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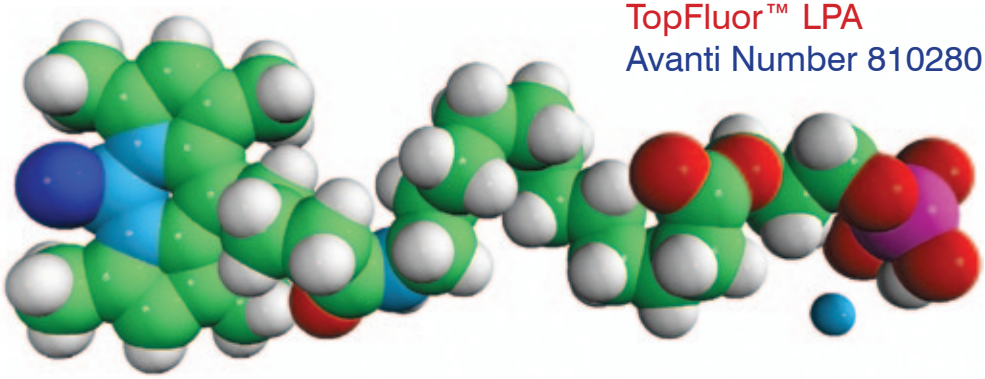

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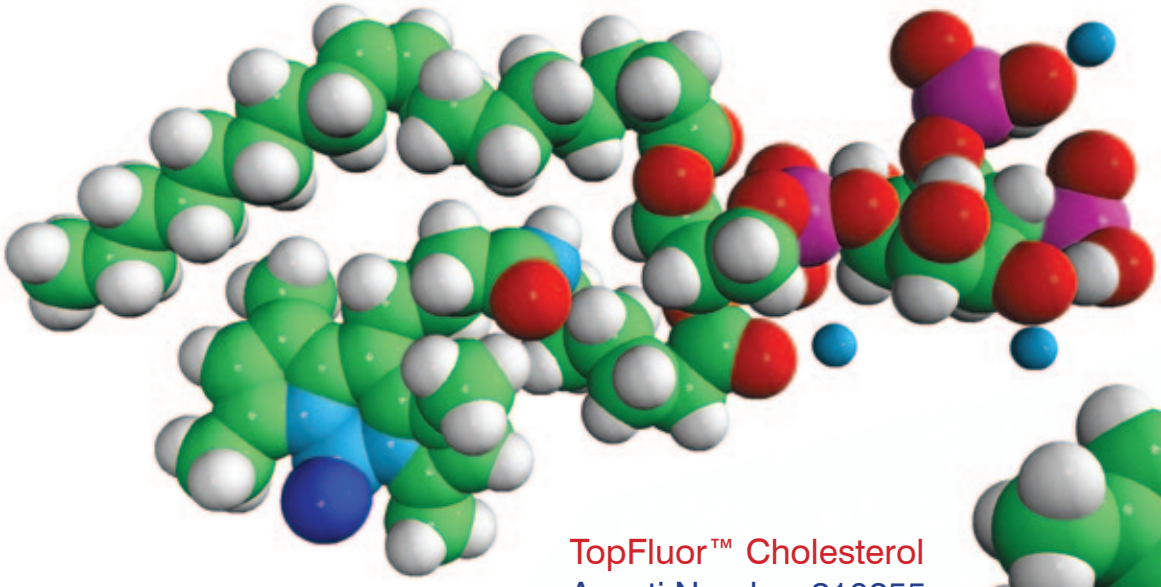

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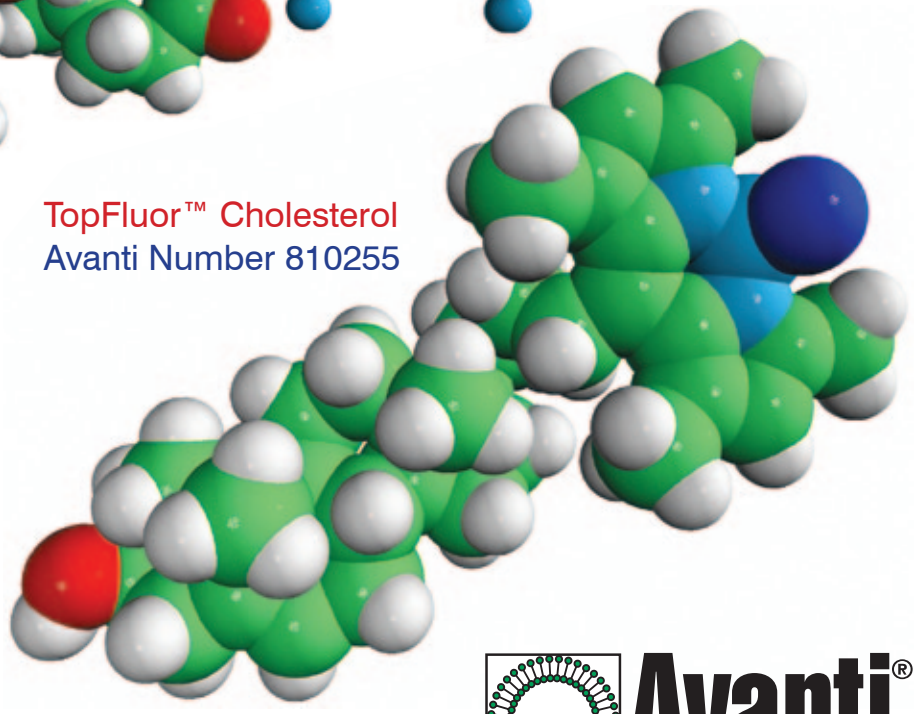

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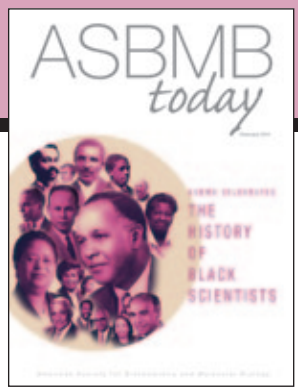

FEBRUARY 2011

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Go to the online version of ASBMB Today to get additional information about topics covered in the magazine including a list of policy fellowships for scientists and links to places mentioned in the "20 things to do in D.C." article.

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ASBMB today

A monthly publication of
The American Society for
Biochemistry and Molecular Biology

president's message

The Yamamoto Plan

BY SUZANNE PFEFFER

Last month I wrote about the importance of explaining the significance of our research at every opportunity: in papers, in talks and in research proposals. Keith Yamamoto, executive vice dean of the University of California San Francisco School of Medicine, has played an incredibly important, behind-the-scenes role in steering the evaluation of U.S. science toward impact. He also has crafted a valuable scheme to help job and grant applicants be most successful; I call this the Yamamoto Plan and share it with you here.

First, a few words about Keith. One of my first wishes as a first-year graduate student was to rotate in the Yamamoto lab. My wish came true in the winter of 1978, and I remember coming in to lab on Saturday mornings only to find Keith sitting quietly in his office reviewing Journal of Biological Chemistry manuscripts. At that time, his office had a glorious view of the Golden Gate Bridge, so it was a pretty nice place for him to work. He won't remember this, but Keith personally taught me how to culture mammalian cells, and during my rotation, he reminded me that devising new methodologies is just as important as scientific findings because new techniques often can enable new discoveries.

In 1994, Harold Varmus, then director of the National Institutes of Health, asked Yamamoto if he would work with the Division of Research Grants (now the Center for Scientific Review) to enhance the NIH peer review process. Since that time, Yamamoto has served as chairman of the Advisory Committee to the CSR and as a member of the NIH director's Peer Review Oversight Group, the CSR Panel on Scientific Boundaries for Review, and the Advisory Committee to the NIH Director. He also co-chairs both the Working Group to Enhance NIH Peer Review and the Review Committee for the Transformational R01 Award.

Each of these committees has discussed the importance of distinguishing between science that just provides more information and thus moves the field horizontally, and transformational science that has the potential to move an entire field forward vertically. Now, during an era in which scientists can do so much more but must operate with tightly constrained resources, we need to select the questions that will provide the most important answers. I have said this before: Every cell has 10,000 proteins; we need to focus on the classes of protein functions that are most relevant to understanding fundamental biochemistry, biology and the molecular basis of disease. Over the past 15 years, Yamamoto has steered this important idea through the halls of NIH, culminating in several new mechanisms for support of especially bold ideas as well as new guidelines for the review of grant applications that stress overall impact over detailed approach. No country has enough research dollars to fund all possible science, and our limited dollars need to be directed toward the areas of greatest significance to the entire scientific community.

Yamamoto also has devised a plan to help UCSF junior faculty craft their first research grants. His approach can be useful to graduate students and postdoctoral fellows in conceiving research proposals for their theses,

Keith Yamamoto has played an incredibly important, behind-the-scenes role in steering the evaluation of U.S. science toward impact.

courses and fellowships. Industrial colleagues also may find value in this very wise plan. At UCSF (and also in my Stanford biochemistry department), grant-writing faculty members select a small number of colleagues to serve as an advisory committee. Several months before a deadline, the grant-writing faculty member drafts a single Specific Aims page highlighting the question to be addressed, why it is important and three to five sets of experiments that will advance our understanding. The role of the advisory committee is to help their colleague ensure that the research question, and the specific aims to approach it, will truly move that field forward vertically. Is the question impactful in concept and/or practice and clearly articulated? Are the experiments, even if bold and untested, technically feasible, and do they employ the most advanced approaches? Would a collaborator add conceptual or technical breadth to the potential outcome? Face-to-face conversations with the full committee uncover uncertainties and ambiguities, resolve differences of opinion, and often stimulate improvements. Then, and only then, does the scientist write the research proposal.

A major advantage of the Yamamoto Plan is that quality advice and mentorship can be obtained at an early stage, long before hours are wasted writing up what might not be the best approach. In contrast, scientists commonly seek feedback regarding a completed grant application just a few days before a deadline. At that point, it is way too late to send someone back to the starting block to recraft a proposal that is off the mark. Once you write an entire grant application, mental cement can set in.

The Yamamoto Plan provides, as he says, "honest feed-forward instead of less-than-honest feedback," saving time and effort for both applicant and mentors: Most scientists happily will read a one-page Specific Aims description carefully and provide forthright impressions.

Job candidates and prospective postdoctoral fellows take note: This plan can be used to hone your CV and research description before you apply for a job. An advisory committee also can prepare you for interviews; don't be shy in asking for help.

I recently reviewed what struck me as an unusual grant application from a successful and fairly well-known scientist. What was unusual was the fact that this applicant listed ten other well-known scientists as unpaid "key collaborators." The applicant could have carried out all the science described in his own lab, but including a list of collaborators left this reviewer with the impression that this long list of scientists really cared about the outcome of the proposal under review and would do all they could to support the project and guarantee its success. I recently have come to appreciate the importance and value of scientific collaboration and will write about that in greater detail in a future column. But I add it here as a reminder to younger scientists: Collaborations permit us to accomplish more with limited resources. Collaborations bring additional expertise and methodologies to our work. Our industrial colleagues understand the value of team science. Never be shy in asking for help to move your science forward, be it help with a set of experiments or help crafting a proposal.

And wholehearted thanks to Keith Yamamoto for helping all of us stay focused on impact. XXX

NIH to create translational research center

BY GEOFFREY HUNT

The National Institutes of Health got an early start on spring cleaning when it announced that a new center focused on improving the translation of basic research to clinical care and therapeutics would be formed. Provisionally named the National Center for the Advancement of Translational Sciences, the center is set to commence operations in the fall and will be composed of extant research programs currently spread across the NIH. However, the center does not arrive without controversy, as the effects of the proposed reorganization of funding priorities and the structure of other institutes and centers remain unclear.

Where are you going? Where have you been?

Reshuffling institutes and centers is nothing new at the NIH. Beginning with the establishment of the National Cancer Institute as the first stand-alone component in 1937, the NIH has continued to proliferate as subsequent congressional authorizations have expanded the agency's focus wider and wider. The period between 1980 and 2000 saw a flurry of reorganization at the NIH as existing departments were renamed and merged and others were created. But after the formation of the National Institute of Biomedical Imaging and Bioengineering in 2001, critics warned that the agency had become overly fragmented, leading some, including former NIH Director Harold Varmus, to push for consolidation of the 27 individual institutes. However, a 2003 study published by the National Academy of Sciences recommended against major reorganization.

The same report advised small-scale changes, including the formation of a clinical research center as part of a broader proposal to increase cross-disciplinary translational research programs. The proposal recommended that the new center subsume the National Center for Research Resources, which contains an array of resource programs ranging from the Biomedical Technology Research Centers and instrumentation grants to invertebrate animal resources. Former NIH Director Elias Zerhouni implemented a number of those initiatives, most notably the NIH Roadmap, but left the NCRR as a stand-alone entity.

Still, questions lingered as to whether the organization of NIH enabled it to fulfill its mission to advance science to improve public health effectively. When the NIH came up for reauthorization in 2006, Congress created the Scientific Management Review Board, an advisory panel charged with assessing the agency's organizational efficiency.

In 2010, NIH Director Francis Collins asked the SMRB to study how the agency could better promote translational research. The board responded that translational research "could benefit from a reorganization at NIH to capitalize on emerging scientific opportunities, recent changes in therapeutics development, existing resources and programs." On Dec. 7, the formal recommendation was delivered and NCATS was born.

Lost in translation?

A 2006 law limiting the overall number of NIH departments meant that the creation of NCATS would require that another institute or center be sacrificed. NCRR would finally meet its maker and be dissolved, leaving its programs to be cannibalized by the other NIH institutes. Some of the NCRR's programs, most significantly the Clinical Translation Science Awards program, will be incorporated into NCATS. Collins has placed the fate of the other orphaned programs in the hands of a special task force.

As for funding, the budget for NCATS is expected to be 1 percent to 2 percent of the overall NIH budget, which approximates the amount currently set aside through the NIH Common Fund for the translational research-focused NIH Roadmap. NCATS will house several Roadmap programs as well as the Cures Acceleration Network, a new program authorized (though not yet appropriated) by Congress to speed the development of disease cures.

Shifting funds to NCATS will require adjustment of additional budgets, including those at other institutes and centers; it is unclear if the NCATS programs, including CTSA, will retain their current budgets.

The best-laid plans …

Congress has been notified of the recommendation and has 180 days to object; otherwise, the new center will be approved. Although the new center currently lacks a director, plans continue to move forward as the NIH, once again, makes itself over to fulfill its mission.

Geoffrey Hunt (ghunt@asbmb.org) is the ASBMB science policy fellow.

