professor of chemistry and a Howard Hughes Medical Institute investigator at Yale University, also received a call from Stockholm informing him that he had been awarded one-third of the 2009 Nobel Prize in chemistry.

Greider, who shared the award with her Ph.D. adviser Elizabeth H. Blackburn (currently a professor at the University of California, San Francisco) and Harvard University professor Jack W. Szostak, was awarded the Nobel for her groundbreaking discovery — on Christmas Day — of telomerase, the enzyme that preserves the ends of chromosomes (telomeres) during replication cycles. Over the years, Greider's continued work in characterizing telomeres and telomerase has further highlighted the importance of this RNA- and protein-containing enzyme complex in maintaining genetic stability. Today, telomerase has become a hot therapeutic target for cancer, aging and other genetic disorders.

Steitz and his chemistry co-recipients, Venkatraman Ramakrishnan of the Medical Research Council Laboratory of Molecular Biology and Ada E. Yonath of the Weizmann Institute of Science, received the honor for their pioneering studies on a key cellular component and therapeutic drug target: the ribosome. The three scientists did what many thought was unfeasible, solving the three-dimensional structure of the organelle (which, like telomerase, contains both RNA and protein components) responsible for translating mRNA templates into functioning proteins. As the ribosome is a primary target for antibiotics, the elucidation of its structure has been instrumental in developing new drugs to combat the ever-growing strains of resistant bacteria.

ASBMB President Gregory A. Petsko was thrilled at the news, and not just because the committee honored outstanding fundamental research driven by pure scientific curiosity. "I can't think of a prize in recent years that has delighted me more [than the 2009 physiology or medicine]," he said. "Two women, one of whom was the student of the other when the key work was done: This one sends all the right messages."

A structural biologist himself, Petsko said he also was extremely pleased with the chemistry announcement: "It's wonderful that the Nobel Committee honored the structure determination of the ribosome. As a window into one of the most important processes in all living cells, this atomic-resolution picture of the machinery that carries out that process is both fascinating and of surpassing beauty."

With the addition of Steitz and Greider, ASBMB now includes 97 Nobel laureates among current and former members.

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Retrospective: Seymour Kaufman (1924–2009)

BY LOUIS SOKOLOFF

The American Society for Biochemistry and Molecular Biology recently lost another of its distinguished and long-time members. Seymour Kaufman, a scientist emeritus and former chief of the laboratory of neurochemistry at the National Institute of Mental Health, passed away at the age of 85 in Bethesda, Md.

Seymour was renowned for his contributions toward the characterizations of the partial reactions in processes catalyzed by mixed function oxidases, particularly those involved in the hydroxylation of aromatic amino acids. He identified tetrahydrobiopterin as an essential co-factor in these hydroxylation reactions. Seymour established, by direct enzyme assays, that it is indeed the lack of the phenylalanine hydroxylase enzyme that is responsible for the human genetic disease classical phenylketonuria. Subsequently, he identified other genetic variants of phenylketonuria that result from deficiencies in enzyme activities involved in the synthesis and processing of tetrahydrobiopterin, the co-factor in the phenylalanine hydroxylation reaction.

Seymour was born in Brooklyn, N.Y., on March 13, 1924. His earliest interests were not in science; at a young age, he showed artistic talents that led him to attend New York's High School of Music and Art. The curriculum there was markedly deficient in science. Although Seymour never lost his interest in the arts, he, like so many others of his generation, was diverted to ambitions in science by reading Paul DeKruif's "Microbe Hunters" during his senior year. This new interest initially was unfocused and fluctuated between basic chemistry and biochemistry. Eventually, having learned that the University of Illinois had an outstanding chemistry department and understanding that a strong background in chemistry would also be invaluable in biochemistry, he applied to the school and was admitted in 1941. During his undergraduate and graduate studies at the University of Illinois, he took most of the organic chemistry and biochemistry courses available and acquired extensive knowledge and experience in organic and synthetic chemistry, which proved to be valuable later in his career. His primary interest became biochemistry after he took W. C. Rose's course in intermediary metabolism during his senior year in college. His interest was heightened while doing research for his master's degree at the University of Illinois with Carl Vestling. It was this work with Vestling that led to Seymour's first publication in the Journal of Biological Chemistry in 1946 (1).

After receiving his master's degree in 1946, Seymour enrolled as a Ph.D. candidate under Hans Neurath in the department of biochemistry at Duke University. There, he worked with George Schwert and John Snoke on proteolytic enzymes, which stimulated an interest in enzymology that would remain with Seymour throughout his career. It was also in Neurath's lab that he met Elaine Elkins, another of Neurath's graduate students, who later became his wife.

After acquiring his Ph.D. in 1949 and doing a brief postdoctoral fellowship with Neurath, Seymour joined Severo Ochoa's department of pharmacology at New York University, first as a postdoctoral fellow and then as an assistant professor. He remained there for approximately five years and matured into an outstanding enzymologist and scientist. The department had an extraordinarily stimulating atmosphere and was home to many great scientists. There was also the powerful influence of Ochoa's character, personality and modus operandi. He was completely dedicated and focused on his research and uncompromis-

ingly rigorous in its execution. Although Seymour probably would have denied it, he later displayed some of these traits while directing his own lab.

It was in Ochoa's department that Seymour made his first important contribution to biochemistry. This was the characterization of the partial reactions in the conversion of alpha-ketoglutarate to succinate in the tricarboxylic acid cycle and the elucidation of the mechanism of the substrate-level phosphorylation associated with this step.

Giulio Cantoni had been in Ochoa's lab during part of the time that Seymour was there and was very impressed with him. Cantoni later became chief of the laboratory of cellular pharmacology at the newly established NIMH and recruited Seymour as an independent research biochemist. In Ochoa's lab, Seymour had been more or less required to work on projects of Ochoa's choosing. Cantoni's offer of complete freedom to choose his own research project was probably an important consideration in his decision to accept Cantoni's offer and to join to the NIMH in 1954.

"He once said that he spent 10 percent of his time being 90 percent sure and the remainder being 99.9 percent sure."

When Seymour arrived at the NIMH, he found that Cantoni's laboratory was still under construction and would not be fully operational for several months. Although he was initially disappointed, he used this delay to deliberate on the choice of his first research project. He finally settled on the enzymatic hydroxylation of phenylalanine to tyrosine. The problem not only satisfied his interest in organic chemistry and his desire to contribute to biomedical research, but it was appropriate for the NIMH (even though he was not obligated to work on problems directly related to the brain), as the inability to convert phenylalanine to tyrosine results in phenylketonuria, which is characterized by mental deficiency.

Using partially purified enzymes from rat and sheep livers, Seymour developed a system that converted phenylalanine to tyrosine in vitro. In addition to oxygen, the reaction required NADPH and a boiled rat liver extract (i.e., "kochsaft"), indicating that there was an essential co-factor in the reaction. In a series of classical biochemical studies, he identified the co-factor as tetrahydropteridine and showed that it was formed from 7,8-dihydropteridine in the presence of NADPH. It was subsequently found that this compound is also an essential co-factor in other aromatic amino acid hydroxylations.

In 1968, the significance of Seymour's contributions to neuroscience and to the research program of the NIMH was recognized by his appointment as chief of the laboratory of neurochemistry at the NIMH. From then on, his work largely, but not exclusively, concentrated on phenylketonuria. He finally proved that classical phenylketonuria was due to the lack of the phenylalanine hydroxylase enzyme. He also identified other variants of phenylketonuria, which were due not to lack of phenylalanine hydroxylase but to other enzymes involved in the synthesis of the essential co-factor tetrahydropteridine.

Seymour's status in the world of biochemistry and his outstanding research contributions were honored by his selection to serve two terms on the editorial board of the American Journal of Biochemistry, election to the National Academy of Sciences and the American Academy of Arts and Sciences, the Meritorious Presidential Rank Award and the American Chemical Society Hillebrand Prize.

Although Seymour had decided that he lacked the talent to be a successful artist, he never lost his interest in art. He acquired an impressive collection of lithographs, woodcuts and paintings, some by Henri de Toulouse-Lautrec, whose work he particularly admired. His home also was filled with a number of sculptures produced by his daughter Emily, a very successful sculptor, who has one of her sculptures on display in the Hirshhorn Museum in Washington, D.C.

Seymour also had other interests to which, in his typical fashion, he was passionately devoted. Tennis was one of them. Although he lacked natural athletic talents and had never received any formal coaching, he developed a quite creditable tennis game, mainly because of his competitive nature. He hated to lose. He also developed a strong taste for good food. This probably evolved from several trips to France, during which he was introduced to the culinary magic of several of the three-star restaurants in the Michelin Guide.

Sadly, Seymour passed away on June 23, 2009. He had been ill for several years, but, during that time, he never lost his zest for life. He is survived by his wife, Elaine; son, Allan; daughters, Emily and Leslie; three grandchildren, Lisa, Joshua, and Amanda; and two sisters, Lilly Wolfe and Dottie Laiserin. He will be greatly missed by his family, friends, associates and by all in the biochemical community. Below, we offer thoughts and reflections from several of Seymour's friends and colleagues.

The one word that best describes Seymour Kaufman's approach to research is "careful." He felt that to publish an erroneous datum or draw an unjustified conclusion would be a disaster, because it might deflect the progress of science. He once said that he spent 10 percent of his time being 90 percent sure and the remainder being 99.9 percent sure. Though this often delayed his publications, they never could have been any more respected by those who knew him well. His ability to draw valid conclusions and useful hypotheses from data was unsurpassed. His curiosity made the process of investigation a treasure hunt.

Seymour imbued his fellows with the same high technical and behavioral standards. He was not free with praise but was similarly stingy with opprobrium. One of my proudest moments as a postdoctoral fellow came after he suggested I repeat some experiments in a slightly different way. I must have visibly sagged, because he clapped me on the shoulder and said, "Look, I know you're working like a dog." It was a compliment to cherish. Seymour made his fellows realize he was genuinely interested in their work, fair in his evaluations and generous with his time. He claimed to enjoy being interrupted by fellows' comments and questions because they provided some variety for the intensity of his focus. He was a superb teacher, an outstanding and creative investigator and a highly moral human being.

Ephraim Levin, retired captain,
U.S. Public Health Service

My memories of Seymour Kaufman date to 1965, when I came to the Bethesda campus of the NIMH as a visiting scientist from Sydney, Australia. Much of my research prior to this appointment was concerned with the metabolism of organic acids and their CoA derivatives in plants. I was, therefore, quite familiar with Seymour's pioneering research with animals in this field, and he became one of my early acquaintances. At this time, Seymour and I were both in Giulio Cantoni's laboratory of general and comparative biochemistry; I had joined the section on alkaloid biosynthesis, and Seymour was chief of the section on cellular regulatory mechanisms. Giulio's laboratory sponsored a marvelous journal club for discussing interesting research papers; members included Harvey Mudd, David Neville, Howard Nash, Lou Sokoloff and Jack Durell. Seymour's presentations provided important lessons in the importance of a rational, rigorous and critical approach to research.

Some less academic memories include the times when Seymour and I spent many enjoyable weekends playing doubles tennis with Lou Sokoloff and Jack Durell. In 1987, the section on alkaloid biosynthesis was discontinued, and I was fortunate to be invited by Seymour to join his laboratory of neurochemistry. My collaboration with Seymour on the mechanism of nitric oxide synthesis represented a wonderful finale during the decade before my retirement. I cherish fond memories of a good friend, colleague and mentor.

John Giovanelli, guest researcher,
NIMH

Seymour and I were laboratory neighbors in the newly constructed clinical center at NIH in 1954. We quickly discovered that we both had switched from a high school art program to one in science, he in Brooklyn and I in Detroit. He already had established himself as an up-and-coming biochemist, and I was just getting started, and so, in addition to occasional discussions on diverse topics of mutual interest ranging from the arts to food and wine, he also served as a helpful informal adviser in matters of biochemical research. We both participated in a weekly journal club established by Giulio Cantoni, in which we presented either our own recent research results or reviewed an interesting journal article. I followed his pursuit of phenylketonuria and the nature of phenylalanine hydroxylation reaction like a serial detective story.

