JULY 2006

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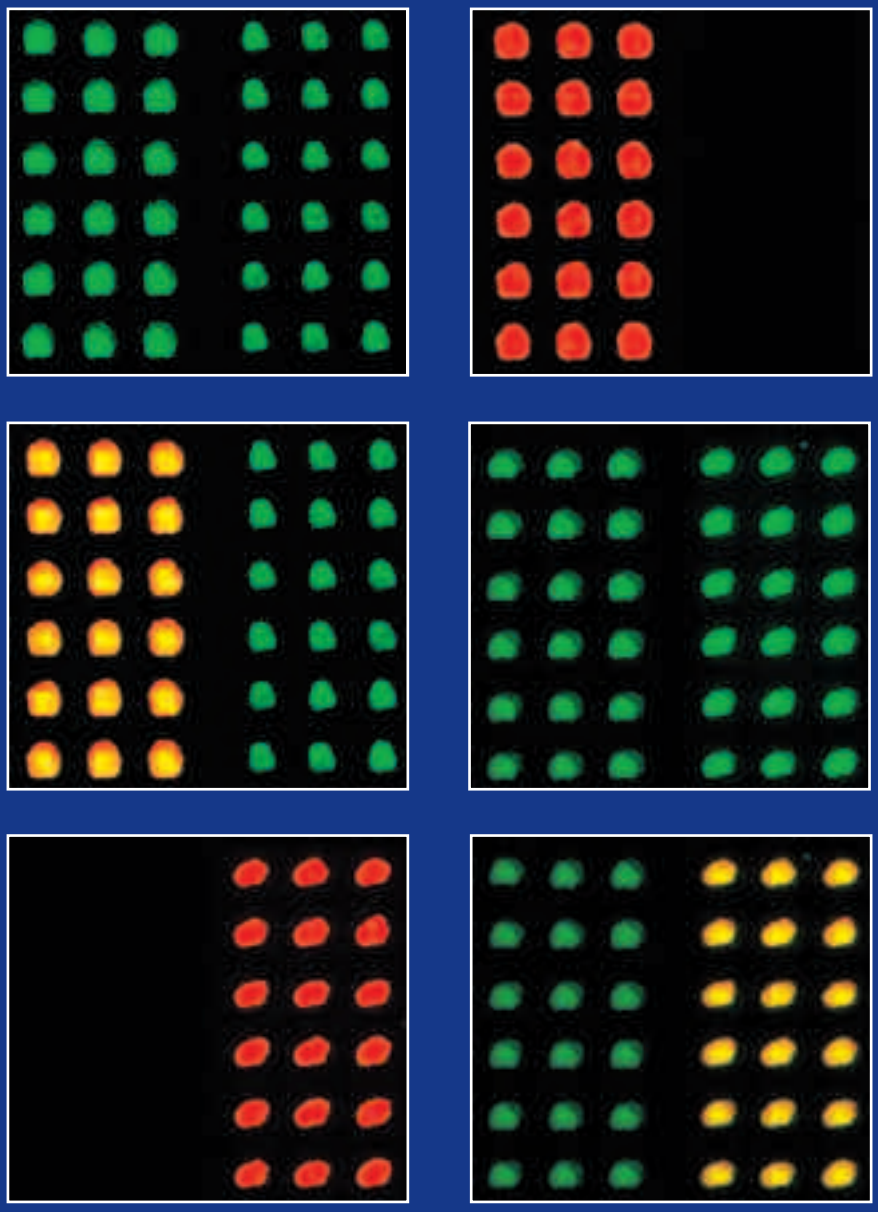

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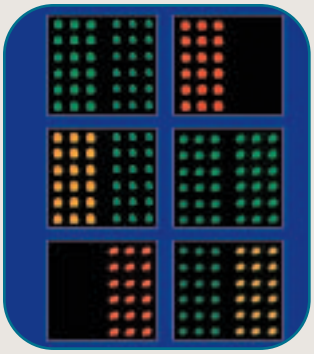
Volume 5, Issue 4



ON THE COVER:

20 Using Antibody Ultramicroarrays to Detect Low Concentrations of Biomakers. For more information, see ASBMB Biobits.

features

24

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14

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An ASBMB Perspective

Greetings! This is my first message to you as President. It's been a pleasure this last year as President-Elect to work closely with Judy Bond, ASBMB staff and many ASBMB members on an issue that is critically important: the quality of peer review of NIH grant applications. I'd like to give you a report on where we are and what we hope to be doing in the coming year in this area.

We rely on the peer-review system at NIH and we know that it is one of the main reasons for the preeminence of our scientific enterprise. The resources of the NIH must be allocated as the result of a fair and rigorous competition among scientists. Thus, there was strong support from the scientific community of the Blue-Ribbon Panel headed by Bruce Alberts, then President of the National Academy of Sciences, that proposed the sweeping reforms in 1998 that have led to the new Integrated Review Group (IRG) structure.

A central recommendation of that study proposed constant oversight of the review groups in each IRG by leading scientists in the field. At the time, Bruce Alberts described this as a "great once-in-a-lifetime opportunity to create a system that won't be just locked in place, but can continually be evaluated by outside experts—and in which modern science, which is changing so rapidly, can really be adequately supported and tracked."

Currently, however, the IRGs are reviewed only once every 5 years. In November, 2005, after a number of conversations with biochemists about these problems, I convened a group of ASBMB Past Presidents and members of the Blue Ribbon Panel to talk about these issues. We are concerned about the current lack of ongoing oversight. Our concern stems from extensive conversations with scientists in the areas of biochemistry and molecular biology who have told us that reorganization of the Biochemistry and Cell Biology IRGs had decreased the number of biochemistry study sections. Because of the breadth of the reorganized study sections, their work is not receiving adequate peer review. In addition, a search of the CRISP database showed that many biochemists whose grants had been funded before reorganization fared poorly afterward. We fear that on a 5-year oversight schedule, it will be several more years until there will be a comprehensive review of the reorganization in these areas. We are concerned that we risk losing a whole generation of our most productive biochemists and molecular biologists if we wait that long to correct the problems.

Some particular problems we have seen are: 1) an uneven quality of study sections, 2) large, oversubscribed study sections that are often populated with ad hoc reviewers and Assistant Professors, and 3) study sections whose members come largely from the previous study sections with a particular expertise, but who now are reviewing grants in other areas of expertise. A check of the Center for Scientific Review (CSR) web site showed that more than 50% of members of study sections that cover biochemistry and molecular biology are ad hoc.