When a clear vision isn't clear

BY BENJAMIN W. CORB

Last month's recommendation by the National Institutes of Health's Scientific Management Review Board to create a new translational science institute at the NIH came as a surprise to many in the extramural research community. NIH Director Francis Collins had made clear from the beginning of his administration that translational science (and specifically the translation of basic research into life-saving treatments) would be one of the major focuses of his tenure in Bethesda, but to many in the community, the short timetable for SMRB's recommendation was unanticipated. Surely, many believed, a recommendation to create an entirely new institute at the NIH would be made after months of deliberation, stakeholder meetings and detailed analysis.

Behind the scenes, the basic research community investigated the proposal's background, asking who was ultimately being served and looking for opportunities to slow momentum or even halt a decision until further detailed analysis could take place. While not outright opposing the proposed SMRB recommendation, the community had concerns about the unintended consequences such a decision could have on researchers who have become reliant on programs like the National Center for Research Resources' P-41 program. The community attended the December SMRB meeting, and more than a dozen concerned stakeholders spoke, calling for further analysis and urging the SMRB to wait before making a final decision.

Ultimately, the decision to create the new center was made in a matter of only a few months and without very many discussions with key stakeholders. The SMRB voted nearly unanimously (the only opposing vote was that of outgoing National Institute of General Medical Sciences Director Jeremy Berg). The leadership of the American Society for Biochemistry and Molecular Biology and those on the ASBMB Public Affairs Advisory Committee quickly mobilized, authoring a recommendation to Francis Collins and Lawrence Tabak, the principal deputy director at the NIH, to encourage the NIH to maintain the Biomedical Technology Research Centers program and the Shared Instrumentation and High End Instrumentation grants within a single institute or center. Specifically, ASBMB recommended that the BTRC program be housed in an institute whose primary focus is to support research without a disease-specific mission, such as the National Institute of General Medical Sciences, a recommendation that — at the time of writing — has not received a response from NIH leadership.

> **"In the end, the community continues to have more questions than answers... there is only a vacuum filled with rumor and innuendo."**

The community continues to have more questions than answers, and where a clear public vision should exist, there is only a vacuum being filled with rumor and innuendo. What will the future hold for the biotechnology programs formally housed in the NCRR? As the programs are farmed out to their new homes at the NIH, will their funding transfer with them? Why did the leadership of the NIH ultimately choose to make decisions without offering the community an opportunity to have a role in the development of a program to ensure that all stakeholders (federal and nonfederal) were able to capitalize on the new recommendations? Why did NIH leadership feel that the fusion of the National Institute of Alcohol Abuse and Alcoholism with the National Institute on Drug Abuse (an SMRB recommendation that took place at the same meeting as the translational science institute decision) needed more than a year of deliberation, while the creation of a new institute occurred in only months?

Let's be clear: the creation of a new institute focusing on translational science is needed for the health and well-being of the nation. As such, the uneasiness of the community doesn't rest with the actual decision. In fact, many support it. The unease exists because of the manner in which the decision was made and the lack of a clear plan moving forward. The community waits with bated breath for such a plan.

Benjamin W. Corb (bcorb@asbmb.org) is director of public affairs at ASBMB.

FASEB rallies scientific community in support of research funding

BY JENNIFER A. HOBIN AND KAREN R. MOWRER

The 111th Congress adjourned this past December, with legislators quickly wrapping up the year's business before heading home for the holidays. As negotiations on the 2011 budget were in full swing, the Federation of American Societies for Experimental Biology rallied the scientific community to urge their senators and representatives to pass a spending bill that included a $1 billion funding increase for the National Institutes of Health. As a result, scientists sent nearly 9,500 messages to Capitol Hill urging lawmakers to sustain the federal investment in biomedical research.

Despite the best efforts of the community, legislators failed to reach an agreement on a budget for the entire fiscal year, instead passing a continuing resolution that will keep the government operating until March 4. The resolution continues funding for nearly all federal agencies at 2010 levels, although exceptions were made for certain programs that would otherwise expire or seriously be interrupted. The federal science agencies were not included in these exceptions, and the resolution does not apportion funds to implement the Cures Acceleration Network, a new NIH entity authorized at $500 million to speed the development of "high need cures."

The new year did ring in some good tidings for the scientific community, however. During the final days of the congressional session, FASEB worked with the research community to prevent Congress from passing a bill that would have reauthorized the Small Business Innovation Research and Small Business Technology Transfer programs.

These programs fund research conducted by small businesses by "setting aside" a portion of the budgets of 11 federal agencies, including the NIH, the National Science Foundation, the U.S. Department of Agriculture and the U.S. Department of Energy. These agencies already are required to devote at least 2.5 percent of their budgets to SBIR research funding. A bill introduced in the Senate would have increased the amount set aside to 3.5 percent — redirecting as much as $1 billion to a single research program at the expense of all other national scientific priorities and further eroding the NIH's capacity to fund competitive investigator-initiated grants. Responding to the introduction of the Senate bill, FASEB initiated an action alert that generated more than 1,000 letters to Congress from scientists who opposed the bill. FASEB and its advocacy partners also sent letters to every senator, the House leadership and the House Committees on Small Business and Science and Technology. The bill was defeated when those committees blocked the House from taking action on the Senate bill.

Since early 2009, FASEB has led a coalition of nearly 100 groups from research institutions, higher education associations and patient advocacy organizations to fight attempts to increase the amount set aside for SBIR, noting that it would redirect funding from competitive, peer-reviewed research at a time when future funding levels are uncertain. The latest authority for the SBIR and STTR programs expired on January 31, and it is likely that the new Congress will try again to renew both programs. FASEB will continue to oppose any attempt to increase the "set-aside" and urge legislators to work with the Obama administration to increase funding for all research.

Scientists have another reason to celebrate 2011: Both the House and Senate passed the America COMPETES Act Reauthorization of 2010. The legislation provides a three-year reauthorization for key federal science agencies including the NSF, the DOE Office of Science and the National Institute of Standards and Technology, continuing a plan to double authorized funding for those agencies over 10 years. For the short term, recommended funding levels for the NSF would grow from $7.8 billion in fiscal 2012 to $8.3 billion in 2013, while DOE Office of Science levels would increase from $5.6 billion to $6 billion during the same timeframe.

President Obama signed the COMPETES legislation into law on January 4.

Jennifer A. Hobin (jhobin@faseb.org) is director of science policy and Karen R. Mowrer (kmowrer@faseb.org) is the legislative affairs officer in FASEB's office of public affairs.

EARL AND THRESSA STADTMAN DISTINGUISHED SCIENTIST AWARD

ASBMB honors Brown and Goldstein

BY ANGELA HOPP

The American Society for Biochemistry and Molecular Biology has named Nobel laureates Michael S. Brown and Joseph L. Goldstein, pioneers in the study of cholesterol metabolism, the joint winners of its first Earl and Thressa Stadtman Distinguished Scientist Award.

Brown and Goldstein, both of the University of Texas Southwestern Medical Center at Dallas, shared the 1985 Nobel Prize in medicine or physiology for their discovery of the low-density lipoprotein, or LDL, receptor and the process of receptor-mediated endocytosis. In recent years, they discovered sterol regulatory element-binding proteins and the process of regulated intramembrane proteolysis.

"It is intensely poignant for Joe and me to accept this award in the name of Earl and Thressa Stadtman. My fellowship with Earl imbued me with a love of enzyme regulation. Later Earl adopted Joe as well, and the two of us enjoyed a long and inspirational friendship with him. Although Earl and Terry never collaborated in the way that Joe and I have, their profound mutual respect served as a model for the working relationship that Joe and I forged." **MICHAEL S. BROWN**

"Mike and I entered the NIH as youngsters trained in medicine and intensely curious about science. My exposure to Marshall Nirenberg and Mike's exposure to Earl Stadtman kindled in us a love of experimentation and a respect for rigor that has endured for 40 years. The Earl and Thressa Stadtman Award is a living testament to the profound influence that they had on the careers of so many budding scientists." **JOSEPH L. GOLDSTEIN**

The researchers met at Massachusetts General Hospital in Boston in the 1960s and have collaborated ever since. From 1968 to 1971, Brown worked at the National Institutes of Health, initially as a clinical associate in gastroenterology and hereditary disease and later in the biochemistry laboratory headed by Earl Stadtman. Meanwhile, Goldstein spent 1968 through 1970 at the NIH as well, working in the laboratory of Marshall W. Nirenberg and at the National Heart Institute.

In 1971, Brown joined the University of Texas Southwestern Medical School in Dallas. A year later, so did Goldstein.

"Put simply, these guys are great. It has been a pleasure for the scientific community to watch this story unfold," says Richard Axel, a professor at Columbia University Medical Center and the recipient of the 2004 Nobel Prize in physiology or medicine. "With unabated and unsurpassed creativity and rigor, they continue to pursue a problem in basic science with profound implications for clinical medicine: the regulation of lipid and cholesterol biosynthesis."

Robert D. Simoni, chairman of the biology department at Stanford University and associate editor of the Journal of Biological Chemistry, emphasizes that Brown and Goldstein also have kept alive the Stadtmans' tradition of mentoring.

"Beyond their own research accomplishments, Mike and Joe, like the Stadtmans, have provided an excellent training ground for young scientists, many of whom have gone on to assume leadership roles in biochemistry," Simoni says.

About the award

The Stadtman award is given every other year to an established scientist for his or her outstanding achievement in basic research in biochemistry or molecular biology. Brown and Goldstein will present their award lecture, "The SREBP Pathway: Stadtman's Paradigm Applied to Cholesterol," at 2:40 p.m. April 11 at the 2011 annual meeting in Washington, D.C. To learn more about the Stadtmans, go to bit.ly/ATodayStadtman.

BIG DREAMS. BOLD FUTURE.

ASSISTANT/ASSOCIATE PROFESSOR

Department of Molecular Medicine and USF Health Byrd Alzheimer's Institute

The USF Health Byrd Alzheimer's Institute and Department of Molecular Medicine at the USF Health College of Medicine are partnering to identify a candidate for a tenure track position at the rank of Assistant or Associate Professor. A successful applicant will employ structural, molecular and/or computational approaches to develop a mechanism-based drug discovery program related to neurodegenerative disease. The USF Health Byrd Alzheimer's Institute is a unique enterprise that allows investigators to participate in basic and clinical studies directly related to Alzheimer's disease and other dementias in one building. The Institute is the largest of its kind in the world. The Department of Molecular Medicine and USF Health Byrd Alzheimer's Institute are located in a vibrant and expanding USF Health Complex on the main campus of the University of South Florida that includes the Colleges of Medicine, Nursing, and Public Health, and the H. Lee Moffitt Comprehensive Cancer Center and Research Institute. USF is a nationally recognized research campus with extramural grants and contract activity in excess of $350 million annually and is home to several Centers for Excellence in Biomedical Research and state-of-the-art facilities. Over the past 3 years, the state of Florida committed an additional $450 million to the existing medical research budget, and as a result, USF is now part of a collaborative research corridor running through the heart of the sunshine state.

Successful candidates for this position are expected to develop and maintain a competitively funded research program, and to participate in medical and graduate education. To support these expectations, the department offers strong institutional salary support, competitive start-up packages, excellent core facilities, and a collegial atmosphere to create an environment that promotes success. Academic rank and salary are commensurate with qualifications and experience. The successful candidate must have a doctorate in a biomedical sciences discipline with at least two years postdoctoral experience. Appointment at the level of Associate Professor requires a minimum of five years experience at the Assistant Professor level, a nationally-recognized and federally funded research program and experience mentoring graduate students.

Please send a cover letter, curriculum vitae, research plan, statement of teaching philosophy, and arrange three reference letters to be sent by e-mail (with attached PDFs) to Ms. Maxine Roth at **mroth@health.usf.edu** Review of applicants will begin immediately and continue until the position is filled. **Dr. Chad Dickey, Search Committee Chair, University of South Florida-Health, 12901 Bruce B. Downs Blvd. MDC7, Tampa, Florida 33612-4799**

USF Health is committed to increasing its diversity and will give individual consideration to qualified applicants for this position with experience in ethnically diverse settings, who possess varied language skills, or who have a record of research that support diverse communities or teaching a diverse student population. The University of South Florida is an EO/EA/AA Employer. For disability accommodations, contact Maxine Roth at (813) 396-0746 a minimum of five working days in advance. According to FL law, applications and meetings regarding them are open to the public.

USF HEALTH

DELANO AWARD FOR COMPUTATIONAL BIOSCIENCES

Axel T. Brunger wins inaugural ASBMB DeLano Award

BY ANGELA HOPP

Stanford University professor Axel T. Brunger has been named the winner of the American Society for Biochemistry and Molecular Biology's inaugural DeLano Award for Computational Biosciences.

The award was established to honor those who create accessible and innovative developments or applications of computer technology to enhance research in the life sciences at the molecular level. Nominees' contributions must promote (a) more productive use of computers to accelerate and facilitate research and (b) ready access of those programs for the scientific community.

"Axel was the principal designer of CNS, which for over a decade has been the standard refinement program used by the structural (biology) community," said James A.Wells of the University of California, San Francisco, one of Brunger's nominators. "He has clearly made enormous contributions to structural biology by defining, developing and automating crystallographic refinement methods."

Established this year, the computational award aims to honor the legacy of the late Warren L. DeLano, a scientist and entrepreneur who promoted open-source technology and believed in making his programs and source code freely available to users and enabling researchers to build on his developments. While a graduate student, DeLano created PyMOL, an open-source tool for visualizing the three-dimensional structures of proteins and other biological molecules.

Wells credits Brunger, who is also a Howard Hughes Medical Institute investigator, for being a great mentor to DeLano, who died unexpectedly in November 2009 at age 37.

"Working with Axel as an undergraduate at Yale University was Warren's inspiration for devoting his own life to computational biosciences. Warren joined my lab as a graduate student, where he combined both wet lab and computational methods to understand promiscuous protein-protein binding partners," Wells said. "But it was Axel's dedicated mentoring and science that launched him and, I feel, ultimately was responsible for Warren developing PyMOL."

John Kuriyan, chancellor's professor in the departments of molecular and cell biology and chemistry at the University of California, Berkeley, also supported Brunger's nomination for the award. He had this to say about his longtime associate: "Axel is the foremost computational biologist working at the interface between X-ray crystallography, computation and biology. In addition, he is an outstanding structural biologist working on problems in vesicle fusion in neurobiology. I can think of no person better suited for this inaugural award."

"While I feel greatly honored to receive the inaugural DeLano award, this is also a bittersweet moment because we have lost such a great young talent. By making his developments readily accessible, Warren had such a broad impact in the biological sciences. It is fitting that ASBMB and the Warren DeLano Memorial Fund have established this award to honor his memory." **AXEL T. BRUNGER**

About the award

The DeLano Award for Computational Biosciences consists of a plaque, a $3,000 cash award and travel expenses to present a lecture at the ASBMB annual meeting in April in Washington, D.C. Brunger will present his award lecture, titled "Towards Structural Biology with Single Molecules" at 9:03 a.m. on April 13.