Seymour loved good food and wine. Seymour Kety, Seymour Kaufman, Giulio Cantoni, Louis Sokoloff, myself and our wives shared many memorable meals in Bethesda and wherever in the world our travels coincided.

For 40 years, our home has been graced by several sculptures created by Emily Kaufman. They serve as a reminder of our fond friendship and shared memories.

Bernard W. Agranoff, research scientist, Molecular and Behavioral Neuroscience Institute, and professor emeritus, department of biological chemistry, University of Michigan

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Louis Sokoloff is a scientist emeritus at the National Institutes of Health. He can be reached at louissokoloff@mail.nih.gov.

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asbmb member spotlight

Lindquist Is Oesper Awardee

Susan L. Lindquist, professor of biology at the Massachusetts Institute of Technology, is the winner of the 2009 Ralph & Helen Oesper Award for her pioneering work on protein folding.

The Oesper Award, co-sponsored by the Cincinnati section of the American Chemical Society and the University of Cincinnati's department of chemistry, is given annually to a senior, well-established chemist or biochemist with a long record of outstanding scientific achievement. Lindquist received her award during a symposium at the University of Cincinnati in October.

Lindquist, a member of the Whitehead Institute for Biomedical Research and a Howard Hughes Medical Institute investigator, uses biochemistry and genetics to investigate the mechanisms of protein folding and the consequences of misfolding. Her work has shown how changes in protein conformation affect processes such as stress tolerance, neurodegenerative disease and heredity. Her group has pioneered the use of yeast as a discovery platform for new chemical and genetic therapies for neurological conditions such as Parkinson's and Huntington's diseases.

O'Neill Wins Boyle Medal

Luke O'Neill, a Journal of Biological Chemistry associate editor and professor in the school of biochemistry and immunology at Trinity College Dublin, has won the 2009 Irish Times Boyle Medal for Scientific Excellence. He was given the award for "his pioneering work on the molecular basis of our innate immune system and inflammatory diseases such as rheumatoid arthritis," according to The Irish Times.

The Irish Times also stated that the seven people on the international judging panel invited to Dublin to adjudicate the 2009 award were unanimously in agreement that the prize should go to O'Neill. He and three other world-class scientists were shortlisted for the Boyle Medal award last May.

The medal, considered Ireland's premier award for excellence in scientific research, is presented to scientists who have made contributions of global importance to their chosen research fields. O'Neill is the 37th recipient since its inception 110 years ago.

The main focus of O'Neill's work is to provide a molecular understanding of innate immunity and inflammation. He is particularly interested in receptors involved in innate immunity, such as Toll-like receptors and Nod-like receptors, and the signals they activate, including NF-κB, IRF family transcription factors and MAP kinases.

O'Neill also co-founded Opsona Therapeutics, a drug development company.

Shorter Receives New Scholar Award

James Shorter, assistant professor of biochemistry and biophysics at the University of Pennsylvania School of Medicine, is the recipient of a 2009 Ellison Medical Foundation New Scholar Award in Aging. Awardees are nominated by U.S. medical institutions and universities for outstanding promise in aging research. The award provides up to $100,000 per year for a four-year period to a maximum of 25 scholars.

Shorter studies how yeast can be used to look at lethal nerve-degeneration disorders, such as Alzheimer's disease and amyotrophic lateral sclerosis, which are associated with protein aggregation. His major focus is Hsp104, a protein-remodeling factor that disaggregates denatured proteins and returns them to normal function. Shorter is attempting to understand the mechanistic basis of how the Hsp104 structure enables these disaggregation activities and other prion-regulatory functions. He also is trying to identify proteins with similar functions to Hsp104 and is looking at how small molecules disrupt amyloid structure.

Taylor Awarded Vanderbilt Prize

Former American Society for Biochemistry and Molecular Biology President Susan S. Taylor has been awarded the 2009 Vanderbilt Prize in Biomedical Science. The award honors women who have "made significant advances in the biological and biomedical sciences and have contributed positively to the mentorship of other women in science." The prize carries a purse of $25,000 and a scholarship in the name of the honoree for a woman entering graduate studies at Vanderbilt University.

Taylor is a professor of chemistry and biochemistry and pharmacology at the University of California, San Diego, a senior fellow at the San Diego Supercomputer Center and a Howard Hughes Medical Institute investigator. Her work focuses on cyclic adenosine monophosphate-dependent protein kinase, or protein kinase A. In 1991, Taylor and colleagues at UCSD solved the three-dimensional crystal structure of the first protein kinase – protein kinase A. The structure continues to serve as a prototype for the entire protein kinase family. In parallel, Taylor solved structures of the protein's regulatory subunits.

Taylor, who was ASBMB president in 1995, also recently received the 2010 Federation of American Societies for Experimental Biology Excellence in Science Award.

ASBMB Members Named Biophysical Society Fellows


CLORE


FERGUSON-MILLER


WAND

ASBMB members G. Marius Clore of the National Institutes of Health, Shelagh Ferguson-Miller of Michigan State University and Andrew Joshua Wand of the University of Pennsylvania School of Medicine have been named to the 2009 class of Biophysical Society fellows. The award, given to six scientists this year, is designed to recognize distinguished members who have demonstrated excellence in science and have contributed to the expansion of the field of biophysics. The fellows will be honored at a ceremony during the Biophysical Society's annual meeting in February.

According to the Biophysical Society, Clore, who works in the laboratory of chemical physics at the National Institute of Diabetes and Digestive and Kidney Diseases, was selected for "pioneering contributions in the development of nuclear magnetic resonance spectroscopy for structural characterization of biological macromolecules."

Ferguson-Miller, chairwoman and distinguished professor of biochemistry and molecular biology in East Lansing, Mich., was chosen for "contributions to understanding the structure and function of integral membrane proteins involved in respiratory electron transport, as well as detergent-based methodologies for isolation, purification and crystallization of membrane proteins."

And Wand, the Benjamin Rush professor of biochemistry and biophysics in Philadelphia, was honored "for his numerous advances in the understanding of protein structure, function and dynamics through the application of state-of-the art magnetic resonance methodologies."

Two ASBMB Members Receive National Medals of Science


STUBBE


FUCHS

In September, President Obama named nine eminent researchers, including ASBMB members JoAnne Stubbe and Elaine Fuchs, as recipients of the National Medal of Science, the highest honor bestowed by the U.S. government on scientists, engineers and inventors. The recipients received their awards in a White House ceremony last month.

Stubbe, the Novartis professor of chemistry and a professor of biology at the Massachusetts Institute of Technology, was honored "for her groundbreaking experiments establishing the mechanisms of ribonucleotide reductases, polyester synthases and natural product DNA cleavers — compelling demonstrations of the power of chemical investigations to solve problems in biology," according to the National Science Foundation.

Fuchs, Rebecca C. Lancefield professor and head of the laboratory of mammalian cell biology and development at Rockefeller University, was honored "for her pioneering use of cell biology and molecular genetics in mice to understand the basis of inherited diseases in humans and her outstanding contributions to our understanding of the biology of skin and its disorders, including her notable investigations of adult skin stem cells, cancers and genetic syndromes."

The National Medal of Science was created in 1959 and is administered by the NSF. Awarded annually, the medal recognizes individuals who have made outstanding contributions to science and engineering. Nominees are selected, by a committee of presidential appointees, based on their advanced knowledge in, and contributions to, the biological, behavioral/social and physical sciences, as well as chemistry, engineering, computing and mathematics.

IN MEMORIAM:

Zofia Borowska-Rzucidlo

Zofia Borowska-Rzucidlo, professor emeritus at Rockefeller University and discoverer of edeine, died in June in San Francisco.

Borowska-Rzucidlo was born in Lublin, Poland, on May 13, 1927. She received her master's degree in chemistry in 1950 and her doctoral degree in biochemistry in 1958, both from the Gdańsk University of Technology in Poland. She then became an assistant professor at the Institute of Marine and Tropical Medicine in Gdańsk.

In 1961, Borowska-Rzucidlo was awarded a research fellowship from the Rockefeller Foundation and emigrated to the U.S., where she became a guest investigator at the Institute of Microbiology at Rutgers University. A year later, she became a research associate at the McArdle Laboratory for Cancer Research. In 1962, Borowska-Rzucidlo moved again, this time joining the faculty of Rockefeller University, where she remained for the rest of her career, eventually becoming a senior research associate.

Borowska-Rzucidlo's early research in Poland focused on basic peptide antibiotics. After coming to the United States, she continued to work on edeine and amino acids but also expanded the scope of her research to hepatitis C, other viruses as well as the photochemical origins of life.

After retiring, Borowska-Rzucidlo spent her time drawing and writing poems in Polish and English under the pen name Sota Kurylo. She eventually published three volumes of poems: "Wyspa Wspomnień" ("The Island of Memories") in 1997, "The Play of Time" in 2001 and "Jeszcze się wznoszę" ("I Am Still Ascending") in 2004. She also published numerous poems in journals and anthologies.

Award Winner Lauded for Teaching

BY ANGELA HOPP

Colleagues and students don't hold back when asked to evaluate University of Richmond associate professor of chemistry Lisa Gentile. They gush about her enthusiasm and about how she always delivers. They say she "rolls up her sleeves, gets out the chalk and goes to work." They also call her a "dynamo."

If you average such reviews, add them to her laundry list of responsibilities as a department head, sprinkle in a dash of her K-12 outreach efforts and analyze the results, you don't need an advanced degree to conclude — unscientifically, of course — that she must be superhuman, or pretty close to it.

All kidding aside, those who work with Gentile in the classroom and lab have come to expect no less than greatness from her, making her selection as the winner of the American Society for Biochemistry and Molecular Biology's Award for Exemplary Contributions to Education all the more fitting, according to Barbara Gordon, executive director of ASBMB.

"Lisa's commitment to teaching and turning her research into experiential-learning opportunities for students at all levels makes her an outstanding example for faculty at whatever stage of their careers," Gordon said.

Gentile said she feels lucky to be recognized for simply doing the things she loves best.

"I am incredibly honored to be nominated for this award, especially considering the accomplishments of some of the past recipients," she said. "I am fortunate to be part of an institution that is so supportive of interdisciplinary approaches to science education, both in the classroom and in the research lab."

Colleagues describe Gentile, long a champion of undergraduate research and pioneer of outreach activities for each institution at which she has hung her hat, as an agent of change.

"Her energy, creativity and passion for curricular reform seem boundless. She seems to develop new courses with ease — all the while still mentoring research students, writing research proposals and submitting manuscripts for publication," said professor Carol Parish, a member of Gentile's department.

Lisa Gentile, left, invites high school teachers and students from schools serving underrepresented minorities to work alongside her research group each summer.

Today, Gentile is collaborating with colleagues from five different disciplines to establish a unique course that replaces standard introductory classes in computer science, biology, chemistry, physics and math. Instead of learning the subjects in isolation, students will approach them in an interdisciplinary way, according to professor J. Ellis Bell, who insisted that such reworking of curricula is "the future of science education."

The quantitative science course, to be offered over two semesters to first-year students, is funded in part by a grant from the Howard Hughes Medical Institute. Ten faculty members — two from each discipline — spent last year developing the course and are now working on implementation, Gentile said.

Gentile's inclusive approach also carries over into her lab. Each summer, she invites high school teachers and students from schools serving underrepresented minorities to work with her research group, which studies the structure and function of proteins.

In recognition of the ASBMB award, bestowed annually for effective teaching of biochemistry and molecular biology through leadership, writing, educational research, mentoring and/or outreach, Gentile will give a plenary lecture, "Dynamics of PKA Signaling," at the society's annual meeting April 24–28 in Anaheim, Calif.

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Researchers "Rock Out" for Scientific Awareness

BY NICK ZAGORSKI

Joe Perry (right) rocks out with Francis Collins and Rudy Tanzi (left) who plays a mean harmonica. RESEARCH!AMERICA

When many of us were growing up, we often dreamed of living the glamorous life of a rock star. Now that we're older and wiser, we know that the life of a rock star might not be as glamorous as it seems. Still, it has its perks. A case in point: An incident at the visitor's center for the U.S. Capitol. Normally, musical performances are restricted in its plush auditorium, because the Capitol has concerns about sound vibrations damaging the chandeliers on the floor above. However, when it was revealed that Joe Perry would be part of a tribute event held in that auditorium, the Senate gave the Aerosmith guitarist a special waiver that allowed him to play. Though, just to be safe, it had to be "unplugged."