At that time, we wrote a letter to Dr. Antonio Scarpa, Director of CSR, and made the following suggestions to begin to address these problems.

It is critical that the oversight of IRGs be ongoing. We suggested, and the Blue Ribbon Panel also envisaged, a fine-tuning of study section quality and expertise on an annual basis. This

on Peer Review

Dr. Heidi E. Hamm

seems to be especially important in the early years of a new system.

Senior researchers who have served as regular members of study sections should be encouraged to continue to serve on study sections, even if in an ad hoc capacity once a year rather than as full-fledged members.

The study section membership must fit the charge of the study section. Especially for some of the recently reorganized study sections, there appears to be a major mismatch between the clearly laid out charge and the expertise of the members.

Study section size should be manageable. Rather than have huge study sections that are very broad, more study sections with appropriate expertise should be created. In creating these study sections, we suggested that CSR obtain input from the scientific community as well as the suggestions of Scientific Review Administrators (SRAs), who know what areas are not being served.

Finally, we suggested that assistant professors without tenure should be protected from service on study sections.

We carried through on this letter by speaking with Dr. Scarpa in a series of one-on-one meetings, as well as asking him to address the ASBMB Council meeting in December 2005.

In response to our concerns, Dr. Scarpa told us that the peer review system is overwhelmed with more grant applications than can be handled—in fact applications have almost doubled since 1998 (23,000 in 1998; 43,000 in 2005). He also told us of a number of ways the CSR is dealing with this large increase in grant applications (see CSR web site).

We asked him whether he would welcome a survey of our members asking if senior scientists are willing to participate in study section peer review. He welcomed this suggestion, and we sent you, the ASBMB membership, a survey asking if you were willing to serve on a study section, even if you had already served in the past. We heard from many of you (1,123 responses). Of the respondents, 80% were current NIH grantees, and 71% had already served on a study section.

Of course, everyone is busy, and study section service is onerous—1-2 months per year are required. Nevertheless, the positive response to our request was notable—700 Associate and Full Professors who have already served on a study section are willing to serve again. We also received numerous comments with very many good suggestions for dealing with the crisis in peer review. We presented this list to Dr. Scarpa and the CSR, and forwarded the numerous comments as well. We appreciate how strongly you feel about this issue!!

Dr. Scarpa was highly appreciative of our efforts. He asked us if we would ask other scientific societies to conduct similar surveys, and we are working with FASEB as well as several other scientific organizations on this. I was invited to present the results of the survey at a FASEB Conference on Peer Review that was held in early June, and several scientific organizations have asked us to help them conduct similar surveys.

We are working closely with the CSR to add more study sections in the various areas of expertise in biochemistry. There are many other changes taking place under Dr. Scarpa's leadership at the

Continued next page

On June 6, a delegation of ASBMB officials met with NIH Director Elias Zerhouni and Dr. Norka Ruiz-Bravo, NIH's Deputy Director of Extramural Research. From left to right: Dr. Ruiz-Bravo; incoming ASBMB President Heidi Hamm, Vanderbilt University; Dr. Zerhouni; current ASBMB President Judith Bond, Penn State University Medical Center; and Dr. Robert E. Palazzo, Rensselaer Polytechnic Institute, member of the ASBMB Public Affairs Advisory Committee and FASEB President-Elect.

Continued from previous page

CSR to address the issues. Some other changes being implemented include electronic submission of grants, videoconferencing of study sections, and more detailed discussions of controversial decisions in electronic chat rooms. There is also discussion about decreasing the length of the RO1 proposal.

A few of our members responded that they had never been asked to serve, but that they are willing. We have asked Dr. Scarpa bout this and, as you know, it is a federal regulation that the review process use strict criteria of geographic, female and minority membership. Thus, some scientists in the Northeast and California have not been asked because there are so many willing reviewers in these areas. Please, if you are willing to serve, and missed responding to the survey, send an e-mail to me (heidi.hamm@ASBMB.org) or Barbara Gordon (bgordon@asbmb.org). These efforts are critical, because the entire endeavor depends on the volunteer efforts of the very best people.

Of course, we also understand that when the NIH budget is flat (or falling, considering the effects of high inflation rates on the costs of biomedical research supplies and equipment), success rates are low, and that there are extraordinary stresses on all aspects of the system. Thus, a focus of both my own and ASBMB activity during this year will be to become more active in getting the message out to our local communities and our congressmen about the extraordinary benefits to society of biomedical research: the impact on human health, training the next generation of creative and talented scientists, the highly leveraged investment in job and infrastructure creation in our local communities and, finally, the impact of all these things on the competitiveness of our nation in the world.

Next month, I will be asking your help and participation in a grass-roots effort to get this word out to every community where there is an ASBMB member.

Heidi E. Hamm
ASBMB President

ASBMB Election Results

The ASBMB recently conducted an election to select new members for the Council, Nominating Committee, and Publications Committee. With the results of these elections come several changes in the Society's governing and support committees.

Dr. John D. Scott and Dr. Kevin Struhl

John D. Scott and Kevin Struhl have been elected to the Council, replacing William Brinkley and William Smith. Scott is currently a Senior Scientist at the Vollum Institute and Professor of Biochemistry at Oregon Health & Science University in Portland. He is also a Howard Hughes Medical Institute investigator. Scott received his B.Sc. in biochemistry from Herriot-Watt University in Edinburgh, and his Ph.D. from the University of Aberdeen. His current research focuses on the specificity of signal transduction events that are controlled by anchoring proteins. Struhl, who is the David Wesley Gaiser Professor in the Department of Biological Chemistry & Molecular Pharmacology at Harvard Medical School, studies gene regulation in yeast and in humans. He earned his undergraduate degree from the Massachusetts Institute of Technology and his Ph.D. from Stanford University.

Newly elected to the Publications Committee are Toni M. Antalis and Dennis R. Dean, who replace Karen Browning and Catherine Drennan. Antalis is a Professor in the Department of Physiology at the University of Maryland School of Medicine in Baltimore. She attended Furman University for her undergraduate studies and received her Ph.D. from Rice University. The long term goal of Antalis' research is to better understand the biology of serine proteases and their inhibitors (serpins) and to investigate their potential as targets for diagnostic applications or rational drug-based therapies for cancer and other diseases. Dean is Professor of Biochemistry and Director of the Fralin Biotech Center at Virginia Tech. He received his B.A. from Wabash College and his Ph.D. from Purdue University. The major emphasis of work in his laboratory involves the biochemical-genetic analysis of nitrogenase catalysis and the molecular mechanisms of metallocluster formation.