ASBMB-MERCK AWARD

Christine Guthrie recognized with ASBMB-Merck Award

BY ANGELA HOPP

Christine Guthrie, a leading figure in the field of RNA processing and a dedicated mentor to young scientists, has been named the winner of the 2011 American Society for Biochemistry and Molecular Biology-Merck Award.

Guthrie, a major contributor to the development of yeast as a model system for studying cell biology, was nominated by Yale University's Joan Steitz, who says of the winner, "Christine Guthrie's pioneering advances have relied on her innovative coupling of biochemistry and genetics starting from the beginning of her distinguished career. Christine is not only an inspiring role model to her peers and to younger scientists, but her mentorship has guided the careers of a number of today's leaders in the RNA field worldwide."

Guthrie, a professor of biochemistry at the University of California, San Francisco, first identified small nuclear RNAs in yeast, which initiated a genetic study of the roles of those RNAs in the spliceosome process. In addition, she isolated a large number of yeast mutants defective in splicing and established the point in the splicing cycle that required each mutant protein.

"Her body of work has been recognized both nationally and internationally," says Phillip A. Sharp, a professor at the David H. Koch Institute for Integrative Cancer Research at the Massachusetts Institute for Technology. "Her papers are novel and superbly written, and I am frequently spellbound by her lectures, for she is an eloquent orator who skillfully uses humor and substance."

Longtime acquaintance James E. Dahlberg, the Fredrick Sanger professor at the University of Wisconsin School of Medicine, said Guthrie sets the pace and bar for scientists of all ages and levels of achievement.

"I have known Christine since she was a graduate student and have followed her career and accomplishments very carefully. She is truly a guiding light for those of us working on the chemistry, biology or genetics of RNA, a class of molecules that is crucial to essentially all aspects of biology," he says. "In particular, young scientists can see in her the satisfaction that comes from being a successful scientist and that it is possible for them to do just as well."

Those sentiments were echoed by one of Guthrie's former doctoral students, Hiten Madhani, who is now a professor at UCSF.

"I am just delighted to receive this award. I am deeply honored to be included in the august company of the previous recipients and profoundly indebted to the long succession of remarkable students and fellows who have made this possible." **CHRISTINE GUTHRIE**

"If one were to ask any well-informed molecular biologists who were the two women who have had the greatest impact on the field of RNA splicing, the unanimous answer would be Christine Guthrie and Joan Steitz," Madhani says. "Christine's contributions to the field over the past quarter century have been numerous and read like the greatest hits of RNA splicing."

Angela Hopp (ahopp@asbmb.org) is managing editor for special projects at ASBMB.

About the award

The ASBMB-Merck Award recognizes outstanding contributions to research in biochemistry and molecular biology. It provides a plaque and a $5,000 purse, and it covers transportation and expenses of the recipient and spouse to attend the ASBMB annual meeting and present a lecture. Guthrie will give her award lecture, "The Spliceosome is a Dynamic RNP Machine: Fidelity Strategies," at 8:30 a.m. April 13 at the 2011 annual meeting in Washington, D.C.

Retrospective: Eugene Goldwasser (1922–2010)

BY NICOLE KRESGE

Eugene Goldwasser, the Alice Hogge and Arthur A. Baer professor emeritus of biochemistry and molecular biology at the University of Chicago, died Dec. 17. He was 88.

Generally regarded as the father of erythropoietin, Goldwasser led the team that succeeded in purifying sheep and human erythropoietin, a discovery that has enabled millions of dialysis and anemic patients to live longer and more productive lives.

Goldwasser was born in 1922 in Brooklyn, N.Y. He developed an interest in science in high school and won a scholarship to the University of Chicago, where he majored in biology. After the Japanese attack on Pearl Harbor, he worked as a research assistant in the university's defense-oriented toxicity laboratory. He completed his bachelor's degree in biochemistry in 1943.

In 1944, Goldwasser was drafted into the United States Army. He served for two years as a biochemist at Fort Detrick, Md., working on the army's anthrax program. In 1946, he returned to Chicago as a graduate student and completed his doctorate in biochemistry in 1950. He then spent two years as a postdoctoral fellow with Herman Kalckar at the Institute for Cytophysiology in Copenhagen, Denmark.

In 1952, Goldwasser returned to Chicago as an instructor in biochemistry. He stayed there for the rest of his career, rising to professor of biochemistry and molecular biology. He retired in 1987 but remained active in his laboratory until he retired again in 2002.

Goldwasser started working on erythropoietin in 1955 when his mentor, Leon O. Jacobson, challenged him to isolate and purify the biochemical signal that regulated the growth of new red blood cells. By systematically removing various organs from rats and looking for the onset of anemia, Goldwasser was able to trace signal production to the kidneys. Reasoning that animals with anemia would produce more erythropoietin, he spent many years visiting a slaughterhouse outside Chicago, collecting blood from anemic sheep. But by 1971, he and his colleagues had only managed to purify six millionths of a gram of erythropoietin from 125 gallons of plasma from the sheep.

Looking for a better source of the hormone, Goldwasser turned to urine and began collaborating with Takaji Miyake, a Japanese physician who had been collecting urine from people with aplastic anemia. Miyake was able to collect 2,550 liters of urine from his patients, which he concentrated and brought to Chicago on Christmas Day, 1975. Within 18 months the scientists managed to purify eight milligrams of erythropoietin and published their results in the Journal of Biological Chemistry (1).

At the urging of colleagues and the federal agencies that funded his research, Goldwasser submitted a patent disclosure form to the university. Unfortunately, the school officials did not patent his discovery, and Goldwasser never followed up.

Many Midwestern companies also failed to take interest in Goldwasser's findings, so he ended up sharing his results with a young biotech company called Applied Molecular Genetics (now Amgen). Amgen eventually became one of the world's biggest biotech companies based on its sales of erythropoietin under names like Epogen, Procrit and Aranesp, which brought in billions of dollars a year.

Nicole Kresge (nkresge@asbmb.org) is the editor of ASBMB Today.

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2011 ASBMB Special Symposia Series

www.asbmb.org/specialsymposia

JULY 20–23, Richmond, VA

Student-Centered Education in the Molecular Life Sciences II

J. Ellis Bell, *University of Richmond*

University of Richmond

JULY 24–26, Guangzhou, China

Recent Advances in Pathogenic Human Viruses

Kuan-Teh Jeang, *National Institute of Allergy and Infectious Diseases, NIH*

Douglas Lowy, *National Cancer Institute, NIH*

Guangzhou Baiyun International Convention Center

SEPT 27–Oct 2, Pacific Grove, CA

13th International ATPase Conference Na, K-ATPase and Related P-ATPase: Structure, Biology, and Medicine

Kathleen J. Sweadner, *Harvard Medical School and Massachusetts General Hospital*

Co-Chairs: Svetlana Lutsenko, *Johns Hopkins University School of Medicine;* Jacob I. Sznajder, *Northwestern University, Feinberg School of Medicine;* Hiroshi Suzuki, *Asahikawa Medical College, Japan;* Zijian Xie, *University of Toledo College of Medicine*

Asilomar Conference Grounds

OCT 6–9, Snowbird, UT

Cellular Traffic of Lipids and Calcium at Membrane Contact Sites

Joint meeting with the Biochemical Society

Tim Levine, *University College London Institute of Opthalmology, London*

Will Prinz, *National Institute of Diabetes and Digestive and Kidney Diseases, NIH*

Snowbird Ski and Summer Resort

OCT 12–16, Snowbird, UT

Chemical, Synthetic and Systems Biology: New Directions of Biochemistry in the 21st Century

Arcady Mushegian, *Stowers Institute for Medical Research*

Aled Edwards, *University of Toronto, Canada*

Snowbird Ski and Summer Resort

OCT 27–30, Tahoe City, CA

Gene Regulation by Non-Coding RNAs

Richard Carthew, *Northwestern University*

Jennifer A. Doudna, *HHMI, University of California, Berkeley*

Granlibakken Resort and Conference Center

NOV 15-18, Bethesda, MD

Life Sciences and the Issues of Our Time

Ralph A. Bradshaw, *University of California, San Francisco*

Philip A. Sharp, *Massachusetts Institute of Technology*

Howard Hughes Medical Institute at Bethesda

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PROPOSALS FOR 2012 MEETINGS DUE MARCH 1, 2011

ASBMB

American Society for Biochemistry and Molecular Biology

48 ASBMB members elected to AAAS

BY NICOLE KRESGE

Forty-eight members of the American Society for Biochemistry and Molecular Biology have been awarded the distinction of American Association for the Advancement of Science Fellow, an honor bestowed on AAAS members by their peers. These individuals will be recognized for their contributions to science and technology at the AAAS Fellows Forum in February.

We congratulate the following ASBMB members for this achievement:

SECTION ON AGRICULTURE, FOOD AND RENEWABLE RESOURCES

Eugene Sander, *University of Arizona*

SECTION ON BIOLOGICAL SCIENCES

Brenda Andrews, *The Donnelly Centre, University of Toronto*

Eduardo Blumwald, *University of California, Davis*

Donald A. Bryant, *Pennsylvania State University*

Peter M. J. Burgers, *Washington University School of Medicine*

Ta-Yuan Chang, *Dartmouth Medical School*

Michael M. Cox, *University of Wisconsin-Madison*

Valeria Culotta, *Johns Hopkins University, Bloomberg School of Public Health*

Roberto Docampo, *University of Georgia*

Jorge C. Escalante-Semerena, *University of Wisconsin-Madison*

Susan J. Fisher, *University of California, San Francisco*

Vadim Gladyshev, *Brigham and Women's Hospital, Harvard Medical School*

Edward Hawrot, *Brown University*

S. Michal Jazwinski, *Tulane University Health Sciences Center*

Jack D. Keene, *Duke University Medical Center*

Jerry B. Lingrel, *University of Cincinnati*

Bernhard Palsson, *University of California, San Diego*

Ann Marie Pendergast, *Duke University Medical Center*

Raymond Reeves, *Washington State University*

Michael J. Smerdon, *Washington State University*

James M. Sodetz, *University of South Carolina*

Abraham L. Sonenshein, *Tufts University School of Medicine*

Susan R. Wente, *Vanderbilt University Medical Center*

Hong Wu, *Institute for Molecular Medicine, UCLA*

John D. York, *Duke University Medical Center*

SECTION ON CHEMISTRY

Charles S. Craik, *University of California, San Francisco*

Paul Frederick Fitzpatrick, *University of Texas Health Science Center, San Antonio*

Lizbeth Hedstrom, *Brandeis University*

Julie A. Leary, *University of California, Davis*

Nigel Richards, *University of Florida*

Steven Rokita, *University of Maryland, College Park*

Anthony S. Serianni, *University of Notre Dame*

Michael P. Stone, *Vanderbilt University*

Eric Wickstrom, *Thomas Jefferson University*

SECTION ON DENTISTRY AND ORAL HEALTH SCIENCES

Bjorn R. Olsen, *Harvard School of Dental Medicine*

SECTION ON MEDICAL SCIENCES

Lewis C. Cantley, *Beth Israel Deaconess Medical Center*

R. John Collier, *Harvard Medical School*

P. Michael Conn, *Oregon Health & Science University/ Oregon National Primate Research Center*

Thomas Alan Hamilton, *Cleveland Clinic and Cleveland Clinic Lerner College of Medicine of Case Western Reserve University*

Linheng Li, *Stowers Institute for Medical Research*

Stuart H. Orkin, *Dana-Farber Cancer Institute*

Charles N. Serhan, *Brigham and Women's Hospital*

Yang Shi, *Harvard Medical School*

Qing Kenneth Wang, *Cleveland Clinic and Cleveland Clinic Lerner College of Medicine of Case Western Reserve University*

SECTION ON NEUROSCIENCE

Lori L. Isom, *University of Michigan*

Mark M. Rasenick, *University of Illinois at Chicago*

Robert Vassar, *Northwestern University Feinberg School of Medicine*

SECTION ON PHARMACEUTICAL SCIENCES

Roy S. Wu, *Cancer Therapy Evaluation Program, Division of Cancer Treatment and Diagnosis, National Cancer Institute, National Institutes of Health*

Nicole Kresge (nkresge@asbmb.org) is the editor of ASBMB Today.


HOLICK


GINSBURG

Holick named Van Slyke Award recipient

Michael F. Holick, a professor of medicine, physiology and biophysics and director of the General Clinical Research Unit at Boston University School of Medicine, is the recipient of the 2010 Van Slyke Award from the American Academy for Clinical Chemistry New York Metro Section. The award acknowledges outstanding contributions to the science of clinical chemistry and laboratory medicine.

Holick, who also is director of the Bone Health Care Clinic at Boston Medical Center, was chosen to receive the award for his seminal contributions to laboratory medicine. He helped pioneer several assays for vitamin D and its metabolites. The assays now are used worldwide to determine a patient's vitamin D status and to evaluate disorders of calcium and bone metabolism. Holick also helped establish global recommendations for sensible sun exposure and vitamin D intake for children and adults.

Ginsburg receives biomedical science research award

David Ginsburg, the James V. Neel distinguished university professor of internal medicine and human genetics at the University of Michigan Medical School, received a Distinguished Research in the Biomedical Sciences Award from the Association of American Medical Colleges.

The annual AAMC award was established in 1947 and recognizes outstanding clinical or laboratory research by a medical school faculty member. The research generally is related to health and disease that has contributed to the substance of medicine.

Ginsburg, who also is a Life Sciences Institute research professor and an investigator at Howard Hughes Medical Institute, studies the components of the blood-clotting system and how disturbances in their function lead to human bleeding and blood-clotting disorders. Specifically, he and his colleagues are looking at the blood-clotting protein von Willebrand factor and how molecular defects in the protein are responsible for many of the less common subtypes of von Willebrand disease. He also studies diseases involving coagulation factor V, a central regulator in the early phases of blood clot formation, and plasminogen activator inhibitor-1 and PAI2, both of which regulate the fibrinolytic system that breaks down blood clots.

IN MEMORIAM

Gerald C. Mueller

Gerald C. Mueller passed away on Nov. 7, 2010. He helped to establish the international reputation of the McArdle Laboratory and build a strong foundation of basic cancer research on the University of Wisconsin-Madison campus.

Mueller was born in 1920 and raised in St. Croix, Wis. He attended the University of Wisconsin-Madison, where he worked part time in the laboratory of Harold P. Rusch studying the biochemical actions of chemical carcinogens and ultraviolet radiation. Mueller enrolled in medical school at the University of Wisconsin and received his M.D. in 1946. He then carried out an internship at the Medical College of Virginia in Richmond. In 1947, Mueller returned to Wisconsin to pursue a doctoral degree in biochemistry and oncology. After graduating in 1950, he accepted a position as an assistant professor at the university.