As unusual as the waiver was, perhaps even more unusual was Perry's actual performance — a stirring rendition of Bob Dylan's "The Times They Are A-Changin," accompanied by Harvard University neurology professor Rudolph Tanzi and new National Institutes of Health Director Francis Collins. It was an unexpected mix of talent, which spoke volumes about what the Rock Stars of Science Campaign — the focus of the daylong briefing and tribute event — is all about.

The brainchild of Emmy-award winning reporter and producer Meryl Comer, president of the Geoffrey Beene Gives Back® Alzheimer's Initiative, Rock Stars of Science brings together musicians like Perry, who possess a level of visibility and cachet that can influence public opinion, with top-level biomedical scientists. The campaign's goal is to bolster awareness and financial support for research conducted in the U.S. and, by doing so, to help speed up the discovery of disease treatments and cures. And through some fun events, like a GQ magazine photo shoot, the initiative also aims to show young people that science can "rock" as a career choice.

The event at the Capitol Visitor Center was held in September and hosted by Research!America, the Geoffrey Beene Foundation, the Alzheimer's Association, Wyeth, Elan Corp. and GQ, in cooperation with the Congressional Biomedical Research Caucus and Congressional Task Force on Alzheimer's Disease. In various panel sessions, celebrities, scientists and congressmen discussed the current outlook and future prospects of medical research, advocacy and funding, with a special emphasis on Alzheimer's disease and cancer.

The discussions highlighted news both good and bad. The outlook on Alzheimer's disease, which currently affects more than100 million people and likely will double in 20 years, was quite sobering and punctuated by a simple statement given by Robert J. Egge, vice president of public policy and advocacy for the Alzheimer's Association: Unlike other leading killers like cancer and heart disease, no one has met an "Alzheimer's survivor."

However, this does not mean things cannot improve if the U.S. develops a strategic plan, such as it did for HIV/AIDS. In just a little over a generation, AIDS went from being a terminal disease to a manageable one. And, considering there are plenty of scientists taking up the cause, like American Society for Biochemistry and Molecular Biology member and "Rock Doc" Samuel E. Gandy of the Mount Sinai School of Medicine, hope for Alzheimer's disease may be on the horizon.

But, as Collins noted in his remarks at the briefing, it will take more than just support. In our aging society, chronic, debilitating diseases like Alzheimer's and cancer continue to rise in incidence and create an ever-increasing burden on patients, their families and caregivers. Easing this burden will require new and innovative research models that can effectively tackle these complex disorders. And that task falls on the shoulders of our dedicated scientists, who too often toil in obscurity. Considering the importance of their work, they should be treated like rock stars, and, thanks to the efforts of groups like Geoffrey Beene Gives Back®, they just might be.

For a recap of the briefing, go to http://bit.ly/LW8RX.

To learn more about the Rock Stars of Science, go to www.rockstarsofscience.org.

Nick Zagorski is a science writer at ASBMB. He can be reached at nzagorski@asbmb.org.

ASBMB Advocates at NIH

Underscores Importance of Basic, Investigator-initiated Research

BY KYLE M. BROWN

In meetings with members of the American Society for Biochemistry and Molecular Biology Public Affairs Advisory Committee in September, National Institutes of Health directors underscored their commitment to sustaining stimulus-level funding and supporting research efforts by individual investigators.

The committee members met with five institute directors and the director of extramural research this past September to emphasize the importance of funding mechanisms for investigator-initiated, basic research and to find out more about NIH funding priorities under Director Francis Collins. Collins has a history with major research initiatives and led the publically funded effort to sequence the human genome.

"We're not going to cut into basic science," said Nora D. Volkrow, director of the National Institute on Drug Abuse. "That is who we are."

Jeremy M. Berg, director of the National Institute of General Medical Sciences, and Sally J. Rockey, director of extramural research, echoed Volkrow, assuring the committee that they had seen no indication of a shift away from funding individual researchers.

"[Collins] knows that R01s are the strength of the NIH," Rockey said.

Berg noted that although Collins has been involved in large-scale projects, he, like most biomedical researchers, began his career as an individual investigator.

Deputy Director Greg G. Germino and others at the National Institute of Diabetes and Digestive and Kidney Diseases pointed to a number of mechanisms the institute has used to meaningfully fund and maintain the pre-eminent role of competitive, investigator-initiated research.

Germino said that their priority was to fund the maximum number of individual investigators.

In discussions with Barbara Alving, director of the National Center for Research Resources, the committee members also expressed concerns about a shift in priorities to translational science programs from basic research infrastructure.

Alving and other directors said they support the center's new Clinical and Translational Science Awards, which will fund translational research at 60 institutions nationwide.

Berg assured the committee that basic research and infrastructure could remain a priority. It's "not necessarily a zero-sum game," Berg said.

The committee members emphasized that supporting individual investigators also meant cushioning the fall when NIH's $10 billion in stimulus funding, much of which supported individual investigators, expires after 2010.

According to Berg and NIDDK officials, the large number of applications for the NIH Challenge Grants in Health and Science Research demonstrated an enormous unmet need for individual investigators, some of which could be attributed to decreasing institutional support.

Berg said managing the potential 14 percent drop in funding in 2011 is priority No. 1.

While institutes will attempt to administratively cushion the landing, both the directors and the committee members question whether congressional funding will continue to support the new projects.

Kyle M. Brown is an ASBMB science policy fellow. He can be reached at kmbrown@asbmb.org.

Update on the New NIH Scoring System

Acknowledging that the National institutes of Health scoring system, implemented this year, was still in its infancy, ASBMB PAAC members asked NIH directors about its effectiveness.

Jeremy M. Berg, director of the National Institute of General Medical Sciences, was supportive of the effort, saying that the distribution of grants scores on the new nine-point scale "isn't too bad," despite fears that the vast majority of grants will be given similar, good scores.

Director for Extramural Research Sally J. Rockey agreed, saying reviewers are taking advantage of the full scoring range.

For more information and an initial analysis of the new scoring system, visit the NIGMS Feedback Loop at http://bit.ly/13Sdvd.

Young Scientists Take to the Hill

BY NICK ZAGORSKI

Lisa Noelle Cooper, a graduate student from Northeastern Ohio Universities College of Medicine, came to Washington to advocate for increased research funding.

This past September, members of the American Society for Biochemistry and Molecular Biology's policy staff and Public Affairs Advisory Committee descended upon Capitol Hill for one of their regular appearances to advocate for steady and increased funding for biomedical research. This time, though, they added a new twist and brought individuals from the front lines of the research-funding debate: graduate students and postdoctoral fellows.

It's often said that the best way to get your point across is to put a human face on it, and ASBMB took that message to heart, inviting young scientists-in-training from across the U.S. to help convey the society's message. The students and postdocs were selected, with the help of ASBMB members at local universities, from districts represented by members of the House and Senate appropriations subcommittees that oversee Department of Health and Human Services and National Institutes of Health funding. In the end, nine talented trainees, representing eight districts stretching from California to Connecticut, arrived for ASBMB's first Graduate Student/Postdoc Hill Day since 2004.

The students and postdocs spent their first evening in Washington relaxing and getting to know one another at a dinner reception, where they also received a crash course in how to communicate with Congress. The next day, they descended upon the Hill as concerned constituents and, more importantly, as "ambassadors of science."

Splitting up into small groups, the young scientists and their guides traversed the various House and Senate office buildings to reach their district representatives and senators.

The students and postdocs met with congressional staff, although, in a few cases, the senator or representative did make an appearance as well, and presented their message. That message was two-fold: that they supported the House proposal in the 2010 budget that provides a 3.1 percent increase in NIH funding, and that the NIH needs a commitment to long-term sustainable increases in funding. The fundamental nature of research cannot thrive with a roller coaster ride of booms and busts in funding.

And although they presented some general talking points about the medical and economic value of investing federal money into basic research to bolster the message, the young scientists made sure to emphasize the "personal." Often with the poise and passion of skilled orators, they discussed specifically how NIH funding and/or stimulus money was helping them complete their research projects and advance their careers, or, on the flip side, how funding problems forced them to abandon potentially valuable projects or change labs. They also talked about how their projects would benefit society and combat diseases like Alzheimer's disease or diabetes. And, finally, they stressed that today's students become tomorrow's teachers, who will train and educate the next generation of scientists.

The responses provided by the congressional offices understandably were subdued; while many on the appropriations committees have long been supporters of biomedical research, a general theme amongst the House and Senate staff was noting that health care reform was taking most of the congressional resources, and, combined with the traditional delays in budgeting that occur in the first year of a new administration, a quick resolution may not be at hand. However, many also noted President Obama is a strong supporter of research and said they were hopeful that NIH would receive adequate funding.

Despite uncertainty concerning the budget, the mood after the event remained bright for the participants, who praised their unique experience. ASBMB and the PAAC hope to make Hill visits by young investigators a recurring event and also to have students and postdocs visit local congressional offices and have policymakers take tours of university labs in their districts.

Nick Zagorski is a science writer at ASBMB. He can be reached at nzagorski@asbmb.org.

Meet the ASBMB Hill Day Attendees

Connecting Scientists and Government

BY SARAH CRESPI

We asked our nine American Society for Biochemistry and Molecular Biology Hill Day attendees to answer some questions so we could learn a little more about them as well as their motivations to go to Capitol Hill.

Melissa Caras

Graduate Student
University of Washington

RESEARCH FOCUS: I look at the effects of seasons and hormones on auditory processing using the white-crowned sparrow as a model organism.

POLITICAL EXPERIENCE: I never have done anything remotely like this before.

MOTIVATION: Political decisions often influence not only us, but our oceans, land, climate and all of the organisms that share our planet. In my opinion, policies that are based on sound scientific data are in everyone's best interest, because they are rooted in facts rather than public opinion. This is why it's important that scientists take an active role in advising policymakers.

FUTURE: I hope to earn a faculty position at a research university and run my own laboratory.

Angel Shree' Byrd

Graduate Student
Warren Alpert Medical School, Brown University

RESEARCH FOCUS: I study CR3, a beta 2 integrin that is unique because it contains a polysaccharide binding lectin-like domain. Ultimately, these studies are expected to render new signaling pathways for CR3, providing fundamental targets for pharmacological therapies.

POLITICAL EXPERIENCE: Yes, as an undergraduate at Tougaloo College, Mississippi.

MOTIVATION: Scientists should be involved in politics to assure that adequate attention and resources are reserved for such a crucial component of education, drug discovery, patient care, etc.

FUTURE: I plan to pursue a career in pediatric endocrinology/diabetology. I aspire to practice translational research/medicine.

Lisa Noelle Cooper

Graduate Student
Northeastern Ohio Universities College of Medicine

RESEARCH FOCUS: I study the evolution and development of whales, dolphins and porpoises.

POLITICAL EXPERIENCE: At NEOUCOM, I serve on two academic committees, but I have no prior political experience.

MOTIVATION: Scientists gather techniques and information that directly affect the public's quality of life. They also further the understanding of evolution via cutting-edge research that affects science education.

FUTURE: In January, I will start a postdoctoral fellowship in a molecular lab engaged in evolutionary and developmental research. After my tenure as postdoctoral fellow, I plan to be the principal investigator in a research laboratory and to teach either undergraduate or medical students.

May L. Lam

Postdoctoral Fellow
Louisiana State University Health Sciences Center

RESEARCH FOCUS: I look at heart development, with a special emphasis on regeneration and repair after heart damage, such as that caused by a myocardial infarction.

POLITICAL EXPERIENCE: None. This was a completely novel experience for me.

MOTIVATION: Our elected officials need to hear from their constituents to learn about our concerns. This is especially important in an area like National Institutes of Health funding, as some of these elected officials may not be familiar with the effect that their votes could have on future scientific research.

FUTURE: I will most likely stay in academia.

Brian Couch

Graduate Student
Yale University

RESEARCH FOCUS: My research aims to aid in understanding the biochemical mechanisms that underlie neurodegeneration in Alzheimer's disease.