Dr. Toni Antalis and Dr. Dennis Dean

Dr. Jennifer Doudna

Vincent C. Hascall finished his term on the Nominating Committee and has been replaced by the newly-elected Jennifer A. Doudna. Doudna is currently a Howard Hughes Medical Institute investigator and a Professor of Molecular and Cell Biology and Chemistry at the University of California, Berkeley. She received her B.A. from Pomona College and her Ph.D. from Harvard University. Doudna is interested in the structures and mechanisms of RNA catalysts and the roles of structured RNA molecules in protein secretion and translation initiation.

Senate Bill Would Create National Institute of Food and Agriculture

A bill has been introduced in the Senate that would create a National Institute of Food and Agriculture (NIFA) in the United States Department of Agriculture (USDA). This is the latest chapter in a years-long saga to establish a new, competitive agricultural research program. In 2003, language was attached to an agriculture appropriations bill instructing the USDA to establish a task force to "evaluate the merits of establishing one or more National Institutes focused on disciplines important to the progress of food and agricultural science," as well as assessing the existing USDA research programs. The Research, Economics and Education Task Force, as it was called, was chaired by Dr. William Danforth, chancellor emeritus of Washington University, and met several times before producing its report in July, 2004.

The task force report recommended the creation of NIFA, in the model of the National Science Foundation (NSF), within the USDA to better foster the "highest caliber of fundamental agricultural research." FASEB originally supported the creation of NIFA. In a letter to USDA Secretary Ann Veneman, then-FASEB President Paul Kincade wrote, "FASEB strongly believes that the establishment of a National Institute for Food and Agriculture will foment a culture of scientific eminence and innovation in agriculture that will be of great benefit to our nation." For many years, FASEB had advocated funding for the National Research Initiative Competitive Grants Program (NRI) at the USDA. Unfortunately, NRI and competitive research have never fared well in the agricultural appropriations process, in which a culture of earmarking funds tends to leave very little discretionary spending. Research advocates, including FASEB, hoped that NIFA, as an independent entity, might garner more support from Congress and be protected against targeted programs, in the way NSF and the National Institutes of Health (NIH) have remained largely untouched by earmarks.

In November 2004, Senator Kit Bond (R-MO) introduced a bill (S. 3009), the National Food and Agriculture Science Act, which would have placed NIFA at NSF. This placed FASEB and many others in the research community in the difficult position of supporting NIFA in concept, but unable to support the legislation that would make it a reality. Bond's bill would have taken the infrastructure suggested for NIFA in the Task Force report, which had envisioned the Institute as an independent agency, and superimposed it on the pre-existing management structure at NSF, which would have caused a number of administrative problems. Additionally, this marked the beginning of limited federal budgets, and there was concern that the addition of NIFA would take away from existing NSF programs.

The new NIFA legislation (S. 2872), introduced in May 2006 by Senators Jim Talent (R-MO) and Tom Harkin (D-IA), has resolved this conflict by placing the proposed agency back within the USDA. Moreover, the bill contains language clearly designed to win over the broader research community, such as "the research of the Institute supplements and enhances, and does not replace, research conducted by other agencies of the Department, the National Science Foundation or the National Institutes of Health." Finally, the legislation has adopted a number of interesting provisions originally proposed by the Task Force that conceived NIFA, including creating an Office of Advanced Science and Application, designed to facilitate translation of basic research advances, and an Office of Scientific Assessment and Liaison, which would continuously evaluate the research portfolio and scientific workforce in agricultural sciences.

FASEB has sent letters of support to the sponsors of the legislation, as well as to Senator Saxby Chambliss (R-GA), Chair of the Senate Committee on Agriculture, Nutrition and Forestry, to which it has been referred. A House counterpart is expected soon. However, given the limited number of days left in the legislative session, it is unlikely the bill will move forward in this Congress. Also at issue is whether there is money for NIFA. The bill authorizes the agency at $245 million to start, growing to a level of $966 million by 2011. Even if the bill were to pass both chambers of Congress, it is questionable whether it would be supported by the agriculture appropriators, who would ultimately have to allocate money to NIFA.

by Peter Farnham, CAE, ASBMB Public Affairs Officer

Open Access Issues Still Alive

As Washington enjoys an atypically mild spring, interest in issues associated with open access to papers resulting from scientific research funded by the federal government is heating up among lawmakers in both the House and Senate, with report language and a bill being introduced.

House Report Language

The House Appropriations Subcommittee on Labor, Health and Human Services, and Education marked up its annual funding bill in early June (see the article on the ASBMB home page for information on funding). The bill included language requiring NIH-funded scientists to provide their papers to PubMed Central, the National Library of Medicine's electronic database, within twelve months of publication. Here is the exact language:

"The director of NIH shall require that all investigators funded by NIH submit an electronic version of their final, peer-reviewed manuscripts upon acceptance for publication to the NIH NLM's PubMed Central as soon as practicable but no later than 12 months after the official date of publication."

The language was inserted by Rep. Ernest Istook (R-OK), and marks the third consecutive year he has inserted such language in the bill. It tracks very closely with NIH's current policy, with one exception: it *requires* that investigators submit a copy of their papers. Current NIH policy is that submission is strongly encouraged, but not required.

The 12-month time limit is also consistent with NIH policy. We are informed that the language originally called for only a 6-month delay. However, nonprofit publishers led by the DC Principles for Free Access to Science Coalition (of which ASBMB is a member) are engaged in ongoing discussions with NIH about how to help NIH implement a workable public access policy. Some subcommittee members were aware of these ongoing discussions and did not want to preclude them from going forward.

ASBMB currently complies with most of the requirements of the language. ASBMB's Papers in Press (PIP) makes all final peer-reviewed manuscripts accepted for publication in ASBMB journals available within a day or two of acceptance to anyone with access to a computer. In addition, ASBMB releases each year's collection of published papers free of charge at the end of each calendar year. However, the language would still require authors to submit their manuscripts to NLM.