For the next 40 years, Mueller pursued various scientific interests, from the molecular processes regulating animal cell replication and differentiation to the role of phosphatidylethanol synthesis in alcoholism. He was a pioneer in the development of a practical method for the synchronization of mammalian cell populations and one of the first investigators to show that in each cell cycle, the units of DNA replicate in the same time sequence.

Mueller also significantly affected cancer policy in the U.S., participating in numerous study sections, advisory committees, and editorial and review boards throughout his career. He served on the Board of Scientific Counselors for both the National Cancer Institute and the National Institute of Environmental Health Sciences, as president and member of the Board of Directors for the American Association for Cancer Research, and as a member of the Board of Directors of the American Cancer Society.

Mueller became professor emeritus of oncology at the McArdle Laboratory for Cancer Research in 1991 but remained active in the department for more than a decade after that.

EMBO recognizes seven ASBMB members

The European Molecular Biology Organization has awarded the life-long honor of EMBO membership to seven American Society for Biochemistry and Molecular Biology members. They are among 63 life scientists from 14 countries who received the honor this year.

The 63 scientists represent a broad cross section of research covering clas-

sical areas of molecular biology as well as rapidly developing fields such as systems biology, neuroscience and cancer biology. More than half of the EMBO members contribute by serving on advisory editorial boards for the organization's four scientific journals, mentoring young researchers, providing expertise to EMBO programs and taking the lead on new initiatives.

The newly elected ASBMB members are:

GIDEON J. DAVIES, professor, Structural Biology Laboratory, department of chemistry, The University of York, United Kingdom

CAROL ROBINSON, Royal Society research professor and Dr. Lee's professor of chemistry, department of chemistry, University of Oxford, United Kingdom

SHARON TOOZE, head, Secretory Pathways Laboratory, Imperial Cancer Research Fund, London, United Kingdom

ROGER J. DAVIS, investigator, Howard Hughes Medical Institute, and professor, department of biochemistry and pharmacology, University of Massachusetts Medical School, United States

ELAINE FUCHS, investigator, Howard Hughes Medical Institute, and Rebecca C. Lancefield professor, Laboratory of Mammalian Cell Biology and Development, Rockefeller University, United States

THOMAS D. POLLARD, Sterling professor of molecular cellular and developmental biology and of cell biology and of molecular biophysics and biochemistry, Yale University, United States

CHI-HUEY WONG, professor, department of chemistry, The Scripps Research Institute, United States, and president, Academia Sinica, Taiwan

IN MEMORIAM

Mark Smith (1965–2010)

Mark A. Smith, professor of pathology at Case Western Reserve University, died Dec. 19 after being struck by a car in suburban Cleveland.

Smith was a renowned Alzheimer's disease researcher whose work focused on understanding how and why neurons cease to function in neurodegenerative diseases. He also was a Journal of Biological Chemistry editorial board member, co-editor-in-chief of the Journal of Alzheimer's Disease and executive director of the American Aging Association.

Smith studied molecular biology and biochemistry at Durham University's Hatfield College in England and earned his Bachelor of Science degree in 1986. He then attended Nottingham University, where he received his doctorate degree in 1990. After two years as a postdoctoral biochemist in the division of immunodermatology at Sandoz Forschungsinstitut (now Novartis) in Vienna, Austria, he began working at Case Western Reserve University.

Smith quickly drew attention and accolades, becoming one of the most prolific and cited faculty members on the Case Western campus, numerically accounting for more than 1 percent of publications and 4 percent of citations during the past several years (data from Institute for Scientific Information). He published more than 800 peer-reviewed articles, and his work was cited more than 21,000 times. In 2007, Smith was named the 21st most-cited author (of 3,170) in the fields of neuroscience and behavior during the previous 10 years. In 2009, he was named the No. 3 Alzheimer's investigator in the world in a study published in the Journal of Alzheimer's Disease.

Smith received numerous awards and honors, including two Ruth Salta Junior Investigator Achievement Awards from the American Health Assistance Foundation, making him the first individual ever to receive the honor more than once. He also earned multiple campus awards for teaching and mentoring, such as the 2009 J. Bruce Jackson, M.D., Award for Excellence in Undergraduate Mentoring, one of the highest honors given to a member of the Case Western faculty. Most recently, Smith was named the recipient of the 2011 American Society for Investigative Pathology Outstanding Investigator Award and the 2011 Goudie Lecture and Medal.

"Mark Smith's passion for scientific discovery was matched by his complete dedication to students and colleagues," Case Western President Barbara R. Snyder said in a press release. "His death is a tragedy for his field, for Case Western Reserve and, most of all, for his family. We extend our deepest sympathies to all who are grieving this terrible loss."

For more information

You can learn more about Mark Smith's research and career and read the recollections of his friends and colleagues using the links below:

- The Journal of Alzheimer's Disease: j-alz.com/marksmith.html
- Alzheimer Research Forum: bit.ly/AlzheimerForum
- Smith's faculty webpage: bit.ly/FacultySmith

Getting serious about science education

BY MIKE KLYMKOWSKY

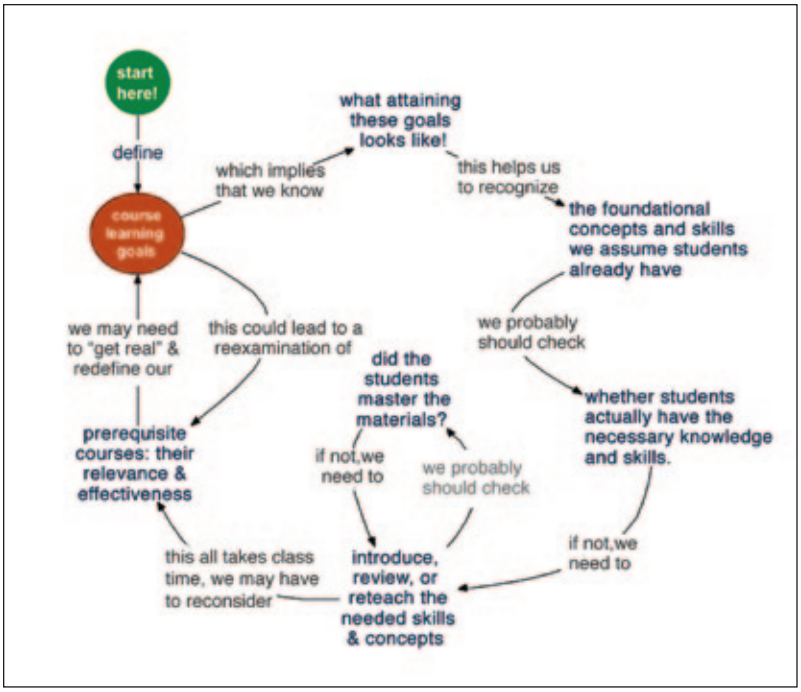
You may have noticed that the state of science education has been very much in the news of late, including reports from the National Academies (1) and editorials and articles in Science, the New York Times and the Wall Street Journal (2 – 4). Responses to the perceived problems in science, technology, engineering and mathematics education include calls for revised MCAT and College Advanced Placement exams, better science and mathematics standards (frameworks), and the appointment of prominent scientists, focused on education, to positions high in the government. While much of this activity has been centered on K-12 education, its impact can also be felt in higher education, where there is now greater emphasis on active engagement versus passive lecturing (5).

The problem

You might well ask yourself what drew so much attention to this subject — what is the evidence that our educational system is doing a bad job, that it needs reform? Early hints came from the work of Treagust and Hestenes and colleagues, together with an awareness that grades and conceptual understanding are not always correlated (6). One also can do one's own experiments — ask students or colleagues to describe the evidence that respiration and photosynthesis share a common evolutionary origin, explain why oil and water do not mix, describe the mechanisms by which mutations lead to novel phenotypes or consider whether DNA is inherently more or less stable than protein. The answers, or more often the hemming and hawing, might surprise you.

The recent emphasis on the science education system is based in large part on the perceived need to broaden the appeal of science and deepen appreciation for the scientific approach's value when thinking about a wide range of phenomena. While the current system is demonstrably adequate for those who succeed in it, it actively discourages the majority of students. All too often, the function of a science or math course is perceived by students (and, sadly, by some faculty) as a sorting mechanism rather than an opportunity to learn (and teach). This is a perception that can lead to the loss of important contributions and talent as well as misunderstanding of and hostility toward science within the broader community.

Recently, there have been a number of encouraging developments. For example, there is an increased emphasis on learning goals for science courses and curricula, although how far this has moved into the consciousness of most science educators is unclear. While learning goals are critical for effective instruction, they are essentially meaningless without a close link to informative assessment. Accreditation bodies, who you might think would be interested in the assessment of learning, only rarely require this type of data. Goals and assessments form complementary parts of a dialectic. The assessments needed are quite different from typical course exams (and assessments that correlate with exams are more or less superfluous). The types of assessments needed are those designed to reveal whether particular goals are realistic, whether they are being met, and if not, what is going wrong — they need to



map out how students are thinking about a particular idea.

In this light, it is critical that when a learning goal is formulated it is also illustrated: What exactly does it mean to achieve that goal? What kinds of questions should students be able to answer, and what should their answers contain? Such assessments dig deeper than the typical exam for a number of reasons (6, 7) and serve to provide feedback on the learning goals themselves as well as the pedagogical strategies used to attain them. Often authentic assessments (like Socratic dialogues) are uncomfortable for both the student and the instructor, since they are designed to reveal the limits of understanding rather than to identify who is paying attention. A simple strategy, applied to a multiple-choice question, is to ask students to explain why incorrect choices are wrong. This forces students to become explicit (and instructors to hear) about their understanding of both the question and the proffered response. When carried out rigorously, this dialectic between goals and assessments often reveals that apparently simple goals are quite complex and that students may not be prepared, either by curricular prerequisites or by their current instructional experiences, to address them. It also can reveal serious holes in students' understanding and, by implication, holes in course and curricular design.

A solution

Addressing such problems is not for the faint of heart and depends critically on the culture of the department and institution in which one finds oneself (as well as one's position in the hierarchy). Perhaps counterintuitively, a rigorous learning-goal analysis can lead to what appears to be a simplification of the materials presented, with the goal of producing a deeper, more rigorous and more confident understanding of key ideas. Consider, for example, gene expression. A thorough understanding of this process includes the thermodynamic factors involved in protein-protein and protein-nucleic acid interactions, the general effects of post-transcriptional and post-translational modifications, the stochastic and cooperative nature of the interactions that regulate transcription, RNA processing, transport, translation, the localization of gene products, the assembly of macromolecular complexes, the turn-over of RNAs, polypeptides and proteins, the repair of DNA and the geometric factors that regulate DNA's accessibility (epigenetics). From this perspective, for example, what is important about miRNA activity is not the details of miRNA processing but the fact that miRNAs (primarily) regulate mRNA stability and translation, a role (and in fact a mechanism) not conceptually distinct from that played by various proteins (a similarity rarely appreciated by students). A rigorous and confident understanding of the molecular underpinnings of gene expression prepares the student to approach more complex issues, such as making informed predictions about the effects of mutations and the behavior of the regulatory networks involved in adaptation, homeostasis and a wide range of processes from embryonic development to immune and nervous system function. But how many programs prepare students to even consider the noise inherent in gene expression and molecular behavior? And how many students howl in disbelief (or even recognize the error) when biological processes are displayed as deterministic, as is often the case, for example, in video presentations of various polymerization processes?

So how do we take science education seriously? I suggest that, just as in a scientific experiment, we must establish objective and informative assays and use the results of those assessments to provide feedback that serves to develop, constrain and redirect our learning goals. This is a contagious behavior, since it tends to infect other courses both within and beyond a particular department. If the learning goals in the biological sciences demand and depend upon an understanding of molecular-level phenomena, then we are within our rights to demand that the mathematics, physics and chemistry courses we require our students to take address these concepts. Within a departmental context, it is critical to present this type of analysis not as a critique of current teaching but as an opportunity to think seriously about the educational system in a scientific (that is, skeptical) manner. Effective change is likely to be evolutionary, not revolutionary; it will take a number of cycles of reflection based on informative assessment to achieve and continuing assessment to maintain a rigorous, welcoming and effective science education system. To paraphrase Socrates, perhaps we can come to appreciate that the unexamined course is not worth sitting through.

Mike Klymkowsky (michael.klymkowsky@colorado.edu) is a professor of molecular, cellular and developmental biology and co-director of CU Teach at the University of Colorado, Boulder.

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A history of black scientists

BY NICOLE KRESGE

1864 ***Rebecca Lee Crumpler*** becomes the first black woman to graduate from medical school in the U.S. and the only black woman to graduate from the New England Female Medical College, which merged with Boston University in 1873.

1916 ***George Washington Carver*** publishes the most popular of his 44 practical bulletins for farmers, promoting crops such as peanuts and sweet potatoes as alternatives to cotton. The bulletin is titled, "How to Grow the Peanut and 105 Ways of Preparing it for Human Consumption."

1947 ***Marie Maynard Daly***, a graduate student at Columbia University, becomes the first black woman to earn a doctorate in chemistry.

1935 ***Percy Lavon Julian*** completes the synthesis of physostigmine, a drug now used to treat glaucoma, to improve memory in Alzheimer's patients and as an antidote to nerve gas.

1889 ***Alfred Oscar Coffin*** becomes the first black person to obtain a doctorate degree in biological sciences.

1932 ***Hildrus Augustus Poindexter*** becomes the first black person to receive both an M.D., which he earns at Harvard University in 1929, and a Ph.D., which he earns in bacteriology at Columbia University in 1932.

1914 ***Charles H. Turner*** is the first to demonstrate that insects can hear.

1864 1876 1889 1893 1914 1915 1916 1925 1932 1933 1935 1941 1947

1925 ***Lloyd Augustus Hall*** develops a food preservation process known as flash-drying, which still is used by medical professionals today.

1941 The first blood bank in the U.S., set up by ***Charles Richard Drew***, begins operating.

1893 ***Daniel Hale Williams*** performs the first successful open heart surgery.

1915 ***Ernest Everett Just*** becomes the first recipient of the Spingarn Medal from the National Association for the Advancement of Colored People.

1876 ***Edward Alexander Bouchet*** earns a doctorate in physics from Yale University, becoming the first black person to receive a doctoral degree, in any subject, from an American university.

1933 ***Ruth Ella Moore*** becomes the first black woman in the U.S. to earn a Ph.D. in bacteriology.