POLITICAL EXPERIENCE: Not really. I have participated in numerous political events/rallies and have been part of groups that have sent representatives to speak with congressional leaders, but

I, myself, have never tried to meet with my representatives.

MOTIVATION: I feel strongly that basic research is important both for its own merits as well as for laying the groundwork for breakthroughs that will improve human health. To ensure that support for this continues, we must both keep the general public educated and informed and remind politicians of the importance and benefits of research. The federal government is one of the few entities that have the resources and ability to fund basic research, making our involvement in politics absolutely critical.

FUTURE: I hope to end up teaching at a small college.

Gina Hedberg
Graduate Student
University of Wisconsin-Madison

RESEARCH FOCUS: My project has centered on immunological memory and the persistence of memory T helper cells during late stages of infection by the trypanosome, the parasite that causes African sleeping sickness.

POLITICAL EXPERIENCE: I've never been involved in anything like Hill Day, but I'm really excited to be a part of it this year!

MOTIVATION: I think it's important for politicians to have the fullest understanding possible of the policies they enact and the funds that they allocate. Scientists gain experience with the research process, in regard to the excitement it can provide, the revolutionary data it can produce and the sheer frustration that results when things don't go according to plan. Because of this, their input is critical when it comes to government decisions regarding funding and research, which have an impact not only on the researcher but also on those who are affected by the discoveries going on every day in the lab.

FUTURE: I've given serious thought to being a teacher, most likely at a liberal arts college. I also hope to stay involved in public health in general, so I've given a lot of thought to looking for a position related to program implementation through an organization like the Centers for Disease Control and Prevention.

Jessica M. Slater
Graduate Student
Loma Linda University School of Medicine

RESEARCH FOCUS: I look at the effects of tumor-released proteins on T and B cells.

POLITICAL EXPERIENCE: None.

MOTIVATION: If there is going to be a government funding source for scientists, it is essential to have scientific input to ensure that the money is being spent on worthwhile projects that will help the country as a whole.

FUTURE: I plan to become a pediatric oncologist and treat patients as well as run a research lab to study childhood malignancies.

Robert L. Osborne
Postdoctoral Fellow
University of California, Berkeley

RESEARCH FOCUS: I look at how the mononuclear dicopper monooxygenase enzyme family catalyzes such unique chemistry at an active site completely exposed to solvent. I am studying the enzyme tyramine beta monooxygenase, which is the insect homologue of dopamine beta monooxygenase.

POLITICAL EXPERIENCE: This is my first experience discussing science and funding policy in a truly political environment.

MOTIVATION: Scientists must be involved in politics to bridge the gap between the language we speak amongst ourselves and the language understood by nonscientists. We need to constantly remind our government leaders of how basic research has affected all of our lives as well as how much is yet to be accomplished. Clearly, with the growing population, we absolutely need to increase research efforts to find each and every sustainable solution to a number of critical issues (energy, water supply, obesity, etc.).

FUTURE: As it stands today, I see myself as a full-time professor. I love the idea of directing my own research and training the next generation of scientists.

Craig Belon
Graduate Student
New York Medical College

RESEARCH FOCUS: I study hepatitis C virus helicase mechanics and inhibitor design.

POLITICAL EXPERIENCE: I have participated in policy meetings within the American Physician Scientist Association to draft recommendations for various government agencies.

MOTIVATION: Scientists in general, and academic scientists in particular, depend on government funding. I want to ensure that America keeps its position near the top of the global science community. To fulfill this goal, we need federal and local support. It is unreasonable to expect people to take it upon themselves to understand what it is that we do and why it is important; scientists should be their own activists.

FUTURE: I plan on becoming a practicing academic physician (likely surgery) with a small research lab of my own or a co-primary investigator. I plan to spend about 25 percent of my time doing pure research and 75 percent doing clinical work.

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Careers in Motion

BY KYLE M. BROWN AND ALLEN DODSON

Ask any astrophysicist to describe the "two-body problem," and the answer will involve orbiting celestial bodies. Ask a young scientist, and the question takes on a very earthly meaning.

Years of tight budgets and decreasing paylines at the National Institutes of Health have pushed the average age of first-time grant recipients to 42, effectively turning the entirety of scientists' 20s and 30s into years of training and instability. At the same time, more than two-thirds of life sciences postdoctoral fellows are married, and more than one-third have children (1).

Young would-be academics must confront the two-body problem, balancing their spouse's career aspirations with the mobility demanded by the postdoctoral training cycle. Finding solutions to the two-body problem has become paramount in ensuring the best scientists continue to fill the highest ranks of research.

A Dream Deferred

"People aren't finding places where both partners can work," says Kristofor Langlais, a postdoctoral genetics research fellow at the NIH. "Opportunities are practically nil." Langlais and his wife are both Ph.D. scientists who have struggled to find tenure-track faculty positions in the same location. The lack of faculty jobs gradually has forced them both toward nonacademic careers.

Over the past 30 years, the number of biomedical postdoctoral researchers has more than tripled, while the number of tenured or tenure-track positions has remained virtually static (2). This imbalance has led to greatly increased competition and longer years of training as scientists amass the increased credentials required to earn a job. Statistics from the National Postdoctoral Association show that only 18 percent of recent graduates obtain such positions within six years of graduating (1). Researchers can expect to spend their 20s and 30s moving from their undergraduate school to a Ph.D. lab to one or more postdoctoral positions, relocating on average every four years.

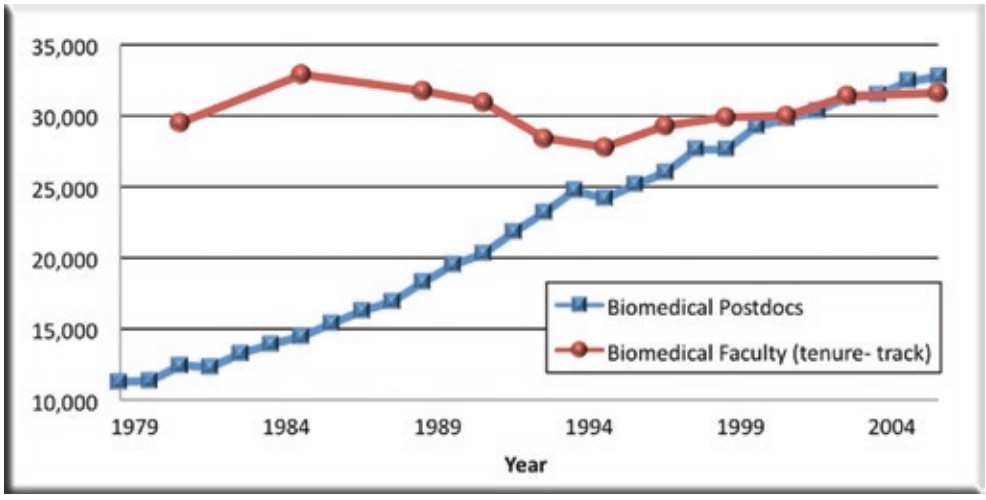
Do scientists make different career choices after being fed up with the academic job market? "We certainly did," says Langlais.

Like Langlais and his wife, Ph.D. scientists are increasingly turning to alternative careers. In 1972, nearly 70 percent of all biomedical Ph.D.s were employed in academic science. Today, that number has dwindled to 50 percent. Meanwhile, the percentage of Ph.D.s employed in industry has more than doubled and now makes up roughly one-quarter of the postdoctoral biomedical work force. Part of the appeal of industry jobs may include the prospect for scientists to choose where they would like to live, perhaps finding a rewarding career in a place where their partner also is employed (2).

Disproportionate Effects

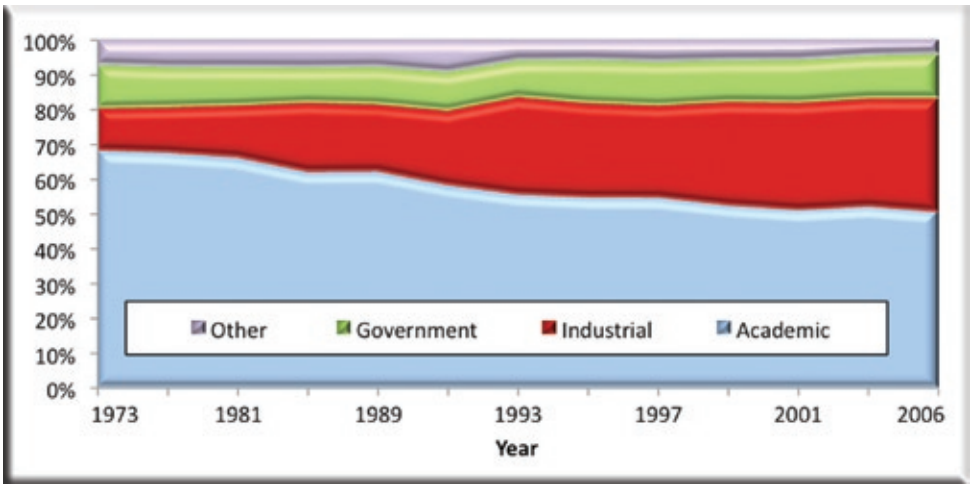
Among many causes of the "leaky pipeline" (3), the two-body problem is likely to be a significant factor in forcing women from the ranks of academic researchers. According to Karen Ruff, a graduate student in chemical biology and

Career Prospects and Tenure Track Postions



The career prospects for biomedical postdocs are daunting. While the postdoctoral work force has tripled, the tenure-track positions have remained stagnant (adapted with permission from (2)).

Employment of Biomedical Science Ph.D. by economic sector



Smaller percentages of biomedical Ph.D.s are employed in academia. The portion of biomedical Ph.D.s in industry and other sectors has grown steadily (adapted with permission from (2)).

former co-chair of Harvard Graduate Women in Science and Engineering, "Many women feel like they must choose either an academic career or a family." Fifty-seven percent of undergraduates are women, and approximately half of all graduates with science degrees are women (2, 4, 5). However, less than 15 percent of tenured faculty members are women, even though women have made up more than 20 percent of all life science Ph.D. recipients in the past 30 years (5).

Historically, women have sacrificed their own careers to follow their husbands' career ambitions. While this may be less true today, many women in academia still play the career equivalent of "follow the leader" (6). According to Ruff, "Because of the lingering expectations of gender roles, as well as the biological burden of carrying any children, a disproportionate number of women choose to be the nonacademic spouse." Male researchers often undertake nationwide searches for the few available academic jobs, while female scientists find a way to make do wherever their spouses are given a job.

But the pressures of the two-body problem are not entirely confined to women. Men also are forced to piece together a career wherever their wives land a faculty position.

When his wife received an offer from Castleton State College, Langlais moved with his wife from Oregon to Vermont. There, Langlais took a number of short-term teaching positions in local high schools and colleges. However, a permanent, full-time academic position eluded him.

"There were just no opportunities for me," Langlais says.

The work-life balance struggles in academia are intimately familiar to the authors of this article. Allen's Ph.D. training kept him apart from his wife for four years. Were it not for his decision to pursue a career outside academia (see his "Career Insights" article in this issue), they might still be struggling to find careers that would allow them to live in the same city. Meanwhile, Kyle and his wife are living apart for a year as she finishes her degree.

Implications for ASBMB and Beyond

In his January 2009 "President's Message," Greg Petsko expressed concern about the rising age of the American Society for Biochemistry and Molecular Biology membership and noted that the occupations of working biochemists are shifting toward industry. Though the two-body problem is certainly not the only cause of these demographic trends, it may play a larger role than is widely discussed. In good economic times, a job in industry or outside academia means being able to choose where you live and work. This factor could prove to be a powerful incentive that affects the willingness of young researchers to remain in the geographic limbo of academic training.

Given the current academic job market, providing career paths sensitive to the work-life balance is vital to ensure that most qualified scientists will remain in innovative biomedical research.

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Cecil Pickett: Advancing Drug Metabolism and Discovery

BY NICK ZAGORSKI

This past Oct. 5, Cecil Pickett found himself celebrating a doubly special occasion. Not only did the date mark his 64th birthday, but it also marked his retirement from Biogen Idec Inc., where he served as president of research and development since 2006. The event brought to a close a sterling 32-year career in the pharmaceutical sector, which included stops at Merck & Co. Inc. and the Schering-Plough Corp. before his appointment at Biogen Idec.