Meanwhile, in the Senate…

The adage that "politics makes strange bedfellows" has rarely been more manifest than in the alliance formed by John Cornyn (R-TX) and Joe Lieberman (D-CT). Cornyn is among the most conservative Republicans in the Senate, and Democrat Lieberman, of course, was Vice President Al Gore's running mate in the 2000 Presidential election. Nevertheless, the two have found common ground and paired up to introduce the Federal Research Public Access Act of 2006.

This bill would apply to every federal agency with an annual extramural research budget of $100 million or more (11 different federal agencies). The bill directs those federal agencies to require any researcher funded totally or partially by the agency to submit an electronic copy of a final manuscript that has been accepted for publication in a peer-reviewed journal to "a stable digital repository maintained by that agency or in another suitable repository that permits free public access, interoperability, and long-term preservation." It also requires free online access within six months of the article's publication in a peer-reviewed journal.

ASBMB has signed onto two letters criticizing this bill—one prepared by the DC Principles Coalition, and one prepared by FASEB. The problem with this legislation, as with the Istook language, is that it is harmful to nonprofit publishers, particularly those of smaller, less frequently published journals. As the DC Principles letter to Cornyn and Lieberman states, the policy ignores the many contributions publishers make to "ensuring the publication and dissemination of accurate scientific information: peer review, copy editing, formatting, printing, publishing on-line, searching, and permanent archiving. These services require a substantial private sector investment that results in prompt access to trusted research results and the reliable archiving of articles at no additional cost to the public."

Fortunately, there does not appear to be a move afoot in the Senate at this time to act on the Cornyn Lieberman bill. We will, of course, watch its progress (if any) and keep you informed.

and Kicking on Hill

News Flash: PLoS Raises its Fees

Finally, in case you missed it—and you may have—the Public Library of Science was forced to raise its publication fees "to reflect more closely the costs of publication." As PLoS notes on its website, "From 1st July 2006, the publication fee for our flagship journals PLoS Biology and PLoS Medicine will be $2500; for our community journals PLoS Computational Biology, PLoS Genetics, and PLoS Pathogens it will be $2000. PLoS Clinical Trials is priced at $2500."

Readers may recall that PLoS used to charge $1,500 to publish in PLoS Biology and PLoS Medicine; thus, it has instituted a whopping 67% price increase to publish in its major journals. However, PLoS notes that "we will ensure that any future increases in the publication fees will be as reasonable as possible."

Says DC Principles Coordinator Martin Frank, "Why didn't we ever think of that?"

House Starts to Move on Appropriations Bills

The House Appropriations Committee began to mark up funding bills for 2007 in May, and the news is decidedly mixed for life sciences research. The good news is that the National Science Foundation was fully supported at the President's request in the House bill, approved by the House Appropriations Committee on June 13. The President had asked for an 8 percent increase, to $6 billion, for NSF. This is a $439 million increase over last year's figure. The agency plays an important role in the President's American Competitiveness Initiative, announced during the State of the Union message last winter.

The report language is still being written, but we know that Research and Related Activities, where the bulk of NSF money is spent, is funded at $4.66 billion, an increase of $334 million over last year. Education and Human Resources receives a modest increase, but is still funded at $832 million. All other NSF programs, except for funding to support operations of the National Science Board, received increases above those of last year.

The bill is expected to make it to the House floor by the end of June. Long-time NSF observers (including this writer) are very pleased with the mark. It is one of the few bright spots for science funding in an otherwise very bleak funding picture.

Unfortunately, the National Institutes of Health suffered a severe blow during subcommittee markup on June 7. It was funded at the President's request of $28.35 billion, level with 2006. The vote was along party lines, and the funding level was ratified by the full Appropriations Committee on June 13. Readers will recall from last month's funding report that we had succeeded in obtaining an additional $4.1 billion for health and education programs in the budget resolution. Unfortunately, none of this money went to support NIH, although it did serve the purpose of filling holes in the bill that would have taken money from NIH if the $4 billion were not available.

Representative Mike Castle (R-DE) was the leader of the group of centrist Republicans who forced the House leadership to add the $4.1 billion to the funds available for health and education (with a promise of $3 billion more to come at the end of the appropriations process). However, even though NIH is flat-funded, Castle is not likely to object to the bill because House leaders informed him that the additional funds may not become available until the House conferences with the Senate, which will not likely occur until the fall. In addition, House Appropriations Chairman Jerry Lewis (R-CA) has already provided $4.1 billion of the promised $7 billion.

We have also received assurances during face-to-face meetings with House appropriators that at the end of the year, NIH will receive some kind of increase, although not the 5 percent the community is seeking, to make up for the flat funding it received in 2006.

The L/HHS bill also contains approximately $1 billion in projects (earmarks) for Members to highlight while campaigning in their respective districts. It is thus likely to pass.

U.S. National Science Foundation Celebrates Opening of Beijing Office

Representatives of the U.S. National Science Foundation (NSF), the U.S. Department of State, the Chinese government and Chinese scientific societies celebrated the opening of NSF's research operations office in Beijing on May 24.

"China and the United States have a long history of cooperation in scientific research," said NSF Director Arden L. Bement, Jr. "Over the years, the National Science Foundation has worked with many organizations in China to bring together world-class scientists and engineers from our two nations. These collaborations have not only advanced the frontiers of discovery, they have also established relationships of mutual respect and friendship."

"Perhaps the most enduring benefit of international collaboration in science and engineering is its power to bring people together to pursue common goals and build a world of peace and prosperity," Bement said.

The National Science Foundation is a U.S. government agency that supports fundamental research and education across all fields of science and engineering, with an annual budget of $5.58 billion. NSF funds reach all 50 states and several countries through grants to nearly 1,700 U.S. universities and institutions. Each year, NSF receives about 40,000 competitive requests for funding, and makes nearly 10,000 new funding awards. The NSF also awards over $400 million for professional and service contracts yearly.

Bement was joined by Clark Randt, U.S. Ambassador to China; Chen Yiyu, president of the Chinese National Natural Sciences Foundation; Bai Chunli, executive vice president of the Chinese Academy of Sciences; and William Chang, director of the new office.

The ceremony was held at the NSF Beijing Office, which occupies a suite in the Silver Tower high rise located in Beijing's Chaoyang district. The office is part of the U.S. Embassy in China and officially began operations in September 2005.

"With China's increasing importance as a world science and technology player, it is vital for the United States to sustain interactions with international counterparts and specifically with China's rapidly growing science sector," said Ambassador Randt. "The NSF Beijing Office gives the United States a better opportunity to work jointly to seek science-driven solutions to common problems for the benefit of the globe."