In honor of Black History Month, we put together a timeline of noteworthy black researchers and their contributions to the life sciences. The list is by no means complete, and you should feel free to go to the online version of this article at bit.ly/ATodayTimeline and add your favorite black scientist in the comment section.

1966 ***Samuel Proctor Massie, Jr.*** becomes the first black professor at the U.S. Naval Academy, making him the first black person to teach full-time at any U.S. military academy.

1973 ***Shirley Ann Jackson*** becomes the first black woman to earn a doctoral degree from the Massachusetts Institute of Technology. Jackson later goes on to become the first black woman president of Rensselaer Polytechnic Institute in 1999.

1977 ***Henry Hill*** becomes the first black president of the American Chemical Society.

1987 ***Benjamin S. Carson*** leads the first medical team that successfully separates Siamese twins conjoined at the back of the head.

1991 ***Kenneth Olden*** is appointed director of the National Institute of Environmental Health Sciences and the National Toxicology Program, becoming the first black person ever to head an institute of the National Institutes of Health.

2006 ***Clifford W. Houston*** is chosen as the first black president-elect of the American Society for Microbiology.

1965 1966 1972 1973 1976 1977 1979 1987 1988 1991 1993 2006 2011

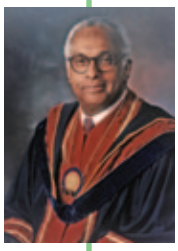
1972 ***Roland B. Scott***, sometimes called the father of sickle cell disease research, founds the Howard University Center for Sickle Cell Disease.

1976 ***Alexa Irene Canady*** becomes the first black woman to enter the field of neurosurgery as a physician in training.

1988 ***Patricia Era Bath*** receives a patent for the cataract laser probe, a device that painlessly removes cataracts, becoming the first black woman doctor to receive a patent for a medical purpose.

1993 ***M. Joycelyn Elders*** becomes the first black person to be appointed as Surgeon General of the United States.

1965 ***David Harold Blackwell***, a mathematician who made important contributions to the fields of applied mathematics and statistics, becomes the first black person to be inducted into the National Academy of Sciences.



1979 ***LaSalle D. Leffall, Jr.*** becomes the first black person to serve as national president of the American Cancer Society.

2011 ***William G. Coleman, Jr.*** is named scientific director of the National Institute on Minority Health and Health Disparities, becoming the first black scientific director in the history of the National Institutes of Health Intramural Research Program.

Ruma V. Banerjee and Stephen W. Ragsdale: *deciphering sulfur and carbon metabolism*

BY NICK ZAGORSKI

Scientists are used to expecting the unexpected in their research, but sometimes the surprising discoveries occur outside the petri dish.

Such is the case of Ruma V. Banerjee and Stephen W. Ragsdale, both professors in the department of biochemistry at the University of Michigan.

In the halls of Medical Science Research Building III, which houses the biochemistry department, Banerjee and Ragsdale are independent researchers who tackle intriguing biological problems. Banerjee, the Vincent Massey collegiate professor of biological chemistry, focuses on mammalian sulfur metabolism and its reliance on enzymes utilizing the cobalt-containing vitamin B_{12}, while Ragsdale studies the microbial metabolism of one-carbon compounds, which also relies heavily on metalloenzymes.

However, their connection goes beyond cobalt, nickel and iron. Banerjee and Ragsdale are partners in life as well as in the department; they have been married for nearly 20 years and share the successes and challenges that come with a life in research that intertwines with life outside the lab.

Chemistry in action

Their initial encounter occurred in 1989, when Stephen Ragsdale was a young assistant professor who had just established his own lab at the University of Wisconsin-Milwaukee. In graduate school, he became fascinated by microbes and the vast and unusual types of chemistry they could carry out and he decided to take up research in acetogenesis, the metabolic process used by certain anaerobic bacteria to create energy by converting carbon sources into acetate.

In particular, Ragsdale was examining the enzymes involved in the Wood-Ljungdahl pathway, which fixes organic carbon from carbon dioxide with the aid of coenzyme A. (Considering he did his graduate and postdoctoral studies with Lars G. Ljungdahl and Harlan Wood, respectively, Ragsdale certainly had the credentials to tackle this pathway.)

One day, he received a call from Rowena Matthews, a colleague and fellow microbial biochemist at the University of Michigan. The two had conversed previously at a microbiology conference, where she described her frustration at not being able to obtain redox measurements for a particular enzyme because the cobalt-containing cofactor had such a low redox potential.

"I had told her I'm sure I could get the measurements because my lab was working on a corrinoid/iron-sulfur protein with a similarly very negative redox potential, but we had managed to develop some techniques to overcome that, so she should let me know if she wanted any assistance," recalls Ragsdale.

In the phone call, Matthews took Ragsdale up on his offer and mentioned that she had just the perfect person, a bright and talented postdoctoral fellow, to come to Ragsdale's lab and collaborate on this effort.

• • •

In Michigan, Ruma Banerjee was packing her bags for a trip. She had been working with Matthews for about a year and a half on methionine synthase, which adds a methyl group to homocysteine to complete the biosynthesis of the amino acid methionine.

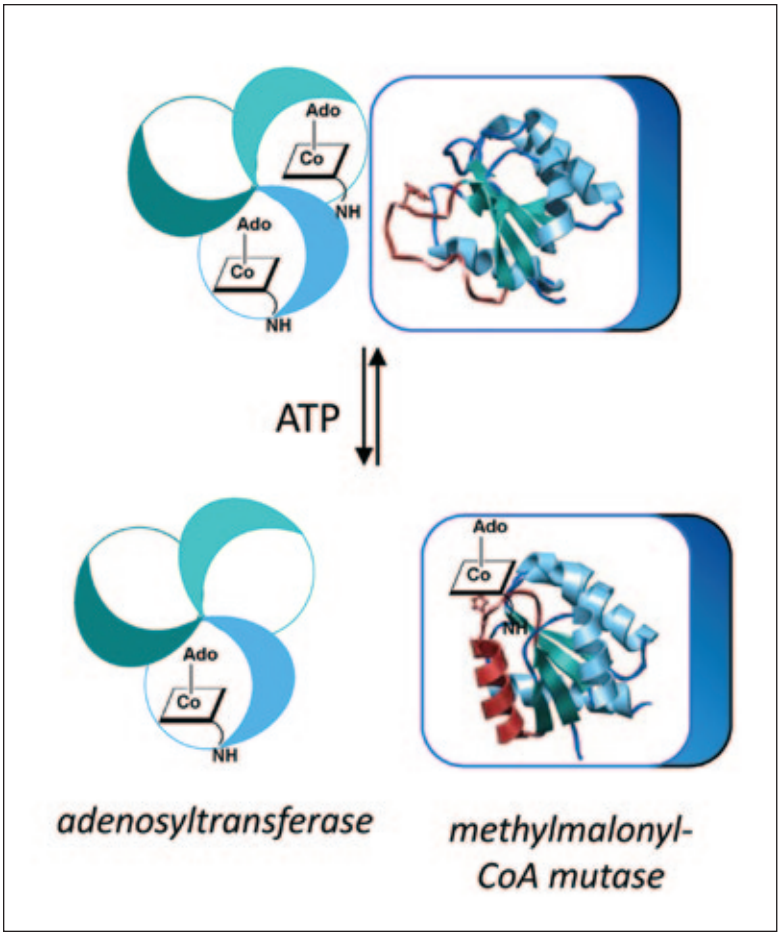
Her initial experiments had gone quite well — Banerjee had managed to clone and characterize the gene from

this enzyme in E. coli; however, her kinetic studies were stalling, as she was unable to analyze the transition of the vitamin B_{12} (cobalamin) cofactor from cobalt (II) to cobalt (I) during the reaction.

Matthews had arranged for Banerjee to do some measurements with a colleague in Milwaukee, Stephen Ragsdale. He had developed a new type of cell for spectro-electrochemical analysis (a method allowing spectroscopic detection of changes in oxidation state) that could analyze even minute changes.

After arriving, Banerjee and Ragsdale spent the next several days carrying out a host of experiments on methionine synthase. "It was intense," she recalls. "We did all these electrochemical and spectroscopy studies, and were getting great data.

"At the same time, there was definitely more than spectroelectrical chemistry going on in that lab."



Vitamin B_{12} is an essential cofactor that is both reactive and rare. Research in the Banerjee laboratory is revealing how an intricate network of proteins tailor and escort the vitamin from its point of entry to its target enzymes in cells.

Convergent evolutions

If one subscribes to the theory that opposites attract, then certainly Banerjee and Ragsdale were destined to find a spark from the moment they met, as their histories up to that point were a contrast in styles if ever one existed.

Banerjee, for her part, had quite a transient youth; as the daughter of a general in the Indian army, her family moved around quite a bit across the country, and she had attended 10 different schools by the time she was getting ready for college — a dizzying journey made even more astounding by the fact that Banerjee graduated high school at the age of 14.

Despite this constant fluidity, her goals solidified early on, and by the time Banerjee was 11, she had developed a strong desire to pursue scientific research, which she subsequently did, obtaining a bachelor's and master's degree in plant science from Delhi University.

"I can't really put my finger on any event or influence that seemed to steer me to science," she says. "It was more of a subconscious unfolding in that I always had a sense I was going down the right path."

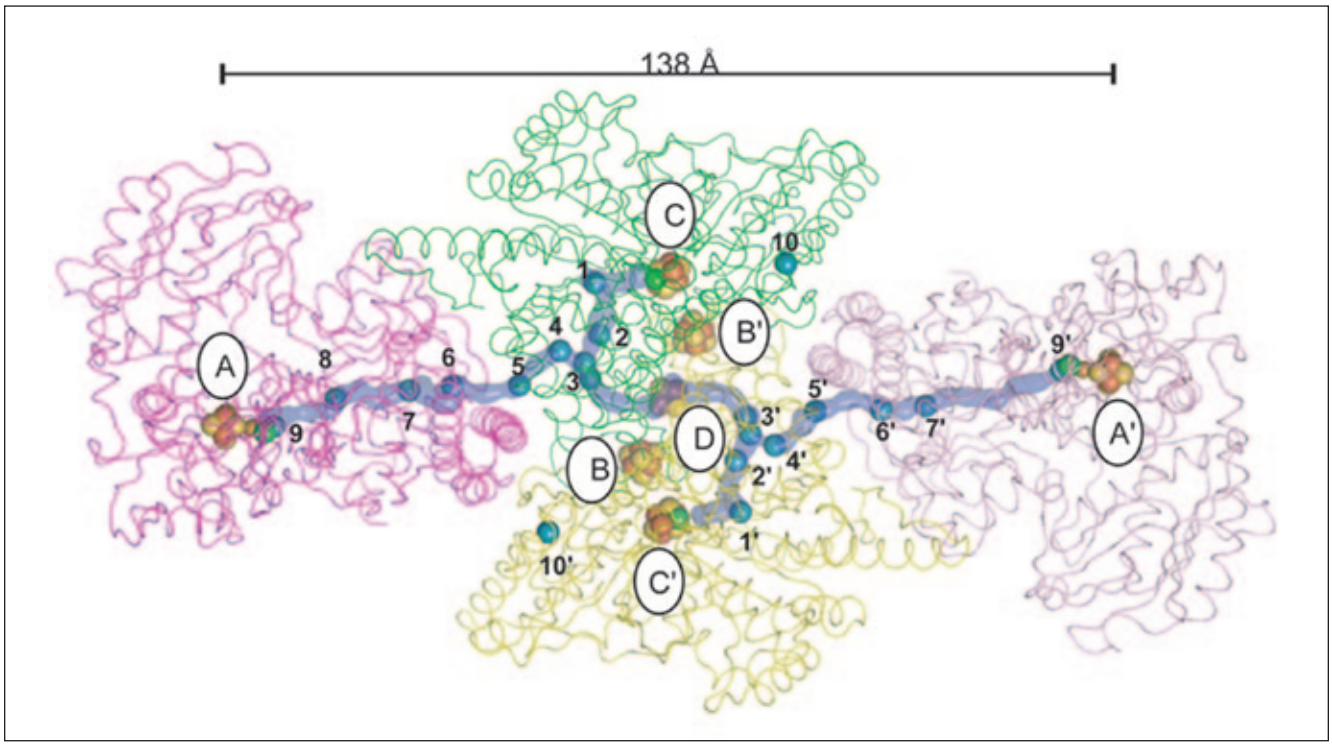
Ragsdale, by comparison, grew up in rural Rome, Ga., and spent his formative years in constant intellectual flux. He did enjoy science a great deal, but the manner in which science was typically taught — involving the rote memorization of terms and concepts — kept it as a secondary interest.

"I've always had a mind that was better at understanding things than memorizing things," he says. "So in high school and college I was always drawn more to arts and humanities classes, though it was really hard to corral myself to any one discipline."

Ragsdale's other great passion was music; in fact, he took a few years off from full-time studies at the University of Georgia to pursue a music career, singing at various bars and coffeehouses while working odd jobs to support his dreams of folk stardom.

But some chance encounters steered these distant partners a little closer together, both in physical distance and in academic fields.

Banerjee came to the United States to conduct her doctoral work at Rensselaer Polytechnic Institute in upstate New York after she met someone affiliated with the university



A gas channel between the active sites of CO dehydrogenase (C) and acetyl-CoA synthase (A). Ragsdale is studying this enzyme complex, which is responsible for reductive conversion of CO_2 to acetyl-CoA. Revised from Doukov, T. I., et al. (2008). *Biochem.* **47**, 3474-3483.

in India who encouraged her to attend, noting it was a fine scientific institute.

The only problem, Banerjee discovered, was that RPI did not have a botany program, so she switched her studies to chemistry, one of the school's strengths. At first, she considered switching schools, but she quickly became enamored with medicinal chemistry and synthesis reactions and decided to stay.

Meanwhile, Ragsdale had reinvigorated his science interests through personal readings and eventually decided to return to university full time. Not long after, he bumped into renowned scientist Marion M. Bradford at a soda machine.

As it happens, Bradford (inventor of the Bradford protein assay) and Ragsdale shared the same hometown and knew each other from church, so Ragsdale mentioned that he needed work to help pay for school and wondered if Bradford had any jobs in his lab for an undergraduate.

"He said sure and told me to stop on by," remembers Ragsdale.

Ragsdale took up a project studying the acrosome reaction in sperm, and immediately, the concept of research — using deductive skills and reasoning to solve a daunting biological problem — struck a chord. "It was like solving a puzzle," Ragsdale says. "It only took one day for me to get hooked."

Balancing life and lab

More than two decades later, Banerjee and Ragsdale still are hooked, both on each other and on their research in metabolism and enzymology, though they certainly have had to maneuver through the delicate balancing act of family and research.

Their first significant challenge was finding a suitable destination once Banerjee had finished her postdoc and was ready to start her independent career. The main goal was to find a place together, for, despite the relative proximity of Milwaukee and Ann Arbor, the constant travel between the cities was a hassle.