Over that period of time, Pickett and his research teams have been responsible for important breakthroughs, like the development of widely used medicines, such as Zetia, Noxafil and Singulair, as well as the more basic studies elucidating the function and regulation of drug-metabolizing enzymes like glutathione-*S*-transferases. Together, these achievements show that pursuing a career in the pharmaceutical or biotech industry can provide the best of both worlds — being able to carry out projects that can impact human health directly while at the same time conducting valuable fundamental research.

"Overall, I felt that life as an industry researcher was really not much different than that of an academic one," Pickett says. "You oversee a laboratory, hire postdocs and technicians, sit on committees and publish articles about your work. And, in the end, I think that the quality of basic research that comes out of industry is on par with that of major academic institutions."

In Pickett's case, at least, many will be quick to agree. "I've spent a long career in industry and been involved in the development of many drugs," says American Society for Biochemistry and Molecular Biology member Al Alberts, who helped bring Pickett into the Merck family many years ago. "But I think it's safe to say Cecil was probably my biggest contribution during my time at Merck."

A Hard Day's Night

Looking back at Pickett's extraordinary career, a phrase that's often used to describe the modest scientist would be "strong work ethic" and that trait was present long before Pickett took on his first industry position at Merck & Co. in 1978. As one of nine children, Pickett, who grew up in the small Illinois town of Canton, began working almost as soon as he could walk to help support his family, including jobs delivering newspapers and mowing lawns.

In school, he became interested in math and science early on, particularly chemistry and biology, and decided to pursue that path in college. And after growing up in the rural Midwest, he was eager for some adventure and headed off to California, where he attended the University of California, Berkeley, and later transferred to nearby California State University, Hayward, which is now known as California State University, East Bay. He continued his hardworking ways and took on full-time jobs to support his education — first in a university chemistry lab and later at Cutter Laboratories.

Pickett notes that his long list of duties made his time in college difficult. "After I finished all of my classes for the day, I went straight to the lab to work on the second shift, or sometimes I even worked on the graveyard shift, so I really didn't have time to enjoy my college experience," he says. However, in 1971, all of the work paid off as Pickett received his bachelor's degree, becoming the first member of his family to graduate college.

Although his undergraduate days were a bit trying, Pickett's next destination, graduate school at the University of California, Los Angeles, was the exact opposite: total fun. "I couldn't believe they actually paid me to go to school," he says. "I could now spend all of my time actually focusing on my research or the classes I was taking."

That research would entail looking at the heterogeneity of mitochondria and their interaction with the endoplasmic reticulum, under the guidance of Joseph Cascarano.

Pickett notes that Cascarano was demanding as a mentor and expected a lot of his students, but Pickett was quite comfortable with demanding schedules. After completing his Ph.D. in 1976, Pickett even spent two more years as a postdoctoral fellow at UCLA, working with Cascarano and Verne Schumaker in the chemistry department.

Into the Breach of Industry

As he was deliberating his next career move, Pickett became very interested in a particular Journal of Biological Chemistry paper he had come across that discussed the conversion of preproalbumin to proalbumin. The corresponding authors on that paper were Al W. Alberts and P. Roy Vagelos, who worked at the Merck, Sharp & Dohme Research Laboratories.

"I remember seeing that affiliation and not even realizing that it represented a pharmaceutical company," Pickett says. "In graduate school, I wasn't really educated about the potential of doing research in industry, so the name didn't mean that much to me."

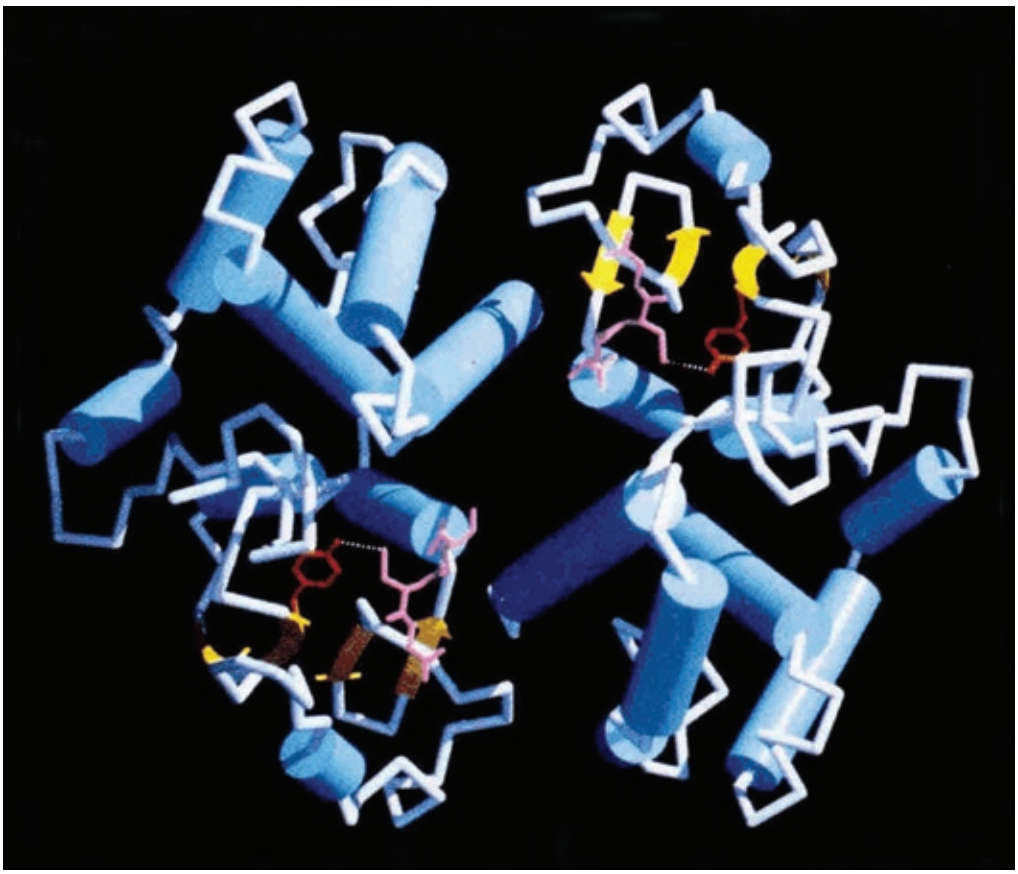
Still, Pickett decided to write a letter to Vagelos and ask if he could join his laboratory; he was startled when he later found out exactly what Merck was but also was pleasantly surprised when he received an offer to join the company. "Cascarano was very influential in my decision to accept the offer," Pickett says. "He had done an internship with a pharmaceutical company, so he was familiar with the culture of industry. And, although he hoped I would consider staying in academia, he told me that Merck would be a good place to work, because they had a strong history of supporting science."

Pickett soon would experience this supportive culture firsthand. At one of the first meetings he had with Alberts and Vagelos, the recently appointed head of Merck Research Laboratories, he was told to respect the company's long-term goals and interests but that he should not be afraid to try to establish his own career and pursue his own interests.

"I found that very enlightening," Pickett says. "But I think Vagelos was ahead of the curve in that he understood that individuals given the freedom to be creative often come up with the initial discovery that eventually leads to a new drug, and he made a concerted effort to seek out talented people in academia to fill out positions in Merck. I feel extremely fortunate that I was chosen near the forefront of that effort."

Pickett was also fortunate in that scientist Anthony Y. H. Lu had just joined Merck.

"During my studies of the association between mitochondria and endoplasmic reticulum, I had become interested in cytochrome P-450, as its biosynthesis was connected with



Three-dimensional image of a dimer of rat liver glutathione *S*-transferase 3-3, a member of the GST family of drug-metabolizing enzymes. *Biochemistry* (1992) 31, 10169-10184.

the formation of endoplasmic reticulum-mitochondria complexes," Pickett says. "And Lu was a noted expert in P-450 biochemistry." Together, they formed a collaboration to try to quantify the activity of specific cytochrome P-450 enzymes after exposure to xenobiotics. This was a vital enterprise, as P-450 enzymes are the major elements involved in drug metabolism, and understanding P-450 interactions is critical in determining proper drug dosage and identifying any risks of multidrug regimens.

"This has been one area that often gets overlooked in discussing the advances made by the pharmaceutical industry," Pickett says. "When I first started in industry, the role of cytochrome P-450 enzymes was largely unknown. Today, however, for every drug we develop, we know exactly which P-450 enzyme metabolizes it."

Cecil Pickett gives a lecture during university week.

Climbing the Ladder

Over the next three decades, Pickett remained embedded in industry, although the names and places changed as he progressed upward. After his initial assignment serving with Alberts on the development team working on the first generation HMG-CoA reductase inhibitors (statins), Pickett soon rose to the position of director of the department of molecular pharmacology and biochemistry. In 1988, he moved to Montreal to become the head of research at the Merck Frosst Centre for Therapeutic Research, where, among other duties, he recruited bright scientific minds — looking for the next Cecil Pickett, as it were. It was during his tenure that Merck Frosst researchers discovered the asthma drug Singulair. (Homage to the site of discovery can be found in the drug's scientific name, *Mont*elukast).

"It was becoming obvious to Merck that Cecil could lead any drug research group," says Vagelos about his longtime colleague, "and unfortunately for Merck this was becoming apparent to others as well."

In 1993, Pickett left Merck to become executive vice president of discovery research at the Schering-Plough Research Institute in Kenilworth, N.J., where he oversaw the planning for the company's drug-discovery program. "After 15 years at Merck, during which time I had seen Vagelos really transform the company, I thought it would be a great challenge to help build up another organization."

Pickett experienced great success over the next several years, which saw the development of drugs like the cholesterol absorption inhibitor Zetia and the antifungal Noxafil, and he also expanded the breadth of the drug-discovery program to include targeting central nervous system disorders. Such contributions would earn him another promotion in 2002, this time to president of the Schering-Plough Research Institute, putting him in charge of all aspects of research and development.

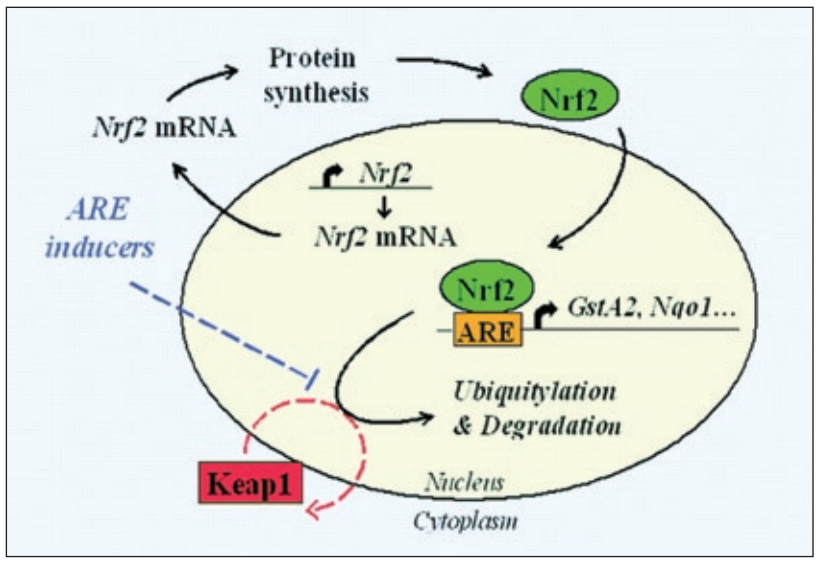
Despite ever-increasing administrative duties with each passing promotion, Pickett continued to oversee his own laboratory and independent research into drug metabolism. After completing his work with cytochrome P-450, he began studying glutathione-*S*-transferases (GSTs), another important family of enzymes involved in drug modifi-

cation and metabolism. Pickett's lab was one of the first to clone the cDNA for GST proteins, characterize their genes and examine the regulation of their expression in response to xenobiotics and oxidative stress. More recently, he also has taken a closer look at Nrf2, a transcription factor that has emerged as the master regulator of the antioxidant response.

"His dedication to research was one of the things I most admire about Cecil," says colleague Fred Guengerich of Vanderbilt School of Medicine, "especially since it carried into other areas. When it came time to make a difficult decision regarding advancing a drug, he always held true to the science."