The Beijing office is managed by NSF's Office of International Science and Engineering (OISE), which serves as a focal point for international science and engineering activities both inside and outside the foundation. Specifically, OISE works to build and strengthen effective institutional partnerships throughout the global science and engineering research and education community, and supports international collaborations in NSF's priority research areas to expand and enhance leading-edge international research and education opportunities for U.S. scientists and engineers, especially early in their careers.

According to the NSF report, Science and Engineering Indicators 2006, China ranked fourth in the world in the year 2000 in research and development, with $48.9 billion in expenditures. Two years later, the country ranked third, behind the United States and Japan, spending an estimated $72.0 billion on R&D.

"It is important for the U.S. scientific community, especially young researchers, to be aware of and consider collaborating with colleagues in China in this environment," said Beijing office Director William Chang.

The NSF Beijing Office is NSF's third foreign office. NSF also maintains research offices in Paris and Tokyo.

Noted Cancer Researcher Anita B. Roberts Dies

Renowned cancer researcher and ASBMB member Anita B. Roberts died of gastric cancer May 26 at her Bethesda, Maryland home. The 49th most-cited scientist in the world and the third most-cited female scientist, she was chief of the Laboratory of Cell Regulation and Carcinogenesis at the National Cancer Institute.

She and her research partner, Michael Sporn of Dartmouth Medical School, won the 2005 Komen Foundation Brinker Award for their work on molecules that can turn a healthy cell cancerous. She also received FASEB's 2005 Award for Excellence in Science and delivered a lecture entitled "TGF-β-Journey of Discovery and Promise" at EB 2005 in San Diego.

Dr. Anita B. Roberts

Roberts, who joined the National Cancer Institute in 1976, achieved international acclaim for her work in growth factor research, having discovered and characterized the cytokine transforming growth factor-β (TGF-β) together with Michael Sporn. Her research established roles for this peptide in autoimmune disease, fibrogenesis, carcinogenesis, and wound healing which are leading to the development of new therapies for these diseases. She was a past president of the Wound Healing Society, authored over 330 articles, and served on numerous scientific advisory and editorial boards.

Roberts obtained her Ph.D. from the University of Wisconsin for the study of the metabolism of retinoic acid with Hector DeLuca, followed by a postdoctoral fellowship at Harvard University Medical School. She was among the first group of NIH scientists elected to the Senior Biomedical Research Service

"When I was first diagnosed with cancer, I was angry about my research," she said in an interview published in the Spring 2006 issue of the journal, *Cancer Research*. "I thought, 'What have I been doing for 25 years? Who cares what compound binds to what piece of DNA?' That lasted about a week. Then I realized we now have drugs based on what we understand from our basic research."

"Cancer is not just a disease of a tumor cell. It's a disease of where the tumor cell is and what the surrounding cells are telling it. That's what makes cancer similar to a wound that doesn't heal, and that's why we're also interested in wound healing."

Roberts is survived by her husband of 41 years, Robert E. Roberts of Bethesda, two children, Greg Roberts of Alpharetta, Georgia, and Karl Roberts, of Grand Rapids, Michigan, a sister, Dorothy Derge of Frederick, Maryland, and five grandchildren.

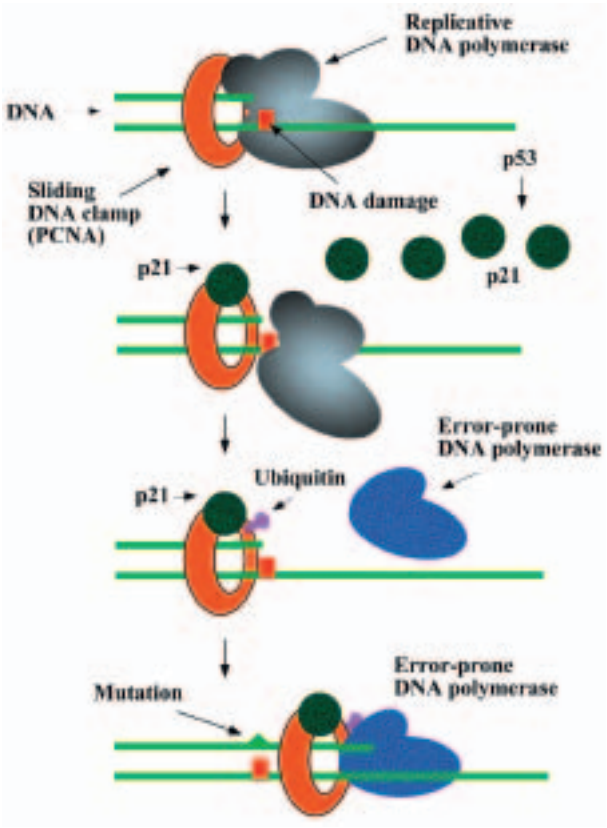
A Molecular Security Mechanism for Keeping Mutations in Check

Everyone knows mutations are bad: the more mutations in a cell's DNA, the higher the risk of cancer developing. But in the last few years it has become clear that the very processes that generate mutations, if they take place at a relatively low frequency, can actually protect us from cancer. But how does the body know how to keep these processes in check? A preliminary answer to this question has come from research carried out by Zvi Livneh of the Weizmann Institute of Science in Israel. The results of the study appeared in the May 5 issue of the journal *Molecular Cell*.

Normally, during DNA replication, DNA polymerase is unable to continue copying when it encounters mutations caused by radiation or chemical damage. However, there is a family of DNA polymerase that is capable of copying through the errors. These polymerases perform translesion DNA synthesis (TLS), an error-prone DNA repair process that involves DNA synthesis across DNA lesions.

Although this may seem paradoxical—intuitively, a careless enzyme should result in more mutations—each of the polymerases is tailored to deal with a certain type of DNA damage. This specialization is what keeps the level of mutation, and thus the cancer risk, low. But the existence of these polymerases also requires precise regulation, otherwise a proliferation of mutations may ensue.

Livneh and his team discovered a security mechanism that prevents such proliferation of mutations. This mechanism allows the right enzyme to go to work at the right time, and only when it is needed. The polymerases are controlled by the tumor suppressor p53, and by the cell cycle inhibitor p21 via its PCNA-interacting domain. The proteins keep the polymerases in check and maintain a low mutagenic load. The scientists showed that if p53 or p21 is inactivated, an out of control lesion-bypass activity occurs, increasing the mutational load. They believe that the regulation may be mediated by binding of p21 to PCNA and via DNA damage-induced ubiquitination of PCNA, which is stimulated by p53 and p21.