"We also made the conscious decision that we would not work in the same lab," Banerjee says. "Steve was a little ahead of me in his career, so when I started my independent work, I did not want to be seen as riding his coattails or risk working in his shadow."

They eventually found a suitable joint destination at the University of Nebraska-Lincoln, and both took positions there in 1991. "Initially, it was a compromise destination," Banerjee says, "but we quickly felt right at home,

and the time we spent there was extremely positive."

Along the way, they also helped bolster Nebraska's research reputation through their prolific research and numerous honors; Banerjee even helped establish the National Institutes of Health-funded Redox Biology Center at the university in 2002 to explore redox metabolism and its connection to disease.

Such outstanding work received notice, and the pair eventually was recruited back to Michigan in 2007 (though Ragsdale never officially attended Michigan, he says he felt like an adopted member of Matthews' lab, so it felt like a return trip).

Today, they continue exploring the frontiers of redox enzymology and one-carbon metabolism, though in different ways — Banerjee through studying mammalian pathways and clinical applications and Ragsdale through his work on microbial chemistry and applications in biotechnology.

"We do have joint lab meetings, so our students benefit from the shared expertise in our groups," Banerjee says. "But over the years we have managed to keep our research aims different and maintain scientific independence."

There were a couple of moments when they considered running a lab in parallel, she notes, but in the end they thought the management involved would be a little too complex.

"It's kind of funny," Ragsdale adds. "We started our relationship with a scientific collaboration, but in the 20 years since, we've both had independent careers; we've only published one Annual Reviews article together."

Molecular traffic patterns

Banerjee, who also serves as a member of the American Society for Biochemistry and Molecular Biology council, has focused her efforts on looking at how sulfur enzymes operate in the framework of a network. "What are the traffic lights that govern the flow of sulfur to help furnish cells with some very important reagents?"

In recent years, her group has been particularly interested in the trafficking of vitamin B_{12}, an essential vitamin that requires 30 dedicated enzymes to synthesize in bacteria. Although humans only have two B_{12}-requiring enzymes, both of which support sulfur metabolism (methylmalonyl-CoA mutase and methionine synthase), this rare vitamin is extremely important for every cell, as evidenced by a complex protein network involved in B_{12} trafficking.

Banerjee's group has been busy identifying and assigning functions to the genes involved in B_{12} maintenance, which include chaperones that escort this highly reactive molecule to various destinations and some novel enzymes that tailor the cobalamin molecule to its enzyme-specific active form. For example, she recently solved a long-standing mystery by revealing that a B_{12} chaperone called MMACHC also was responsible for cleaving off the cyanide group in cyanocobalamin, the form that's most prevalent in vitamin supplements.

Ragsdale has expanded his field of research to include methanogenesis in addition to acetogenesis, and his group recently elucidated the reaction for the final step in methane synthesis, demonstrating that the process is nickel-dependent.

"I've been getting excited about that area because not only does methane have many wonderful chemical properties, but it could be a great source of future energy," Ragsdale says. "There's lots of stored methane available, it's got a great energy potential and it's clean burning."

Following an eye-opening Gordon Conference on metals in biology, the formerly inorganic-adverse Ragsdale also has become interested in other classes of metalloproteins. One intriguing area his lab has just started investigating involves a potentially novel type of metabolic regulation in which thiol/disulfide redox switches regulate a protein's affinity for heme; these heme-regulatory motifs respond to conditions like oxidative stress and subsequently adjust protein function. The heme functionality also allows the protein to respond to gas-signaling molecules like carbon monoxide and nitric oxide.

And, in a discovery that definitely pleased his music-loving soul, Ragsdale even found one such thiol/disulfide redox switch on a key nuclear hormone receptor involved in the circadian cycle called Rev-erb. "It was not a planned occurrence, and I didn't name the protein," he says, "but it kind of highlights the wonders of science and how the right protein, or person, seems to find you."

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20 things to do in D.C.

BY NICOLE KRESGE

The 2011 American Society for Biochemistry and Molecular Biology annual meeting is fast approaching, and although your main purpose in Washington, D.C. will be to attend lectures and network, you probably will have some downtime in which to explore the city. Sure, you can visit the U.S. Capitol or the Smithsonian National Air and Space Museum and take a tour of the monuments, but the city has lots of other things to offer. To help you fill your free time, we polled the ASBMB staff and came up with the following list of 20 of our favorite things to do in the city.

1. View 15 buildings from around the world made entirely of LEGO® bricks at the **National Building Museum**. Many consider this museum's shop to be the best in the city, so even if you're not that interested in buildings, you may want to check it out!
2. Go to the top floor of the **National Gallery of Art East Building** and view Henri Matisse's paper cutouts. He created these by cutting colored paper into shapes, pinning them loosely to his studio walls, and later adjusting, recutting and combining them to his satisfaction.
3. Explore the grounds of the **Washington National Cathedral** and take a gargoyle tour to see the gargoyle fashioned after Darth Vader.
4. View one of the largest known blue diamonds, the Hope Diamond, at the **National Museum of Natural History**. The museum also has an 8.62 meter-long giant squid on display and an insect zoo with tarantula-feeding demonstrations.
5. Get a real taste of D.C. and order a chili half-smoke at **Ben's Chili Bowl** on U Street. For those of you who don't eat meat, Ben's also serves vegetarian chili and veggie dogs.
6. See Kermit the Frog, the Fort McHenry American flag that inspired Francis Scott Key to write "The Star Spangled Banner" and Julia Child's kitchen at the **National Museum of American History**.
7. Check out the **National Museum of Women in the Arts** — it's the only museum in the world dedicated exclusively to recognizing the contributions of women artists.
8. Take advantage of the mild spring weather and go for a walking tour of the city. **Washington Walks** conducts a variety of tours, including a haunted house tour and a memorial by moonlight walk.
9. Have a pint and a delicious plate of corned beef and cabbage and catch a (European) football match at **Fado Irish Pub** in Chinatown.
10. Sit on a bench at the **National Gallery of Art Sculpture Garden** and reflect on all the sculptures, including a giant typewriter eraser by Claes Oldenburg and a two-dimensional house by Roy Lichtenstein that recedes into space.
11. Visit the **National Zoo** and watch giant pandas Mei Xiang and Tian Tian or visit the giant Pacific octopus in the invertebrate exhibit.
12. Do some shopping, sample a variety of foods and catch some music at the free Lunch and Listen concert series at the **Old Post Office Pavilion**.
13. Meet up with friends, pick up some books and grab a bite to eat at **Kramerbooks and Afterwards Café and Grille** in Dupont Circle.

14. Join in the annual spring celebration at the **National Cherry Blossom Festival**, commemorating the gift of Japanese cherry trees from Mayor Yukio Ozaki of Tokyo to the city of Washington. You can catch the parade on April 9 or take a leisurely walk along the Tidal Basin to view the blooms.
15. Take in a free performance at the **Kennedy Center's Millennium Stage** every evening at 6 p.m. Acts include everything from performances by the National Symphony Orchestra to gospel groups.
16. Head over to the up-and-coming **Atlas District** for drinks and dinner. You can enjoy a beer and a game of Skee-ball or indoor miniature golf at the H St. Country Club.
17. View some of the amazing photographs that never made it into National Geographic at the **National Geographic Museum**.
18. See the taped door that led to Richard Nixon's resignation and try your hand at being a reporter or photographer at the **Newseum**.
19. Go for a **mule-drawn canal boat ride along the C&O Canal** in Georgetown. When you're done, stop at **Georgetown Cupcake**, meet the sisters from the TLC reality show and grab a tasty bite to eat.
20. Learn about the lives, languages, literature, history and arts of the Native Americans of the Western Hemisphere at the **National Museum of the American Indian**. Don't forget to save room for some food at the museum's Mitsitam Native Foods Café.

Above: View the giant typewriter eraser by Claes Oldenburg at the National Gallery of Art Sculpture Garden.

Left: Get a real taste of D.C. and order a chili half-smoke at Ben's Chili Bowl. PHOTO CREDIT: BOB JAGENDORF.

Nicole Kresge (nkresge@asbmb.org) is the editor of ASBMB Today.

Poster competition Q&A

The 15th annual American Society for Biochemistry and Molecular Biology Undergraduate Student Research Poster Competition is at 1 p.m. on April 9 at the Washington, D.C., convention center. In addition to showcasing quality undergraduate research, the competition will award cash prizes to poster winners. Here are some answers to questions you might have about the competition.

Q: ***If I submitted my abstract by the November 2010 deadline, am I automatically entered into the poster competition?***

A: No, you are not automatically entered into the poster competition. However, you are eligible to sign up for the competition beginning in January. We encourage all eligible undergraduates to enter the competition.

Q: ***How do I sign up for the poster competition?***

A: If you are a first author and submitted your abstract to an ASBMB topic category, you will have received an e-mail in January inviting you to sign up for the competition online. You also can go to the ASBMB website for information or follow us on Facebook.

Q: ***I submitted a late-breaking abstract; am I eligible to enter the poster competition?***

A: No, late-breaking abstracts are not eligible. However, you are welcome to visit the poster competition as a guest.

Q: ***I'm a travel award recipient; am I automatically entered into the poster competition?***

A: No, you are not automatically entered into the competition. You will need to sign up in early February (see above). Travel award recipients are required to participate in the poster competition.

For a complete schedule of poster competition events, go to bit.ly/2011Poster.

Online resources that make science fun for all ages

BY LOLA OLUFEMI

It's no secret that U.S. students are not as competitive in the sciences as their counterparts in other countries. While this can, in part, be attributed to the way science and math are taught in our nation's schools, it also stems from students' lack of interest in science. Fortunately, the internet offers a bevy of resources that make science less intimidating and more exciting.

Episodes of "Sid the Science Kid," an interactive cartoon that teaches the basics of experimental science, can be viewed online.

Experiencing science through experiments

Websites like Science Kids and Kids Science Experiments expose children to science through a variety of hands-on experiments using reagents that easily can be found around the house. For example, an experiment on Science Kids explains how to make a crystal snowflake using a supersaturated borax solution and some pipe cleaners. Detailed instructions are provided for the experiments on both sites, along with an explanation of the principles involved. The experiments can be easily adapted for classrooms, home or as a presentation at an event. And, when paired with an insightful question, the experiments make great science fair projects. The Science Kids website also has a number of educational games, quizzes and videos.

Anchored in a desire to increase science literacy, Bassam Z. Shakhashiri, a chemistry professor at the University of Wisconsin-Madison, created the Science is Fun website. Featuring mostly chemistry, the resource offers a variety of experiments that can be done at home. Visitors to the site also are encouraged to expand their knowledge by learning about the chemical of the week, which ranges from acetic acid to ozone. Under the Explore heading, the site offers chemical explanations for things observed in everyday life, such as the chemistry of color change in tree leaves. The site also contains links to other online resources, such as the American Chemical Society's "What's that stuff?" website, which explains the chemical properties of everyday materials like silly string, wasabi and trick birthday candles. If you like what you see, the site also lists upcoming chemistry-related events that are open to the public.

Companion sites

The "Sid the Science Kid" website is a companion site for the Public Broadcasting Service TV show "Sid the Science Kid." Visitors can view episodes of the interactive cartoon, which teaches the basics of experimental science, such as observing, comparing and contrasting. Each episode is built around a single scientific concept that is teamed with two or three experiments that can be performed at home. Characters on the show keep track of their findings by recording their data in journals. The site also contains simple animated games, such as "Super Duper Antibodies," in which kids can fight the flu by clicking on antibodies and placing them on flu viruses. Parents also can print activi-

ties from a large coloring book for offline entertainment.

The PBS website Kids Zoom also offers excellent tools for kids interested in science. The site is very child-friendly, and kids easily can navigate through it by themselves. The site is an online version of the children's show "Zoom" where kids can try the activities featured on the show. The site also allows kids to send in their favorite experiments, recipes, brain-teasing riddles and thoughts on current events. For example, Anastasia from Texas submitted instructions on how to make a biome in a baggie. Experiments listed on the website cover various subjects, including chemistry, engineering and life sciences. Each experiment gives kids the opportunity to share their feedback on how well they thought the experiment worked, allowing readers to incorporate changes to perfect the experiment. The site provides a healthy balance that allows kids to have fun while they learn.

Interactive lessons

Today's technology also offers students the opportunity to learn science in ways previous generations could not. Instead of being confined to textbooks and blackboards, students can experience science through interactive, illustrated, online lessons. The lessons often are paired with exercises, problem sets and quizzes, allowing students to challenge their newly acquired knowledge.

The Howard Hughes Medical Institute's Cool Science for Curious Kids site is geared toward younger scientists, such as those in primary school. Lessons here include "Classifying Critters," which explains taxonomy and asks viewers to group animals in the correct categories, and "Plant Parts Salad," in which kids learn about edible plant parts.

The Interactive Concepts in Biochemistry website is an interactive multimedia companion to Rodney Boyer's "Concepts in Biochemistry" textbook. This resource, aimed at high school and college students, offers everything from interactive animations of the Citric Acid Cycle to links to cutting edge articles highlighting recent developments in biochemistry.

Impressively, online lessons are not limited to English-speaking students. The Biology Project at the University of Arizona website offers problem sets and tutorials on cell and human biology in Spanish and Italian.

Science put to music

Alternatively, if students are not visual learners or if they have difficulty remembering concepts, they may benefit from an array of online science music videos. YouTube features a host of videos that have taken science and put it to music. Using melodies from popular songs, graduate students and professors introduce concepts like apoptosis, the polymerase chain reaction, glycolysis and gene regulation. (Some of these videos were featured in the June issue of ASBMB Today.) In addition to being entertaining, each song, paired with illustrations, helps make the concepts easy to understand and even easier to remember.

While not everyone will gravitate toward science explained via catchy songs, most will enjoy Science Songs for Teaching. This website features science songs, such as "Ana and the Telophase" by The Trigs, "The Mitosis Square Dance" by Robin Walling and "The Senses Boogie" by Mark and Morgan Kasmer. Much like the videos, the songs offer students a means of easily remembering concepts about a particular subject. The site also offers printable lyrics and teaching tips.

By creatively weaving science concepts with today's technology, educators have developed these informative yet entertaining resources to make science fun and easier to learn. With the ability to access the internet from smart phones and laptops, the resources can be used anywhere. So whether you're a teacher with students working on a science fair project or a parent with children looking for a way to entertain themselves, these engaging resources are sure to captivate their interest.

Lola Olufemi (olufemi_lola@yahoo.com) is a doctoral candidate/NSF BRIDGE fellow at the Southern Illinois University School of Medicine.