It was only when Pickett took his latest position at Biogen Idec in Cambridge, Mass., that he finally had to shut his research down; though, in truth, he was prepared to pretty much shut everything down before taking the job.

"I was actually ready to retire from Schering-Plough back in 2007," Pickett says, "and take up a position on Biogen Idec Inc.'s board of directors. I had no intention of working in the R&D division, but I got to talking with the CEO, and one thing led to another. And, in the end, I agreed to work on a short-term basis to do some mentoring and help organize the research pipeline before retiring for good."



Proposed Nrf2-antioxidant response element signaling pathway. Newly synthesized Nrf2 translocates to the nucleus where, following transactivation of its genes, it is targeted for degradation by Keap1. *J. Biol. Chem.* (2005) 280, 32485–32492.

Life in Industry

So, what is life like within the walls of a pharmaceutical research center? As Pickett noted, in many ways, academia and industry are similar in terms of running a lab and conducting research. One important difference in his view, though, is how industries divvy up their scientists. Instead of the departmental fields seen in universities, pharmaceutical researchers are grouped based on their specializations within the drug pipeline; whether it's the discovery team that identifies potential drug targets, a process chemistry team that scales up drug production, a formulation team that formulates a drug for optimal delivery or the toxicology team that tests a drug's effects in animals. "So, while the first stages of drug design can begin with just a handful of people, by the time it's ready for the clinic, potentially more than 100 people have become involved." Pickett believes that being willing to work in such a team-oriented structure is a key factor for industry success. (Although it's also becoming more important in academia as well.) "If you think you can be independent and just concentrate within your own lab, your industry experience will not be rewarding."

No Rest for the Retired

After spending more than 30 years in the industry sector, Cecil Pickett has been witness to a tremendous amount of change. Some changes were good, such as the tremendous impact advances in molecular biology and molecular genetics — like cDNA cloning — have had. "These advances pretty much spearheaded the formation of the first biotech companies," Pickett says.

Others were not so good, such as Merck's recent Vioxx problems. And Pickett believes that the near future will remain difficult, given the struggling economy and the negative public perception that pharmaceutical companies often face.

"The pharmaceutical industry is somewhat constrained, because it only can be successful by continually discovering new and innovative products," Pickett says, "and it's true that some organizations have become so large that bureaucracy is stifling innovation. If pharma CEOs manage based on short-term earnings, they cannot succeed in an area that requires long timelines for success."

However, he's hopeful that pharmaceutical companies can remain relevant in today's times.

"Large pharmaceutical companies, I think, might be well served to increase partnerships with smaller compa-

nies, where innovation is still strong," he says. "And if they can do that, think long term and focus on recruiting and retaining bright individuals, there's no reason they can't continue to be one of our most premier companies. Every great drug discovery started simply — with a creative individual and a good idea."

As for Pickett's own rosy post-retirement future, don't expect him to rest on his laurels. He currently holds an adjunct professorship at Rutgers University and will maintain an office there, spending time working with graduate students. This mentoring certainly won't be a new experience, though. Throughout his career, Pickett has demonstrated a strong commitment to mentoring young scientists, particularly minority students and fellows, and using his resources to strive for diversity in the industry sector. As several of his colleagues would point out, his activities as a role model are even more impressive considering the corporate environment, which usually tasks superiors to 'manage' as opposed to 'mentor.'

And, in an interesting twist, he's even thinking of starting up his lab again, giving himself a taste of the academic life he forwent all those years ago. "It's only been a couple of years since my last experiment," he says. "I don't think I'm too far out of the loop in terms of the science."

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Nguyen, T., Nioi, P., and Pickett, C. B. (2009) The Nrf2-antioxidant Response Element Signaling Pathway and its Activation by Oxidative Stress. *J. Biol. Chem.* **284**, 13291–13295.

ASBMB Joins Inaugural USA Science Festival

BY J. ELLIS BELL

In the fall of 2010, the American Society for Biochemistry and Molecular Biology will partner with the organizers of the Inaugural USA Science Festival to host four hands-on activities at an expo in Washington. According to festival organizers, the event will be the ultimate multicultural, multigenerational and multidisciplinary celebration of science in the United States. More than 500 science organizations will demonstrate interactive and entertaining science activities. ASBMB's activities will explore the molecular basis of biological processes and their applications in everyday life:

- **The Molecules of Life**
  The complexities of life arise from the interplay of a few different types of molecules, nucleic acids, proteins, lipids and carbohydrates. This activity will allow participants to explore the shapes and interactions of those molecules.
- **From Molecules to Medicine**
  From drug design to individualized medicine, understanding the molecular basis of disease offers the potential for more effective treatments. Participants will see how the genomics revolution is leading to individualized treatments of various diseases.
- **The Green Revolution: from Sunlight to Biofuels**
  Plants capture and utilize the sun's energy. This activity will show how we are drawing on the molecular life sciences to convert sunlight into useful forms of energy without producing the pollutants associated with fossil fuels and nuclear energy.
- **Molecular Machines**
  From muscle contraction to the movement of molecules within a cell, molecular machines play a critical role in the molecular life sciences. This exhibit will illustrate how they efficiently utilize chemical energy for mechanical purposes.

ASBMB also has planned several activities leading up to the festival, including outreach initiatives and hands-on demonstrations for K-12 students around the country. There also will be a competition for ASBMB Undergraduate Affiliate Network chapters to design projects suitable for K-12 outreach that fit with ASBMB's festival themes. The winning chapters and their activities will be featured at the festival and highlighted in ASBMB Today.

If you are interested in becoming involved with ASBMB's festival activities or have ideas that can be used in K-12 outreach, please contact ASBMB's manager of education and professional development, Weiyi Zhao, at wzhao@asbmb.org.

More details about the festival can be found at www.usasciencefestival.org.

J. Ellis Bell is professor of chemistry and chairman of the biochemistry and molecular biology program at the University of Richmond. He is also chairman of the ASBMB Education and Professional Development Committee. He can be reached at jbell2@richmond.edu.

ASBMB UAN Awards

We would like to remind all of our Undergraduate Affiliate Network chapters that award application submission dates are coming up. All chapters are eligible to apply for the following awards:

Outreach Support Award

Outstanding UAN Chapter Award

Regional Meeting Award

Science Fair Award

UAN Travel Award

Undergraduate Research Award

High School Scholarship Award

High School Research Award

For more information about UAN awards and scholarships, visit www.asbmb.org/uanawards.

An Invigorated Minority Affairs Committee

BY CRAIG E. CAMERON

Infused with new members and fresh ideas, the American Society for Biochemistry and Molecular Biology's minority affairs committee is embarking upon several ambitious initiatives aimed at fostering communication among constituents, building upon relationships with other organizations and enlivening its scientific programming.

In July, three new members joined the minority affairs team. Energized and ready to serve, the committee since then has met monthly via teleconference and has started redefining its objectives and strategy.

A Specific Mission with a Broad Impact

Since the committee was formed in 1971, minority groups have been defined on the basis of race and ethnicity. Today, the average age of the ASBMB membership is about 55, making students, postdocs and junior scientists a significant minority group for our society.

For the committee to spearhead initiatives and develop programming that will include all of ASBMB's underrepresented groups, we need to hear from our constituents. We need to know who we represent and about their needs.

That's why we have developed a registry for minority and young scientists, mentors and advocates.

We hope it will create a community that will help us develop and vet our agenda, and we hope it will serve as a rich resource of contacts for those orchestrating activities, such as meetings and workshops, at ASBMB and other arms of the Federation of American Societies for Experimental Biology.

Creating Opportunities by Facilitating Networking

There is no doubt that who knows you is more important than who you think you know and what you know. Invariably, finding people to plan and/or speak at our annual meetings requires that someone on the meetings committee know you or someone you know.

This circumstance extends to most prestigious professional opportunities, such as editorial board, study section and steering committee membership, to name a few.

Beginning this year, on April 25, we will sponsor a networking reception before the annual meeting is in full swing to foster additional and more substantive social and scientific interactions during the meeting.

We have partnered with minority affairs committees from other societies that will be at Experimental Biology 2010 to maximize scientific diversity of those attending the reception.

Regardless of demographics, everyone is welcome.

If you're interested in increasing the diversity of your graduate student and postdoctoral population and/or your faculty, you should be there. If you want to share your enthusiasm, wisdom and experience with aspiring scientists, you should be there. If you want to contribute to the vitality and diversity of ASBMB membership, you should be there.

A New Twist on Our Scientific Programming

Committee-sponsored scientific sessions at the annual meeting traditionally have highlighted diseases with racial and ethnic disparities. Now, our selection of topics is driven primarily by two factors: breadth of the public-health problem and richness of the science driving the molecular description of the disease and the development of therapeutic options.

The topic for 2010 is hypertension, and the sessions are as follows:

- molecular basis for disease
- diagnosis and treatment, with emphasis on the science underlying diagnostic tests and therapeutics
- disparities, including those caused by gender, age and/or health status

We hope this format will lead to new ways to collaborate with other FASEB societies on scientific programming.

The vitality of ASBMB demands that more attention be given to the integration of minority and young scientists into society activities. The committee is well-positioned to assist the society with this challenge. Please help by signing up on the registry today!

Craig E. Cameron is the Paul Berg professor of biochemistry and molecular biology at The Pennsylvania State University. He can be reached at cec9@psu.edu.

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www.bmb.psu.edu/faculty/cameron/cameron.html

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www.uchsc.edu/pulmonary/faculty/flores.shtml

Regina Stevens-Truss
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reason.kzoo.edu/chem/faculty

Squire J. Booker
Associate Professor of
Chemistry and Associate
Professor of Biochemistry
and Molecular Biology
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www.chem.psu.edu/faculty/sjb14

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www.thomaslandefeld.com

Michael Summers
Professor and Howard
Hughes Medical Institute
Investigator
University of Maryland
Baltimore County
www.hhmi.umbc.edu/personnel.php

Sydella Blatch
Postdoctoral Fellow
National Institutes
of Health

Ishara A. Mills-Henry
Program Director
Science of the Eye:
Bringing Vision into
the Classroom
Massachusetts Institute
of Technology

Takita Felder Sumter
Associate Professor
of Chemistry
Winthrop University
bohr.winthrop.edu

Nestor O. Concha
Manager, Computational
and Structural Chemistry
and Group Leader,
Biomolecular Structure
GlaxoSmithKline

Phillip A. Ortiz
Area Coordinator and
Mentor—Natural Science
State University
of New York
Empire State College
www.esc.edu/cdl

Frank Talamantes
Emeritus Professor of
Endocrinology
University of California,
Santa Cruz

Hypertension: Treatment, Disparities, and Molecular Mechanisms

Sponsored by the ASBMB Minority Affairs Committee

SYMPOSIUM: MOLECULAR MECHANISMS OF HYPERTENSION

Hormonal Regulation of the Sodium Chloride Co-transporter, *Robert Hoover, University of Chicago*

Epithelial Sodium Channels and Hypertension, *Thomas R. Kleyman, University of Pittsburgh School of Medicine*

Regulation of ENaC Trafficking, *David Pearce, University of California, San Francisco*

SYMPOSIUM: DIAGNOSIS AND TREATMENT OF HYPERTENSION

The Importance of Combination Therapy in the Treatment of HTN, *Kenneth A. Jamerson, University of Michigan Health System*

Paradigms for the Diagnosis and Treatment of HTN, *John M. Flack, Wayne State University*

Pre-hypertension: Diagnosis and Treatment, *Shawna D. Nesbitt, University of Texas Southwestern Medical Center*

SYMPOSIUM: DISPARITIES IN HYPERTENSION TREATMENT AND SEQUELAE

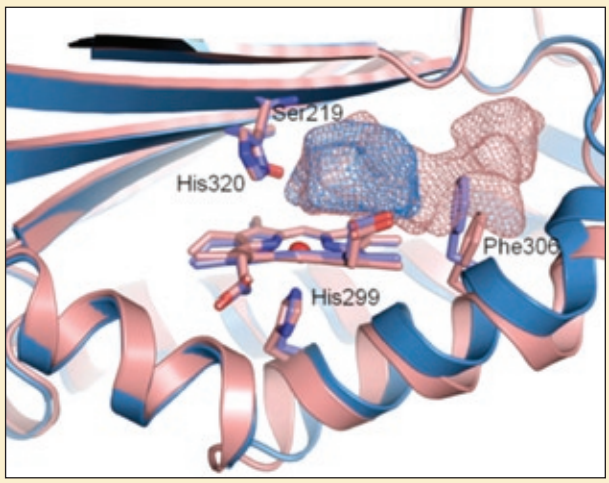
Gender and Age Disparities in Hypertension, *Lawrence Agodoa, National Institutes of Health*

Disparities in Cardiovascular and Renal Complications of Hypertension, *Janice P. Lea, Emory University School of Medicine*

RAAS Inhibitor Containing Antihypertensive Regimens in African Americans: A Look at the Evidence, *Jackson T. Wright, Jr., Case Western Reserve University*

Trapping the Elusive Michaelis

Many crystallographic attempts to trap a reaction intermediate within an enzyme result in a protein crystal that contains multiple intermediate compounds, leaving the structure of the true intermediate open to interpretation. The authors of this study managed to bypass this issue for *Rhodococcus* sp. N-771 aldoxime dehydratase (OxdRE) by reducing the substrate-bound ferric Oxd complex using X-ray radiation under cryogenic temperature, thus enabling them to drive the reaction completely to the intermediate. The result was a clean structure of an elusive Michaelis complex. A comparison with a known structure of OxdRE in the resting state provided insight into the mechanisms of substrate recognition and catalysis of a nitrile-producing enzyme. These results could have practical applications in industry, where the chemical synthesis of nitriles often involves harsh reaction conditions.