The regulation of translesion DNA synthesis by p53 and p21.

Dr. Zvi Livneh in his lab.

Zvi Livneh is an expert in the field of DNA repair and mutagenesis. He received his B.Sc. in Chemistry from Tel Aviv University and his Ph.D. from the Weizmann Institute of Science. Livneh completed postdoctoral studies in the Department of Biochemistry at Stanford University School of Medicine in California. In 1985, he joined the staff of the Weizmann Institute's Department of Biochemistry, a department he headed from 1993 to 1997. In 1992, he was a Visiting Professor at the Johns Hopkins University School of Hygiene and Public Health. He has headed the Weizmann Institute's Department of Biological Chemistry since 2002. Livneh is the recipient of numerous awards, including a Yigal Alon Scholarship, the Weizmann Institute's Morris Levinson Prize, and the Israel Sarov Memorial Prize, awarded by the Israel Society for Microbiology. He is the incumbent of the Maxwell Ellis Professorial Chair in Biomedical Research.

Newly Discovered Protein Kills Anthrax Bacteria by Exploding Their Cell Walls

Not all biological weapons are created equal. They are separated into categories A through C, category A biological agents being the scariest. They are easy to spread, kill effectively and call for special actions by the public health system. One of these worrisome organisms is anthrax, which has already received its fair share of media attention. But work in Vince Fischetti's laboratory at Rockefeller University suggests that a newly discovered protein could be used to fight anthrax infections and even decontaminate areas in which anthrax spores have been released.

"Anthrax is the most efficient biowarfare agent. Its spores are stable and easy to produce, and once someone inhales them, there is only a 48-hour window when antibiotics can be used," says Fischetti. "We've found a new protein that could both potentially expand that treatment window and be used as a large-scale decontaminant of anthrax spores." Because anthrax spores are resistant to most of the chemicals that emergency workers rely on to sterilize contaminated areas, a solution based on the protein would be a powerful tool for cleaning up after an anthrax attack.

All bacteria, anthrax included, have natural predators called bacteriophage. Just as viruses infect people, bacteriophage infect bacteria, reproduce, and then kill their host cell by bursting out to find their next target. The bacteriophage use special proteins, called lysins, to bore holes in the bacteria, causing them literally to explode. Fischetti and colleagues identified one of these lysins, called PlyG, in 2004, and showed that it could be used to help treat animals and humans infected by anthrax. Now, they have identified a second lysin, which they have named PlyPH, with special properties that make it not only a good therapeutic agent but also useful for large-scale decontamination of areas like buildings and military equipment.

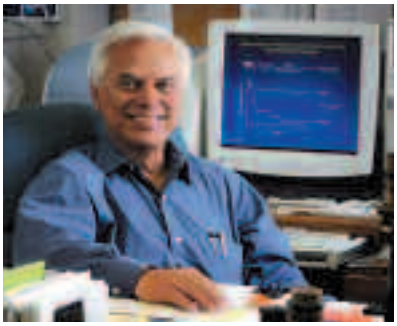
The new protein has several advantages. Most lysins, including PlyG, are only active in a very specific pH range of six to seven, so that they work very effectively in our bloodstream, but may not be useful in many environmental conditions. "PlyPH works in an extremely wide pH range, from as low as four to as high as eight," says Fischetti. "I don't know of any other lytic enzyme that has such a broad range of activity."

In addition, PlyPH, like PlyG, is highly specific in terms of the types of bacteria it affects. When Fischetti and colleagues added PlyPH to different bacterial species, only the anthrax bacteria were killed. This is a great advantage over antibiotics, which kill many different kinds of bacteria, including many helpful species. Because it is so specific, the chances of anthrax becoming resistant to PlyPH, as it is to many of the antibiotics currently available to treat it, are extremely low.

"We have never seen bacterial resistance to a lysin," says Fischetti. "PlyPH and PlyG are probably the most specific lysins we, or anyone, have ever identified—they only kill anthrax and its very close relatives. This feature, and the wide pH range offered by PlyPH, is why we think it could be used as an environmental decontaminant."

Fischetti hopes to combine PlyPH with a non-toxic aqueous substance developed by a group in California that will germinate any anthrax spores it comes in contact with. As the spores germinate, the PlyPH protein will kill them, usually in a matter of minutes. The combined solution could be used in buildings, on transportation equipment, on clothing, even on skin, providing a safe, easy way to fight the spread of anthrax in the event of a mass release.

ASBMB member Vincent A. Fischetti, professor and co-head of the Laboratory of Bacterial Pathogenesis and Immunology, is a microbiologist specializing in the study of group A streptococci. He received a B.S. in bacteriology from Wagner College in 1962, an M.S. in microbiology from Long Island University in 1967, and a Ph.D. in microbiology from New York University in 1970. He has been affiliated with The Rockefeller University since receiving his Ph.D., as a postdoctoral fellow from 1970 to 1972, a guest investigator from 1972 to 1973, an assistant professor from 1973 to 1978, an associate professor from 1978 to 1990 and professor since then. Fischetti is the recipient of numerous awards, including a 10-year National Institutes of Health MERIT Award that commenced in 1987 and was renewed in 1997. He is also the editor-in-chief of *Infection and Immunity*, and previously served as assistant editor of the *Journal of Experimental Medicine*.



Dr. Vincent A. Fischetti

ASBMB 2007 Lipid Theme:

The Chemical Biology of Lipids

By Hugh Rosen, Steven Kliewer, Dennis Voelker and Michael Gelb

The central role of the biochemistry and molecular biology of lipids as an organizing nexus for cellular organization and compartmentalization, signaling and transcription will be the focus of the Lipid Theme at ASBMB in Washington in 2007. Each of the four plenary sessions will be accompanied by a Young Investigator Award to encourage postdoctoral fellow and graduate student participation. ASBMB has been fortunate in attracting plenary speakers who are integrating lipid structure, biochemistry and function, often at the leading edge of methodologies, as critical regulators of integrated systems biology. We are especially grateful for the presence of the Nobel and/or Lasker laureates who are supporting this theme at the 2007 meeting by their participation.