Online Resources

- Science Kids: sciencekids.co.nz
- Kids Science Experiments: kids-science-experiments.com
- Science is Fun: scifun.org
- What's that stuff?: pubs.acs.org/cen/whatstuff
- Sid the Science Kid: pbskids.org/sid
- Kids Zoom: pbskids.org/zoom
- Cool Science for Curious Kids: hhmi.org/coolscience/forkids
- Interactive Concepts in Biochemistry: bit.ly/InteractiveConcepts
- The Biology Project: www.biology.arizona.edu
- Science Songs for Teaching: songsforteaching.com

Do you have a favorite science website? Post it on the online version of this article at http://bit.ly/ATodaySciResources.

MAC still on task

BY CRAIG E. CAMERON

For more than a decade now, I have been a member of the American Society for Biochemistry and Molecular Biology Minority Affairs Committee. During this time, the committee's roster has expanded to its current size of 12. MAC's overarching mission is to inspire and facilitate diversity in biochemistry and molecular biology, and the increase in membership has led to more ideas for new directions and activities for the committee. During my tenure as chairman, my primary objective has been to keep the committee focused on bringing a few of these ideas to fruition. As I will discuss briefly here, the committee remains on task and is having a positive impact not only on minorities in ASBMB but also on the wider community of junior scientists who belong to the society.

The ASBMB annual meeting: a warm climate for all

When I think back to the first time I attended a large scientific conference like the ASBMB annual meeting, I still get chills. I was excited about presenting my work but intimidated by the vast number of people whom I did not know and even more concerned about their (possibly negative) responses to my work. The meeting came and went, but the perceptions from that first experience remain vivid some 20 years later. Having come of age in Richard Hanson's biochemistry department at Case Western Reserve University School of Medicine, I went to the meeting with graduate and postdoctoral students from the department as well as a third or so of the faculty. The networking opportunities were enormous; the number of people who engaged with me positively at my poster was huge. The impression on me was indelible: It motivated me to do more work, to attend more meetings and, ultimately, to commit to the service that I now do for ASBMB.

Unfortunately, the experience I had may now be more of an exception than a rule. Trainees do not, generally, attend our meeting as a part of a pre-existing community of members. Of even greater concern is the number of students who are not being engaged during the poster sessions. MAC has been active in developing strategies to address some of these issues. Last year, we hosted a networking reception that brought together minorities and travel award recipients, their mentors and the ASBMB leadership on the second night of the meeting. The event was such a big success that we exceeded the capacity of the venue. I received positive feedback throughout the meeting and already have received inquiries about the 2011 reception. We were able to establish a community for many of the students early enough in the meeting to increase the overall quality of their experience. We will hold a similar event this year and hope to see you there.

At the 2011 annual meeting in Washington, D.C., MAC will pilot a program aimed at enhancing the level of engagement of our students at the poster session. The general concept was inspired by MAC member Michael Summers. We will deploy groups of our travel award recipients and their mentors to the poster sessions. By mixing and matching travel award recipients and mentors, we hope to expand the passive mentoring that occurs for these trainees. And by having these groups seek out students who are not being engaged, we will increase the quality of the experience for our poster presenters. As a member of ASBMB, we ask you to join with MAC to accomplish this important goal. If each member pledges to visit five posters at random with the sole intention of engaging those who are not interacting with others, then all of our poster presenters will return home with a better perception of the meeting.

Making use of the Partnership for Diversity

In order for ASBMB to have a sustained, diverse membership, we not only need to recruit new, diverse members but also to retain our existing, young, diverse members. It is my belief that both recruitment and retention will be affected positively by having a diverse platform of award recipients and lecturers. Identifying people of color who are doing high quality science in biochemistry and molecular biology has not been easy. More than a year ago now, we launched the Partnership for Diversity to identify minorities in science and champions for diversity. While the list of partners still is short, we have been able to use it to increase the diversity of our platform at the 2011 annual meeting. In addition, we have been able to use this information to contribute to the list of scientists who we are featuring each month in the "Research Spotlight" section of our website. If you embrace diversity, please join the partnership.

The Ruth Kirschstein Diversity in Science Award

A few years ago, the ASBMB council approved the creation of an award to recognize an outstanding scientist who has shown a strong commitment to the encouragement and/or mentoring of under-represented minorities entering the scientific enterprise. The call for nominees went out for the first time last year. The inaugural award will be presented at the 2011 annual meeting to Arthur Gutierrez-Hartmann, a professor at the Anschutz Medical Campus of the University of Colorado-Denver School of Medicine.

Obesity, obesity, obesity

In keeping with tradition, our scientific programming for the annual meeting will deal with a disease of high public health significance — obesity. Sessions will cover topics ranging from the molecular basis of obesity to medical complications of obesity. I am particularly excited about the lecture from Nora D. Volkow. Volkow is the director of the National Institute of Drug Abuse and will tell us how the science of addiction also may apply to the treatment of obesity.

Outreach

The final activity that I would like to mention is our latest foray into outreach. In collaboration with the Education and Professional Development Committee, Regina Stevens-Truss and Ishara Mills-Henry of MAC will bring junior high school science students and their teachers from the D.C. area to the annual meeting for some special programming that promises to convey the thrill of discovery to all. The programming will emphasize strategies that each of us can use to connect with and engage this important, at-risk cohort. We are excited about the potential effects this outreach activity will have on educating the public and hope to repeat this line of programming annually.

MAC is busy! My priority has been to make the meeting a memorable experience for both our under-represented and junior scientists; to create scientific programming that is of broad appeal and will permit a platform of diverse scientists to be assembled; and to begin to prevent leaks in the pipeline of future scientists by targeting the underserved junior high school population, their teachers and their parents.

February is Black History Month. As important as it is to remember our past, it also is important to remember that the impact of blacks, Hispanics and Native Americans on the life sciences has yet to be fully realized. So as we look back, let's also look forward and use this month to say or do something to inspire the next generation of black scientists.

Craig E. Cameron (cec9@psu.edu) is the Paul Berg professor of biochemistry and molecular biology at The Pennsylvania State University and chairman of the ASBMB Minority Affairs Committee.

For more information

- The ASBMB Partnership for Diversity: www.asbmb.org/MinorityAffairs/register.aspx
- The MAC Research Spotlight: bit.ly/ResearchSpotlight
- The Ruth Kirschstein Diversity in Science Award: bit.ly/KirschsteinAward
- Obesity Programming at the annual meeting: bit.ly/Obesity2011
- Annual meeting STEM outreach programming: bit.ly/2011Outreach

Accreditation 2011— turning the corner

BY PETER J. KENNELLY AND J. ELLIS BELL

Background: to accredit, or not to accredit?

Biochemistry, molecular biology, and the combination of both biochemistry and molecular biology (hereafter referred to as biochemistry and molecular biology or BMB) have emerged as the majors of choice for large numbers of scientifically oriented college and university students across North America. On many campuses, enrollment in undergraduate BMB degree programs approaches or exceeds that of the well-established, centuries-old disciplines of mathematics, chemistry, physics and biology. This transformation from a fairly specialized subject pursued by a small cadre of aspiring faculty members and physicians into a widely recognized and heavily subscribed college major suggests the question, What role should the American Society for Biochemistry and Molecular Biology play in promoting and supporting high quality bachelor's degree programs in BMB? If we are and wish to remain the preeminent professional society in biochemistry and molecular biology, shouldn't we be as active in promoting high quality undergraduate education in our core discipline as we are in other areas, such as research?

Whenever our members find themselves discussing how ASBMB might act to promote the improvement and growth of high quality undergraduate education in BMB, the same question eventually arises: Why doesn't ASBMB accredit bachelor's degrees in biochemistry and molecular biology? Despite persistent misgivings regarding the feasibility of implementation, its logical simplicity and directness, along with the precedents offered by several other disciplines, render the question impossible to ignore.

What's in it for us?

An accreditation program for bachelor's degrees in biochemistry and molecular biology constitutes a powerful vehicle by which the ASBMB can

- **actively** and **visibly** promote excellence and innovation in undergraduate BMB education,
- **connect** with and **recruit** aspiring young biochemists and molecular biologists on a nation-wide scale and
- raise the **profile** and **relevance** of our society with BMB educators as well as professionals working in the commercial/industrial sector who often are frustrated with the heterogeneity in knowledge and skills exhibited by BMB majors emerging from different programs.

Receipt of an accredited degree will certify for prospective graduate schools or employers that the degree recipient in question has a) matriculated through a program whose curriculum and infrastructure meet the expectations of ASBMB and b) performed at a level competitive with his or her peers across the nation. Students graduating from lesser-known schools will be able to demonstrate their competitiveness with alumni of well-known programs. The prescription of minimum infrastructure and curriculum requirements by ASBMB will provide program faculty members with a lever to use in negotiations with administrators for personnel and other resources.

For the past three years, the members of the Education and Professional Development Committee, the regional directors of the Undergraduate Affiliates Network, and the members of the ASBMB council have engaged in vigorous discussions regarding the potential benefits, form and cost of an ASBMB-sponsored accreditation program for bachelor's degrees in BMB. As is typical for so many things of this magnitude, many aspects were found to cut both ways. The wide reach that renders accreditation so attractive is inexorably linked to the logistical problems of working with hundreds of programs and many thousands of graduates.

Where do we go from here?

Much remains to be determined, tested and modified. However, with the help of grants from the National Science Foundation and the Teagle Foundation, we are ready to move beyond discussion to piloting a prospective model for the accreditation process. If this empirical venture proves productive, we should be in a position to phase in a full, national degree accreditation program during the next few years.

The pilot accreditation model is designed to emphasize outcomes over form. To receive an ASBMB-certified degree, each student must graduate from an ASBMB-accredited program and exhibit a satisfactory performance on ASBMB's assessment. Students whose

performance is deemed outstanding will be recognized as graduating with distinction. No attempt will be made to specify a sequence of required courses. On the other hand, the requirement of a substantive experiential learning component and support for undergraduate research reflects the high priority placed by our society on these components of BMB education.

Perhaps the biggest challenge to be faced by the pilot program will be the design of an assessment instrument. The sheer number of students to be evaluated renders the use of a standard examination virtually inevitable. Ideally, such an exam should require students to display well-developed analytical and quantitative reasoning skills and to utilize several core defining concepts in biochemistry and molecular biology to synthesize their answers. Our goal is to incorporate this into an exam that is composed of roughly 10 questions answerable within a typical class period of one hour. While it should prove challenging to come up with a set of 10 questions each year that collectively possess the requisite range and balance, this approach will greatly deflate the value of rote memorization and render it difficult to teach to the test. Detailed rubrics will be provided to guide scoring by faculty members from participating institutions.

A community effort

Our proposed model for degree certification and program accreditation is unique in its reliance on community participation, its flexible approach to required curricula and its abandonment of the traditional omnibus multiple-choice examination. The coming months should determine whether assessment of student performance can be accomplished using a relatively small set of high value questions. If so, we will be poised to move forward as a society to play a more active and assertive role in shaping college-level science, technology, math and engineering education in general and BMB in particular.

Peter J. Kennelly (pjkennel@vt.edu) is a professor and head of the department of biochemistry at Virginia Polytechnic Institute and State University. He also is chairman of the ASBMB Education and Professional Development Committee.
J. Ellis Bell (jbell2@richmond.edu) is a professor of chemistry and chair of the biochemistry and molecular biology program at the University of Richmond.

ASBMB Receives Teagle Grant

The Teagle Foundation has awarded $40,000 to the American Society for Biochemistry and Molecular Biology to construct and pilot a concept-based exam suitable for assessing the core knowledge and fundamental skills of students graduating with bachelor's degrees in biochemistry and molecular biology. Development of this assessment instrument is a direct outgrowth of the 2008 white paper, "Biochemistry/Molecular Biology and Liberal Education," published by ASBMB and funded by Teagle. The long-term goal of this pilot project is to establish the experience and expertise necessary to construct and verify an assessment instrument suitable for use in the outcomes-based accreditation of bachelor's degree programs in biochemistry and molecular biology and certification of the performance of individual students.

The two principal investigators on the grant are Peter J. Kennelly, chairman of the ASBMB Education and Professional Development Committee and professor of biochemistry at Virginia Polytechnic Institute and State University, and Adele J. Wolfson, professor of chemistry at Wellesley College.

THE JOURNAL OF LIPID RESEARCH

Noteworthy JLR papers

BY MARY L. CHANG

The February issue of the Journal of Lipid Research features a commentary by Ruth Prassl (1) on a paper in which Yuhang Liu, et al. demonstrate a successful advanced method that allows for the quick freezing of low-density lipoprotein particles (2). Using this technique, Liu and colleagues were able to capture the intermediate state between isotropic and liquid crystalline.

The sample was examined by electron microscopy and 3-D reconstruction, and interestingly, the central density layer of LDL was perturbed, and its outer two layers were described by the authors as having a "disrupted shell"-shaped density. This paper's findings, taken together with the existing two-state phase transition model, demonstrate the dynamic nature of lipid nucleation from isotropic to layered packing during the lipid core phase transition.

Another study of note is a paper looking at the feasibility of using the apolipoprotein A-I mimetic peptide L-4F as a potential therapeutic to increase high-density lipoprotein function in patients with coronary heart disease (3). Catherine E. Watson and colleagues performed two clinical trials, one in which patients were given a daily dose of intravenous L-4F for seven days and another in which L-4F was administered by subcutaneous injection daily for 28 days.

The peptide generally was well tolerated by both studies' participants, but no improvement in HDL inflammatory index or paraoxonase was observed after single or multiple doses. Surprisingly, increases in two inflammatory markers, high-sensitivity C-reactive protein (hs-CRP) and interleukin-6 (IL-6), were observed following multiple doses of L-4F. Because the increase in hs-CRP was not dose-dependent, further study is needed to determine if L-4F is the sole culprit of the increase.

Mary L. Chang (mchang@asbmb.org) is managing editor of the Journal of Lipid Research.

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THE JOURNAL OF BIOLOGICAL CHEMISTRY

Two high notes for 'Eddy' Fischer in the JBC

BY ANGELA HOPP

The Jan. 21 issue of the Journal of Biological Chemistry contained two classic articles (1, 2) by Edmond H. Fischer, who shared the 1992 Nobel Prize in physiology or medicine with Edwin G. Krebs for their research on reversible protein phosphorylation.

Krebs trained with Carl and Gerty Cori, who discovered that muscle phosphorylase exists in two forms: phosphorylase *a*, which is easily crystallized and active without the addition of AMP, and phosphorylase *b*, a more soluble protein, which is inactive without AMP.

Previously, however, Fischer had purified potato phosphorylase, which had no AMP requirement. It seemed unlikely to Fischer and Krebs that muscle phosphorylase but not potato phosphorylase would require AMP as a cofactor, so they set out to elucidate the role of AMP in the reaction. They never discovered what the nucleotide was doing, but they did discover that muscle phosphorylase was regulated by an enzyme-catalyzed phosphorylation-dephosphorylation reaction.