Structure of the OxdRE binding cavity comparing the open (pink) and closed (blue) forms of the enzyme.

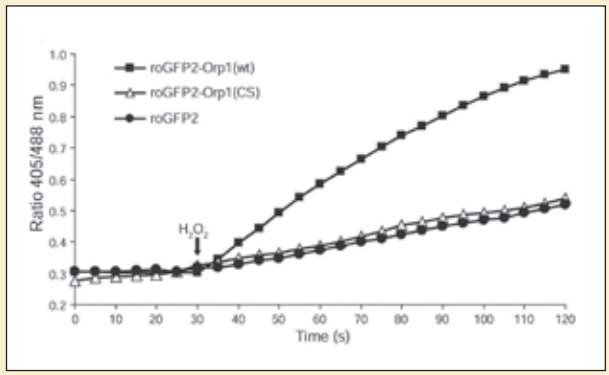
X-ray Crystal Structure of the Michaelis Complex of Aldoxime Dehydratase

Hitomi Sawai, Hiroshi Sugimoto, Yasuo Kato, Yasuhisa Asano, Yoshitsugu Shiro, and Shigetoshi Aono

J. Biol. Chem., published online Sept. 8, 2009

jbc

Pass the Peroxide, Please



The roGFP2-Orp1(WT) fusion protein facilitates H_2O_2-mediated oxidation in living cells, while the roGFP2-Orp1(CS) mutant cannot.

While hydrogen peroxide (H_2O_2) can be quite damaging to proteins, it also can be an effective signaling agent if properly regulated; by oxidizing target thiol groups, H_2O_2 can produce reversible modifications that change the functional properties of proteins. But how do cells ensure that H_2O_2 will oxidize redox-regulated target proteins in a specific and efficient manner? This study answers that question. Using redox-sensitive green fluorescent protein (roGFP) fusion proteins as a measurement tool (the redox-mediated formation of disulfide bridges produces fluorescence), the researchers found that the yeast peroxidase Orp1 could promote the oxidation of roGFP2 in a proximity-dependent manner, both in vitro and in mammalian cells. This "oxidant relay" was not restricted to Orp1, as the mammalian glutathione peroxidase Gpx4 also mediated roGFP2 oxidation. Together, these results suggest that certain enzymes in the glutathione peroxidase family may harbor a general capacity to facilitate thiol oxidation with closely associated proteins.

Proximity-based Protein Thiol Oxidation by H_2O_2-scavenging Peroxidases

Marcus Gutscher, Mirko C. Sobotta, Guido H. Wabnitz, Seda Ballikaya, Andreas J. Meyer, Yvonne Samstag, and Tobias P. Dick

J. Biol. Chem., published online Sept. 15, 2009

jbc

A Little Methanol to Get the Lipid Out

Lipids circulating in plasma, particularly phospholipids and lysophospholipids, have potential applications as both biomarkers and as therapeutic targets for disease. Unfortunately, current methods for extracting and quantitatively analyzing the molecules are often laborious, time-consuming and beset with issues of reproducibility; in addition, extraction efficiency can vary widely depending on the class of lipids. In this study, the researchers developed a new method for PL and LPL extraction from human plasma and serum samples that requires only microliters of blood and involves only a single solvent

Compound	Butanol method		BD method		Modified BD method	
	Mean	SD	Mean	SD	Mean	SD
LPIs						
16:0	33.6	7.2	28.6	8.2	114.6	2.2
18:0	79.2	4.7	16.8	3.7	217.9	12.2
20:4	28.4	3.7	18.5	6.4	112.8	8.3
LPEs						
16:0	70.9	1.2	90.9	26.0	124.7	5.7
18:1	73.4	5.1	89.7	19.1	142.9	0.9
18:0	59.9	5.9	78.1	14.4	92.4	1.1
20:4	131.4	13.9	110.7	20.9	886.4	4.3
22:6	128.9	17.7	107.0	31.0	876.0	8.8
18:1 LPG	78.7	42.8	54.8	1.7	137.5	20.7
18:1 LPS	62.0	1.5	18.0	3.1	164.7	1.0

Comparison of extraction methods in the recovery rate of various lysophospholipid species.

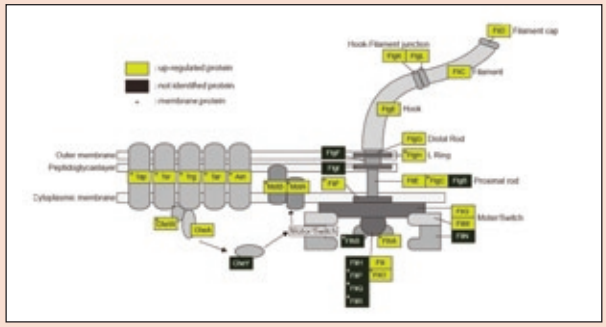
(MeOH) and a single centrifugation step. By streamlining the extraction process, the MeOH method helps increase reproducibility, and yet, at the same time, it offers high recovery efficiency compared with classical methods. This simplified approach should be extremely useful in a wide range of applications beyond advancing lipid biomarkers, including lipid biochemistry and lipidomics.

An Extremely Simple Method for Extraction of Lysophospholipids and Phospholipids from Blood Samples

Zhenwen Zhao and Yan Xu

J. Lipid Res., published online Sept. 25, 2009

A Little Digestive Aid for Analysis



Quantitation and comparison of flagellum and chemotaxis proteins in wild-type and relA KO *E. coli*.

One problem with conventional shotgun proteomics strategies is that they generally underrepresent the membrane proteome because of inadequate solubilization and protease digestion. SDS-PAGE followed by in-gel digestion can partially solve this problem, but recovery can be low, and this approach is not suited for rapid and high-throughput systems. In this study, the researchers tried another trick, employing a digestion protocol that mimics the alimentary canal, in which bile salts such as cholate and deoxycholate are secreted together with trypsin, to increase solubility and digestion efficiency. Using this phase-transfer surfactant (PTS) strategy, the researchers estimated the copy numbers per cell of 1,453 *Escherichia coli* proteins, including 545 membrane proteins. They then applied their protocol to a quantitative analysis of guanosine tetra- and pentaphosphate-dependent signaling in *E. coli* wild-type and *relA* knockout strains. This study demonstrates, for the first time, that membrane proteins can be quantitatively extracted, digested and identified with similar robustness to soluble proteins.

Unbiased Quantitation of *Escherichia coli* Membrane Proteome Using Phase-transfer Surfactants

Takeshi Masuda, Natsumi Saito, Masaru Tomita, and Yasushi Ishihama

Mol. Cell. Proteomics, published online Sept. 18, 2009

From the Bench to the Capitol

BY ALLEN DODSON

As a ninth-grade biology student, I learned that scientists were trying to harness viruses to deliver corrected genes to the lungs of cystic fibrosis patients. The ingenuity of this approach captured my imagination. Genetics had identified the cause of the disease, but human hands had not yet devised the tools to correct the flaw in a living, breathing patient. In contrast, cold viruses had evolved over the course of centuries to deliver genes to human lung cells. The potential of biology to solve this intractable problem was appealing on an intellectual level.

When I first read through the course catalog at Yale University, two listings stood out. One offering, a graduate-level elective titled "Molecular Genetics of Prokaryotes," started with the most fundamental levels of gene expression and then built the skills and knowledge needed to understand and design such clever approaches to problems. The other, a two-semester course on constitutional law, offered an equally fundamental view of the law that shapes our society — the context in which our problem-solving efforts take place.

As an undergraduate, I did not have to choose; I could take a break from my senior thesis research in molecular, cellular and developmental biology to participate in debates on the floor of the Yale Political Union. I ultimately decided to pursue graduate school, reasoning that a specialized knowledge of biology would serve me well regardless of where I went afterward.

Communicating and Advocating Science

Shortly after I started at Harvard University, I joined a graduate student group called Science in the News, whose mission was to bring a greater understanding of science to the public. Through SITN, I presented seminars on topics like therapeutic cloning, avian influenza and the cervical cancer vaccine. I enjoyed learning about different topics in science and explaining them to nontechnical audiences.

During my second year of grad school, I began my dissertation research on antiviral drug screening against the herpes simplex virus. The work appealed to me because it drew on some of the same types of ingenuity that prompted researchers to use viruses for gene therapy. At the same time, I found that I enjoyed learning about, evaluating and communicating science more than I enjoyed performing it at the bench.

As I neared graduation, my adviser pointed me toward the American Society for Biochemistry and Molecular Biology's science policy fellowship. I applied, was accepted and started in ASBMB's public affairs office in the fall of 2008. During my first week on the job, we traveled to the Rayburn House Office Building to see National Institutes of Health Director Elias Zerhouni testifying to the House on NIH's progress. On our way out, Secretary of State Condoleezza Rice passed us in the halls on her way to a hearing on Russia. It was a pretty dramatic change from the daily routine of research.

Most of my lessons from my time at ASBMB are more mundane. I spent a lot of time reading about budget processes and regulatory proposals. Writing nontechnical information, with space at a premium, on a daily basis greatly has improved the quality of my writing. I also had the opportunity to benefit from the expertise of Peter Farnham, the members of ASBMB's Public Affairs Advisory Committee and our collaborators at

Dodson

Allen Dodson was the 2008-2009 ASBMB science policy fellow. He received a B.S. in molecular, cellular and developmental biology from Yale University in 2002, doing his senior thesis with Sidney Altman. He completed his doctoral dissertation research in 2008 in the laboratory of Donald Coen at Harvard Medical School's department of biological chemistry and molecular biology.

the Federation of American Societies for Experimental Biology.

Most of all, I have enjoyed bringing members of ASBMB to the Hill. As a policy staff member, I was in the unique position of being an ambassador between our member scientists, who know technical information but are not as familiar with Congress, and congressional staff, who generally do not have a technical background. I always have been struck by our members' enthusiasm and willingness to participate, and it was very rewarding to know that I had helped them get their messages across.

Early Career Insights

Every month or so, I receive an e-mail from someone looking for career advice.

Most researchers know where to find the path from graduate school to an academic postdoc or a position in industry. The path away from the bench seems murky by comparison. Job announcements request years of experience, and many of the scientists who have successfully made the jump to policy did so with the help of a highly competitive fellowship (such as ASBMB's). The first position beyond the bench — that key credential that establishes one's ability to succeed at something other than experimental science — can prove highly elusive.

I can't claim to solve this problem, but perhaps I can offer some advice on how to look for the solutions.

Places to Go, Things to Do

The science policy field encompasses a wide variety of activities. Knowing which ones interest you will influence what types of jobs you pursue.