The Lipid Theme is organized in four sessions:

Lipids in Transcriptional Signaling (Chair: Steven Kliewer, UTSW)

Lipid Synthesis, Compartmentalization and Transport (Chair: Dennis Voelker, National Jewish Medical Research Center)

Chemical Biology of Lipid Signaling (Chair: Hugh Rosen, Scripps)

Protein-Lipid Interactions (Chair: Michael Gelb, University of Washington)

The "Lipids in Transcriptional Signaling" session will feature cutting-edge talks on two classes of lipid-activated transcription factors, the sterol regulatory element-binding proteins (SREBPs) and nuclear receptors. Both classes of transcription factors play fundamental roles in lipid metabolism and have important implications in the etiology and treatment of common diseases, including obesity, diabetes and atherosclerosis. Dr. Joe Goldstein, Professor and Chair of the Department of Molecular Genetics at the University of Texas Southwestern Medical Center at Dallas, will discuss recent studies from the Brown and Goldstein laboratory on the regulation and biological actions of SREBPs. Dr. Ron Evans, Professor in the Gene Expression Laboratory at the Salk Institute for Biological Studies, and Dr. Steven Kliewer, Professor in the Department of Molecular Biology at UT Southwestern, will discuss the regulation of metabolism by nuclear receptors including the fatty acid receptors (PPARs) and the bile acid receptor (FXR).

The session entitled "Lipid Synthesis, Compartmentalization and Transport" will feature speakers Dennis Voelker (National Jewish Medical and Research Center, Denver), Christoph Benning (Michigan State University) and Joost Holthuis (University of Utrecht, the Netherlands). This symposium will provide the latest information on the coordinate synthesis, transport and metabolism of lipids that is coupled to organelle assembly and function. Dennis Voelker will describe genetic and biochemical studies in yeast examining the synthesis and metabolism of phosphatidylserine and its non-vesicular transport between the ER and mitochondria, and the ER and the Golgi apparatus. Christoph Benning will discuss his genetic and biochemical analysis of glycolipid synthesis and its coordination with phosphatidic acid transport in *Arabadopsis*, and the role of multicomponent ABC transporters in chloroplast membrane assembly. Joost Holthuis will speak about his work on P-type ATPases in yeast, and their role in regulating transmembrane asymmetry and transport of aminoglycerophospholipids at the plasma membrane,

Dr. Hugh Rosen

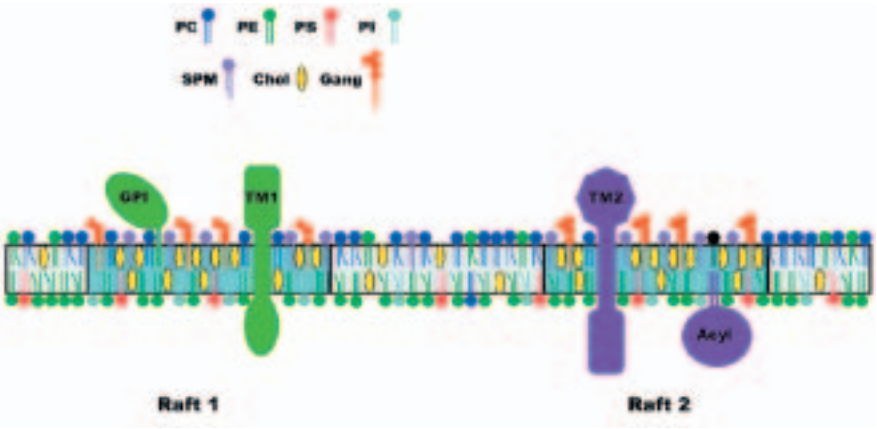
and within the endomembrane components of the secretory pathway.

The "Chemical Biology of Lipid Signaling" session will feature cutting edge approaches to the real-time analysis of lipid signaling in vitro and in whole animal systems. Ben Cravatt (Scripps) will discuss how the parameters for lipid signal generation can be both perturbed and analyzed by combining activity-based profiling with chemical and genetic approaches using the cannabinoid model system. Doreen Cantrell (Dundee) will discuss her work on the lipid signaling and the regulation of the lipid kinome during lymphocyte signaling. Her combination of biochemical and genetic rigor, with state-of-the-art real time imaging, should provide much interest. Hugh Rosen (Scripps) will present his group's work on the sphingosine 1-phosphate model system, where selective chemical and genetic approaches have been combined with real-time 2-photon fluorescence imaging to shed light on some of the unique contributions that lipid signals make in the maintenance

Lipid Rafts Defined

On March 23, a Keystone Symposium on Lipid Rafts and Cell Function was convened to, among other things, ponder the question "What is a raft?" The meeting brought together biophysicists, biochemists and cell biologists and resulted in the generation of a definition for 'lipid rafts' in an ad hoc session on the final day of the meeting. A special report on this new definition can be found in the July issue of the *Journal of Lipid Research*.

The report, entitled "Rafts defined: a report on the Keystone symposium on lipid rafts and cell function" is by Linda J. Pike of the Washington University School of Medicine. Pike, along with Michael Edidin of the Johns Hopkins University, organized the six-day meeting held in Steamboat Springs, CO.



Structure of a lipid raft.

In her report, Pike reveals that the definition adopted by the group is as follows:

Membrane rafts are small (10-200 nm), heterogeneous, highly dynamic, sterol- and sphingolipid-enriched domains that compartmentalize cellular processes. Small rafts can sometimes be stabilized to form larger platforms through protein-protein and protein-lipid interactions.

According to Pike, this definition was arrived at by listing all possible terms that could be used to describe lipid rafts, discussing and prioritizing them and then working them into a definition for these domains. The definition is intended to apply specifically to microdomains in cells, not in model membranes that are thought to be governed by a different, but overlapping, set of rules.

and regulation of biological barriers in the vascular and pulmonary systems.

The session entitled "Protein-Lipid Interactions" will focus on some of the fundamental mechanisms by which membrane organization of proteins occurs. Stephen White will discuss "Translocon-Assisted Folding of Membranes: Insights into Protein-Lipid Interactions." He and his group have established the basic rules that the SecY translocon complex follows to identify transmembrane helices. These rules have led to new insights into protein lipid interactions, which will be the subject of his presentation. The structure and regulation of water and ion channels has been a key interface with lipid biochemistry, a topic that has exploded into prominence recently. Tamir Gonen will discuss this problem by presenting his breakthrough work on the "Structure of Aquaporin-0."