The articles reprinted this January were both first published in JBC in 1955.

In the first, Krebs and Fischer describe experiments meant to determine whether environmental temperature affects the phosphorylase content of skeletal muscle. Though unable to detect temperature effects, they did make the surprising discovery that the muscle extracts contained mainly phosphorylase *b* rather than phosphorylase *a*.

In the second article, the researchers examine the requirements for the phosphorylase conversion and show that the conversion of phosphorylase *b* to phosphorylase *a* in cell-free muscle extracts requires a nucleotide containing high-energy phosphate and a divalent metal ion.

Angela Hopp (ahopp@asbmb.org) is managing editor for special projects of the Journal of Biological Chemistry.

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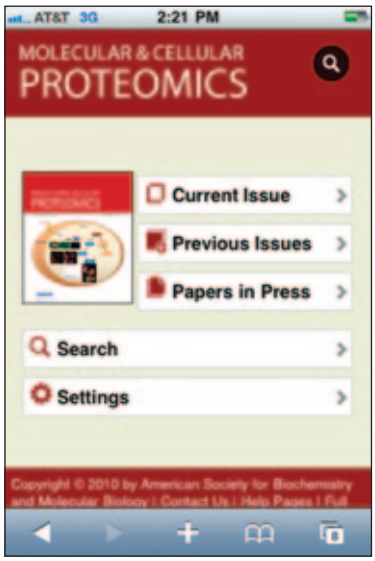
MCP MOLECULAR AND CELLULAR PROTEOMICS

jbc THE JOURNAL OF BIOLOGICAL CHEMISTRY

Digital journal access: as you like it

BY ANGELA HVITVED

It's not easy keeping up with the latest advances in research, but it can be even trickier keeping up with the technology that helps you keep up on the science. Fortunately, the American Society for Biochemistry and Molecular Biology is doing its best to continue putting the content of our journals at your fingertips — wherever those fingertips may be.



The tremendous popularity of smart phones and tablet computers allows access to the internet, and thus journal content, at almost any time or place. Although some may argue about the merits of reading this week's Papers in Press while on a family vacation at the beach, remotely accessible resources can be a great time-saver.

To this end, two of ASBMB's journals, Molecular and Cellular Proteomics and the Journal of Biological Chemistry, recently announced the release of alternate platforms for viewing content on the go.

In December, Molecular and Cellular Proteomics launched a mobile website with a pared down homepage that loads quickly and cleanly on mobile devices. The new mobile website retains all the features of the full website with an easy-to-use interface that is optimized for small screens. The mobile site can be used on most devices including iPhones and Android and Blackberry phones.

ASBMB members and MCP subscribers who go to mcponline.org from a mobile device will be redirected automatically to the mobile site, where they can view full-text versions of any MCP article, including all archived material and MCP's Papers in Press. Although the mobile site is designed specifically for optimized viewing on mobile devices, readers who would rather use the full site still can navigate there by simply clicking the link at the bottom of the mobile home page. The creation of MCP's mobile website was part of a development test by the journal's publishing platform, HighWire, and feedback from users of the new website has been quite positive thus far.

Building on the successful introduction of MCP's mobile website, JBC announced the launch of an iPhone app in January, which can be downloaded for free from the iTunes app store. Although it is tailored to operate on iPhones, the app also can be installed and run on iPads. Different from a mobile website, the iPhone app is based on RSS feeds and does not retain all of the functionality of the full website, but users can move easily between the full website and the app interface. An added feature of the app is a "share this" button that allows users to quickly share a link to the article via e-mail, Facebook or Twitter with the click of a button.

The JBC app currently is limited to iPhone users, who comprise the bulk of ASBMB's mobile users. However, Nancy Rodnan, ASBMB's director of publications, has indicated that plans are under way to develop mobile websites for both JBC and the Journal of Lipid Research that will be usable on any mobile device. Additionally, the society is investigating the development of a full-fledged iPad app for JBC that would allow users to cache content so articles could be viewed offline. This truly would allow for access to content anytime and anywhere, provided you are not caught without your trusty mobile device. XOXO

Angela Hvitved (ahvitved@asbmb.org) is managing editor of Molecular and Cellular Proteomics and a science writer for ASBMB Today.

Fellowships 101: policy opportunities for scientists

BY SARAH EDWARDS

For those of you who crave a career outside of the lab, you are in luck — there are loads of fellowship opportunities for scientists who want to work in the policy realm. Whether pre- or post-doctoral degree, you can help translate science into policy for executive and legislative branch leaders. A policy fellowship provides you with the opportunity to communicate science to nonscientists, conceivably shaping legislation at the state or federal levels.

Life as a National Academies fellow

I recently completed one of these fellowships: the Christine Mirzayan Science and Technology Policy Graduate Fellowship at the National Academies in Washington, D.C. The fellowship appealed to me, and likely to my 25 fellow fellows, because it's a quick and dirty introduction to federal science policy in our nation's capital.

The fellowship began with an intensive one-week orientation. Former fellows told us about their current positions in the departments of State, Energy, Agriculture and Defense; in the House and Senate science committees; and at think tanks or private firms. We also met the director of the President's Council of Advisors on Science and Technology, who works in the White House's Office of Science and Technology Policy. A bowl of alphabet soup, anyone?

During orientation we delved into the workings of the National Academies (this includes engineering, medicine and science). The National Academy of Sciences was the first of the academies, chartered by President Abraham Lincoln as an independent organization to provide the nation's leaders with scientifically sound advice. The twelve-week fellowship program places fellows in a variety of departments within the National Academies, from science education to astronomy to climate change.

My home department at the National Academy of Sciences was the Board on Army Science and Technology. Here, my doctorate degree in chemistry finally came in handy as I immersed myself in the U.S. Army's chemical weapons disposal project. The U.S. has stockpiles of the blister agent mustard gas, several nerve agents and the arsenic-containing Lewisite left over from the cold war era and before. To increase our safety a few notches, the U.S. has ratified an international treaty to destroy all of these stockpiles. I learned this as I traveled to army bases, met with BAST committee members from academia and industry, and talked to experts about the army's chemical demilitarization progress.

D.C. has a ready supply of governmental and nongovernmental policy organizations, so I met with program directors at the National Science Foundation, the National Institutes of Health, the American Chemical Society, and the American Society for Biochemistry and Molecular Biology. On Capitol Hill, I observed House and Senate hearings on science policy from advancing STEM education to finding solutions for global warming. I attended lectures at think tanks like the Brookings Institution and the Potomac Institute, and I visited the Smithsonian museums carpeting the National Mall. The twelve weeks flew by, and after the fellowship ended, I took a Duke University job in science administration. My fellow fellows returned to academia to finish graduate school or begin professorships, entered or returned to the business world, went to teach high school, stayed at the National Academies, or started new jobs or fellowships in the policy world. The National Academies is one of the few places you can jump into policy before finishing your doctorate, but post-doctorate, you have your choice of opportunities.

Fellowship offerings

In the realm of public policy, but not specifically science policy, the Presidential Management Fellowship is a two-year fellowship open to science doctorate holders as well as nonscientists holding advanced degrees. This fellowship program seeks future federal leaders, and PMFs are placed in a variety of federal agencies. Two of my National Academies classmates accepted positions

within the NIH at the National Institute of Allergy and Infectious Diseases. NIH fellows can rotate every three to six months, a key attribute of this fellowship. Current fellow Mengfei Huang says, "As a Presidential Management Fellow, I have an unparalleled opportunity to shape my fellowship experience across different content areas and functionalities within my institute, across the NIH as well as other federal agencies. Talk about being a kid in a candy store!"

The most prominent fellowship in science and technology policy is the American Association for the Advancement of Science policy fellowship in Washington, D.C. This program hosts more than 100 new fellows annually in a variety of federal agencies. The three main fellowship divisions are diplomacy, security and development; energy, environment, agriculture and natural resources; and health, education and human services. One or two AAAS fellows can score a congressional fellowship — working as committee staff or personal staff for a senator or representative — but the more common route for this fellowship is through a scientific professional society. The American Chemical Society, the American Geological Institute, the American Physical Society and many others sponsor a fellow each year for the AAAS Congressional program.

Of the three AAAS fellows who were my National Academies classmates, two chose the diplomacy, security and development fellowship with placements at the U.S. Agency for International Development and the third works on the Hill. Current AAAS fellow Hadas Kushnir says, "At USAID, I am learning how science can best inform policies, strategies, and program implementation both in Washington and in the field across a number of different countries in Africa."

Another AAAS, the American Academy of Arts and Sciences, offers their Hellman Fellowship in science and technology policy. The academy, a policy think tank in Cambridge, Mass., selects one or two fellows with science doctorates to work on the social implications of current science research questions. This one-year fellowship program currently is in its third year.

ASBMB offers a fellowship similar to the American Academy of Arts and Sciences one. It also is geared toward science doctoral degree holders but has a few extra perks: It can last up to 18 months and offers a more personal exploration of federal science policy. The selected ASBMB science policy fellow works directly with ASBMB Director of Public Affairs Benjamin Corb, in Bethesda, Md.

California offers a state version of the American Association for the Advancement of Science federal science and technology policy fellowship through the California Council of Science and Technology. In this program, 10 fellows (all with science doctorates) work in Sacramento for the state legislature on policy issues important to California. This one-year fellowship is in its second year, and my National Academies classmate Tony Marino is a current fellow. According to Marino, "California has been a bellwether for science policy, being the first state to pass an e-waste recycling program, green chemistry and a carbon cap-and-trade. It's a great place to learn about where the country is headed."

For those of you interested in global science policy and further along in your careers, the Franklin Fellows Program in D.C. offers a one-year placement in the Department of State or USAID. I met a Franklin fellow at a congressional hearing on science education; she was on a one-year sabbatical from her university and likely will be an invaluable resource on science education policy once she returns.

If you are interested in broadcasting or publishing, the American Association for the Advancement of Science offers a program where fellows spend ten weeks at a major media outlet within the U.S. This Mass Media Science and Engineering summer program is a nonpolicy fellowship where you can learn how to communicate science to the general public. This program is open to pre- and post-doctoral degree holders, and each fellow has the option to work behind the scenes in research, as a production assistant or editor, or even in front of the camera as a reporter.

Besides these programs, other smaller and subject-specific fellowships abound — check with your professional organizations, the policy office at your local university, a local think tank or a career center at your workplace. Think broadly and apply for any program that strikes your interest.

Sarah Edwards (cardinalrose@gmail.com) is a science administrator at Duke University's Center for Systems Biology.

For more information

For links to these fellowships, and more, go to http://bit.ly/ATodayFellowships.

The Lipid Research Division: director's update

BY DANIEL RABEN

A new year has begun, and it's time to reflect on our past year as well as look ahead. The Lipid Research Division continues to grow, and we've made progress in a number of areas. Two are of particular interest. First, the Steering Committee developed an LRD handbook and bylaws, both of which will be posted soon for all LRD members to review and comment on. Second, thanks to Katherine E. Ward, a graduate student in Rob Stahelin's laboratory at the University of Notre Dame, our Lipid Corner website has been greatly improved. Ward is our new Web editor and is doing a terrific job. The website has a new look, and we are constantly adding updates, including meeting announcements, award notices and job openings.

The annual meeting

Each year, two LRD members are selected to organize the lipid theme for the American Society for Biochemistry and Molecular Biology annual meeting. Last year's meeting was very successful, largely due to the efforts of Mary F. Roberts from Boston College. The 2010 symposia were well attended, especially the talk by Sarah Keller, who was the first recipient of the LRD Young Investigator Award in Lipid Research. This award, like the senior Avanti Lipid Research Award, is generously supported by Walter Shaw of Avanti Polar Lipids. Shaw also awarded a lipid extruder to a lucky attendee at a lipidology workshop organized by Wonhwa Cho of the University of Illinois at Chicago, Lina M. Obeid of the Medical University of South Carolina and Robert Stahelin of Indiana University. Shaw continues to support the Young Investigator Award and plans on giving another door prize at the 2011 annual meeting lipid workshop.

Speaking of the annual meeting, Vytas A. Bankaitis of the University of North Carolina at Chapel Hill School of Medicine and Teresa M. Dunn of the Uniformed Services University of the Health Sciences have organized a very exciting theme for 2011. The theme will cover a breadth of topics, including phosphoinositides, phospholipase D and phosphatidic acid, sphingolipids and neutral lipid metabolism and trafficking. The sessions will highlight the emerging topics in these fields.

Goals for 2011

There are a couple of important goals ahead of us for 2011. First, the Lipid Advocacy Committee, chaired by Yusuf A. Hannun of the Medical University of South Carolina, is increasing its efforts to address the difficulties of lipid research funding. Hannun has organized an discussion between the Lipid Research Advocacy Committee and scientific research administrators from the National Institutes of Health at the 2011annual meeting. The hope is to begin outlining the problems and possible solutions to the ever deepening funding crisis. This is the first step in our efforts to address this important issue.

The second goal pertains to some critical LRD administrative issues. One of the important outcomes of formulating division bylaws is the establishment of procedures for nominating and electing new leadership. While I have fully enjoyed being the de facto director for the LRD, it's time we instituted a system for regular nominations and elections of LRD directors. We plan on holding our elections in alternate years from the election of the ASBMB president. Thus, 2011 will mark the first year in which we hope to nominate a new director. With that in mind, be sure to start thinking of energetic and creative people you believe will help move the LRD even further.

Here's wishing for another successful year and for more exciting science from our members!

Daniel Raben (draben@jhmi.edu) is director of the ASBMB Lipid Division and a professor in the department of biological chemistry at the Johns Hopkins University School of Medicine.

For more information

- The ASBMB Lipid Research Division: www.asbmb.org/lipidcorner
- The 2011 annual meeting lipid theme: bit.ly/2011LipidTheme

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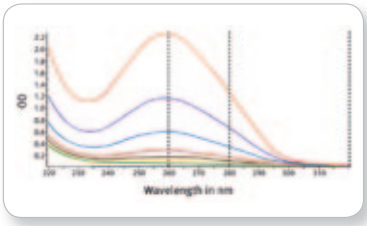

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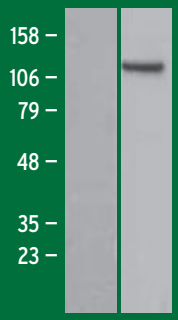

HEK293 were transfected with L) empty vector R) TrueORF for Myc/DDK-tagged hTERT(Cat# RC217436). The lysates were analyzed using anti-DDK antibody to show over-expression of hTERT. *DDK is the same as FLAG.

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