Advocacy organizations like ASBMB work to influence policy: budgets, regulations and all of the other news we cover in this magazine. The policymakers in Congress and relevant agencies are the most prominent audience for this sort of work, but they are not the only audience; communicating directly with the people you represent is equally important. The ASBMB Hill Day covered in this issue was possible only because of the efforts of society members in each of the target districts who responded to my requests for students and postdocs who would make excellent ambassadors for science.

"On our way out, Secretary of State Condoleezza Rice passed us in the halls on her way to a hearing on Russia. It was a pretty dramatic change from the daily routine of research."

The other major direction is implementing policy at government agencies. Scientific expertise is needed to interpret existing regulations and determine how they apply to specific situations. The goal is to ensure that existing policies are carried out — hopefully with an eye toward helping people comply with the regulations.

Skills You Didn't Know You Had

Ever since leaving the bench, I have learned that a lot of the skills I used in research are also applicable to other jobs.

Communication, whether by reading, writing or giving presentations, is crucial. In general, you will need to present concise, nontechnical information, in contrast with the highly technical experimental details of your scientific research. If you do not enjoy reading and writing, whether it is policy news, regulatory submissions or legislative language, this will affect what types of jobs you will want. Research presentations, participation in student/postdoc government or articles for your institution's student newspaper can help polish your skills even as your daily focus remains on bench work.

Your research career also builds qualities that employers will be looking for. You have independence and drive, with the Ph.D. and/or publications to prove your ability to complete a project. You have analytical skills, which work on qualitative questions of policies and budgets. You also have experience working in a group environment and in training your fellow researchers, both of which can play big roles in any number of careers beyond the bench.

If at First You Don't Succeed…

Finally, as with bench research, your search will take patience and persistence. The harsh economy may seem to have made a tough job hunt even tougher, but the dedication that gets you through your research should be enough to handle one more challenge.

M. Daniel Lane Named Professor Emeritus

BY DANIEL M. RABEN

I'm always conflicted whenever I see an investigator who has contributed a lot to science make the decision to close his or her laboratory. On the one hand, I want to congratulate him or her for all of the exciting discoveries he or she has made. On the other hand, I lament losing such a talented colleague. These are my exact feelings in announcing that M. Daniel Lane has become professor emeritus at the Johns Hopkins University School of Medicine.

Dan was born in Chicago in 1930. He received his bachelor of science (1951) and master of science (1953) degrees from Iowa State University and went on to graduate school at the University of Illinois at Urbana-Champaign, where he worked on vitamin A metabolism with George Wolf. He received his Ph.D. in 1956 and joined the faculty of the Virginia Polytechnic Institute and State University as an associate professor. He was promoted to professor in 1963.

In 1964, Dan was recruited to the biochemistry department at New York University but left after five years to join the biological chemistry department at the Johns Hopkins University School of Medicine. After eight years, he was appointed chairman of the department. He served in this capacity until 1997 but remained an active member of the faculty and was named university distinguished service professor. In December 2008, he officially closed his laboratory.

Dan has had a truly amazing career. He made seminal contributions to our understanding of enzymology, lipid metabolism, adipocyte differentiation and the regulation of hunger and satiety. At Virginia Polytechnic Institute and State University, Dan worked on the biotin-dependent propionyl-CoA carboxylase and later made important discoveries pertaining to the enzymatic mechanisms of this and other biotin carboxylases. Dan also made key contributions to our understanding of numerous other enzymes. One of the most noted is his work on acetyl-CoA carboxylase. He defined its enzymology, elucidated key components of its mechanism and made critical discoveries pertaining to its regulation and structure. Some of his accomplishments recently were summarized in a Journal of Biological Chemistry Classic.

Dan's scientific achievements have been recognized with his election to the American Academy of Arts and Sciences (1982) and the National Academy of Sciences (1987) and being named a fellow of the American Society for Nutritional Sciences (1996). He has received numerous awards, including the American Institute of Nutrition Mead Johnson Award (1966), the American Society for Biochemistry and Molecular Biology William C. Rose Award (1981) and an National Institutes of Health Method to Extend Research in Time award in 1990. In 2002, he received an honorary doctoral degree of humane letters from Iowa State University.

In addition to his research accomplishments, Dan has been a wonderful mentor and teacher. His kindness and scientific acumen meld into one of the most well-respected contemporary scientists. He loves to discuss scientific issues and to debate difficult interpretations that generally inspire new hypotheses. Every physician who trained at Hopkins from 1970 to 2006 remembers the "Lane Lectures" in metabolism. His teaching skills were recognized by the Hopkins community when he was awarded the Johns Hopkins University School of Medicine Professor's Award for Distinction in Teaching.

Dan also has been an important member of the ASBMB community. He was president of the society from 1990 to 1991, served on the JBC editorial board, was a member of the ASBMB Council and was program chairman.

So, Dan is closing his laboratory. But, fortunately, he will remain the supportive and intellectual resource we've always known him to be.

Daniel M. Raben is director of the ASBMB Lipid Division and a professor in the department of biological chemistry at the Johns Hopkins University School of Medicine. He can be reached at draben@jhmi.edu.

scientific meeting calendar

NOVEMBER 2009

Annual Biomedical Research Conference for Minority Students
NOVEMBER 4–7, 2009
PHOENIX, AZ
www.abrcms.org

Mass Spec Europe
NOVEMBER 5–6, 2009
BARCELONA, SPAIN
www.selectbiosciences.com

7th Annual World Congress on Insulin Resistance
NOVEMBER 5–7, 2009
SAN FRANCISCO, CA
www.insulinresistance.us

Annual Meeting of the Society for Glycobiology
NOVEMBER 12–15, 2009
SAN DIEGO, CA
www.glycobiology.org

American Heart Association Scientific Sessions 2009
NOVEMBER 14–18, 2009
ORLANDO, FL
www.scientificsessions.org

2nd International Conference on Biodiesel
NOVEMBER 15–17, 2009
MUNICH, GERMANY
www.aocs.org

4th Barossa Meeting: Cell Signaling in Cancer and Development
NOVEMBER 18–21, 2009
BAROSSA VALLEY, SOUTH AUSTRALIA
sapmea.asn.au/conventions/signalling09/index.html

20th International Symposium on Glycoconjugates
NOVEMBER 29–DECEMBER 4, 2009
SAN JUAN, PR
www.glyco20.org

DECEMBER 2009

49th Annual Meeting of the American Society for Cell Biology
DECEMBER 5–9, 2009
SAN DIEGO, CA
www.ascb.org/meetings

JANUARY 2010

Keystone Symposium- Structural Genomics: Expanding the Horizons of Structural Biology
JANUARY 8–13, 2010
BRECKENRIDGE, CO
keystonesymposia.org

Keystone Symposium—Adipose Tissue Biology
JANUARY 24–29, 2010
KEYSTONE, CO
www.keystonesymposia.org

5th Human and Medical Genetics Meeting
JANUARY 28–30, 2010
STRASBOURG, FRANCE
www.assises-genetique.org/fr

FEBRUARY 2010

15th Annual Proteomics Symposium
FEBRUARY 4–7, 2010
LORNE, AUSTRALIA
www.australasianproteomics.org

Gordon Research Conference—Glycolipid and Sphingolipid Biology
FEBRUARY 7–12, 2010
VENTURA, CA
www.grc.org

AAAS Annual Meeting
FEBRUARY 18–22, 2010
SAN DIEGO, CA
www.aaas.org/meetings

Biophysical Society 53rd Annual Meeting
FEBRUARY 28–MARCH 4, 2009
BOSTON, MA
www.biophysics.org/2009meeting

MARCH 2010

Keystone Symposium–Biomolecular Interaction Networks: Function and Disease
MARCH 7–12, 2010
QUEBEC CITY, CANADA
www.keystonesymposia.org

APRIL 2010

Keystone Symposium—Diabetes
APRIL 12–17, 2010
WHISTLER, CANADA

4th ESF Functional Genomics Conference
APRIL 14–17, 2010
DRESDEN, GERMANY
www.esffg2010.org

ASBMB Annual Meeting
APRIL 24–28, 2010
ANAHEIM, CA
www.asbmb.org/meetings.aspx

MAY 2010

Euro Fed Lipid International Symposium on Microbial Lipids
MAY 13–15, 2010
VIENNA, AUSTRIA
www.eurofedlipid.org

2010 American Thoracic Society International Conference
MAY 14–19, 2010
NEW ORLEANS, LA
www.thoracic.org

6th International Atherosclerosis Society Workshop on High Density Lipoproteins
MAY 17–21, 2010
WHISTLER, CANADA
www.athero.org

JUNE 2010

3rd European Workshop on Lipid Mediators
JUNE 3–4, 2010
PARIS, FRANCE
www.workshop-lipid.eu

8th International Conference on Hyaluronan of the International Society for Hyaluronan Sciences
JUNE 6–11, 2010
KYOTO, JAPAN
www.ISHAS.org

Keystone Symposium—Bioactive Lipids: Biochemistry and Diseases
JUNE 6–11, 2010
KYOTO, JAPAN
www.keystonesymposia.org

78th European Atherosclerosis Society Congress
JUNE 20–23, 2010
HAMBURG, GERMANY
www.kenes.com/eas

11th International Symposium on the Genetics of Industrial Microorganisms
JUNE 28–JULY 1, 2010
MELBOURNE, AUSTRALIA
www.gim2010.org

SEB Annual Main Meeting
JUNE 30–JULY 3, 2010
PRAGUE, CZECH REPUBLIC
www.sebiology.org/meetings

AUGUST 2010

24th Annual Symposium of the Protein Society Looking at Proteins: Expanding Perspectives and New Technologies
AUGUST 1–5, 2010
SAN DIEGO, CA
www.proteinsociety.org

9th International Mycological Congress (IMC9): The Biology of Fungi
AUGUST 1–6, 2010
EDINBURGH, UNITED KINGDOM
www.imc9.info

14th International Congress of Immunology
AUGUST 22–27, 2010
KOBE, JAPAN
www.ici2010.org

SEPTEMBER 2010

British Mass Spectrometry Society Meeting
SEPTEMBER 5–8, 2010
CARDIFF, WALES
www.bmss.org.uk

HUPO 9th Annual World Congress
SEPTEMBER 19–24, 2010
SYDNEY, AUSTRALIA
www.hupo.org

OzBio2010
SEPTEMBER 26–OCTOBER 1, 2010
MELBOURNE, AUSTRALIA
www.asbmb.org.au/ozbio2010

Transcriptional Regulation by Chromatin and RNA Polymerase II
SEPTEMBER 30–OCTOBER 4, 2010
TAHOE CITY, CA
www.asbmb.org/meetings.aspx

OCTOBER 2010

Biochemistry and Cell Biology of ESCRTs in Health and Disease
OCTOBER 14–17, 2010
SNOWBIRD, UT
www.asbmb.org/meetings.aspx

Post Translational Modifications: Detection and Physiological Evaluation
OCTOBER 21–24, 2010
TAHOE CITY, CA
www.asbmb.org/meetings.aspx

Biochemistry of Membrane Traffic: Secretory and Endocytic Pathways
OCTOBER 29–31, 2010
TAHOE CITY, CA
www.asbmb.org/meetings.aspx

Asian-Pacific Society of Atherosclerosis and Vascular Diseases (APSAVD) 2010 Congress
OCTOBER 27–29, 2010
CAIRNS, AUSTRALIA
apsavd.org

NOVEMBER 2010

8th Euro Fed Lipid Congress
NOVEMBER 21–24, 2010
MUNICH, GERMANY
www.eurofedlipid.org

APRIL 2011

ASBMB Annual Meeting
APRIL 9–13, 2011
WASHINGTON, D.C.
www.asbmb.org/meetings.aspx

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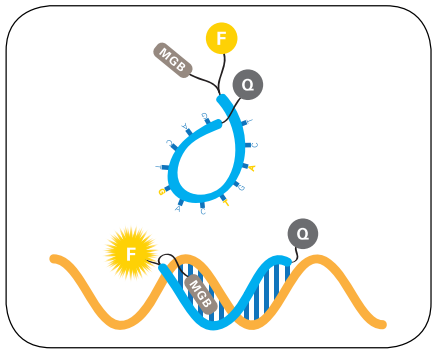

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