He will present the structure of aquaporin-0, a water channel that is only found in the eye lens, and has two unique functions: it forms a water selective pore in membranes, and acts as an adhesive protein, forming cell-to-cell membrane junctions. He has determined the structure of the AQP0 mediated membrane junction to 1.9Å resolution by electron crystallography, and will present the structure of a shell of annular lipids surrounding the protein. Michael Gelb will discuss the "Binding of Phospholipases A_2 to Membranes: Implications for Eicosanoid Generation." The mammalian genome encodes 10 secreted phospholipases A_2. Some of these enzymes play a role in the liberation of arachidonic acid from cellular phospholipids for the biosynthesis of the eicosanoids (prostaglandins and leukotrienes). The 10 enzymes display very different interfacial binding properties, which are partially understood at the molecular level. The differential binding of these enzymes to different kinds of membranes dictates the physiological function of these enzymes.

Overall, the sessions offer much that is of interest to scientists grappling directly with the biochemistry and molecular biology of lipids, as well as to all meeting participants interested in the general themes of cellular structure, compartmentalization and all elements of signaling and transcription. The organizers encourage graduate students, post-doctoral fellows, and junior faculty to submit posters and compete for the four Young Investigator Awards associated with the Lipid Theme for 2007. We look forward to seeing you at the meeting!

2007 ASBMB Annual Meeting

The 2007 annual meeting of the American Society for Biochemistry and Molecular Biology (ASBMB) will be held in conjunction with the FASEB meeting on Experimental Biology in Washington D.C. on April 28-May 2, 2007. The meeting will bring together thousands of scientists from diverse disciplines, united by a common interest in understanding the molecular mechanisms that guide complex biological processes. The program will cover investigations over a wide range of length scales, from the arrangement of atoms in molecules, to the organization of those molecules in cells, to the association of those cells into tissues and organisms. Similarly, a huge range of time scales will be covered, from the millisecond rates of chemical transformations, to the minutes-hours needed for gene regulation, to the days of organism development, and ultimately to the vast time of evolution. Together, the award lectures, scientific sessions, poster sessions and social events will give attendees the opportunity to develop a state-of-the-art, integrated view of how molecules and molecular systems control myriad biological processes.

Many considerations guided the organization of the scientific program by the ASBMB Meetings Committee, co-chaired by Dr. Michael Rosen and Dr. Ben Cravatt. Important among these was that the program continue the thematic approach that has been so successful in recent ASBMB national meetings. As detailed below, each theme will be structured around a core discipline of the *JBC* and ASBMB membership, and will comprise a series of interrelated scientific symposia and associated poster sessions. In order to highlight the increasingly important role of chemistry in modern biological investigations, many themes were organized by scientists with a background in chemistry. This should add a unique and exciting chemical flavor to many symposia, spurring new ideas and potential collaborations. Finally, the committee placed particular emphasis on young scientists—pre- or recently-tenured investigators—in the organization of the meeting and in its implementation. This will give rising stars in various fields, in addition to established leaders, the opportunity to share their visions of the future with the community.

Dr. Ben Cravatt

The meeting will be organized around 13 thematic scientific symposia.

Biochemistry and Signaling of Lipids, organized by Dr. Hugh Rosen (Scripps Research Institute), will include symposia on Biogenesis, Transport and Compartmentalization of Lipids; Chemical Probes of Lipid Systems; Lipids as Transcriptional Regulators; Specific Protein-Lipid Interactions.

Chemical Biology, organized by Dr. Jack Taunton (University of California, San Francisco), will include symposia on Chemical Biology of Cell Death; Fragment Based Drug Discovery; Chemistry and Cell Biology of Natural Products; Antibiotics for the 21st Century.

The Chromosome Cycle, organized by Dr. Hongtao Yu (University of Texas Southwestern Medical Center), will include symposia on Centromeres and Kinetochores; Chromatin Structure and Remodeling; Chromosome Cohesion and Condensation; Chromosome Segregation and Aneuploidy.

Enzymes – Mechanism and Design, organized by Dr. Dorothee Kern (Brandeis University), will include symposia on Enzyme Design; Structural Enzymology; The Role of Dynamics in Enzyme Catalysis; Computational Studies of Mechanistic and Dynamical Aspects of Enzymes Reactions.

to Focus on Molecules Across Scales

Extracellular Matrix at Multiple Biological Scales, organized by Dr. Vito Quaranta (Vanderbilt University), will include symposia on Extracellular Matrix at the Molecular Scale; Extracellular Matrix at the Cellular Scale; Extracellular Matrix at the Tissue Scale; Extracellular Matrix at the Organism Scale.

From Genome to Epigenome—Modification and Repair, organized by Dr. Gregory L. Verdine (Harvard University), will include symposia on Methylating and De-methylating DNA; Making and Remaking DNA; Telomeres and Telomerases; Swapping Segments of DNA.

Macromolecular Structure and Dynamics, organized by Dr. Joseph Noel (Salk Institute for Biological Studies), will include symposia on Conformational Transitions and Protein Aggregation; Experimental and Computational Dynamics; Lipid-Protein Interface; Structural and Mechanistic Evolution.

Metabolism, organized by Dr. Jared Rutter (University of Utah School of Medicine), will include symposia on Metabolic Sensing and Signaling; Molecular and Cellular Aspects of Metabolic Disease; Mitochondria in Health and Disease; Aging and Metabolism.

Organelle Dynamics, organized by Dr. Matthew Shair (Harvard University), will include symposia on Golgi Structure and Biogenesis; Membrane Biogenesis; Mitochondrial Dynamics; Nuclear Dynamics.

Protein Synthesis, Folding and Turnover, organized by Dr. Jamie Williamson (Scripps Research Institute), will include symposia on Molecular Mechanisms of Protein Biosynthesis; Co- and Post-Translational Folding; Protein Modification and Turnover; Ribosome and Translation.

RNA, organized by Dr. Kristen Lynch (University of Texas Southwestern Medical Center), will include symposia on Molecular Recognition and Enzymology of RNA; RNA-Based Gene Regulation; Small RNAs; RNA Modification: Mechanism and Function.

Signaling Pathways Controlling Cell Structure and Fate, organized by Dr. Michael Yaffe (Massachusetts Institute of Technology), will include symposia on Cytokine/Growth Factor Signaling; Sensing and Signaling after DNA Damage; Signaling and Cell Cycle Progression; Signaling to the Cytoskeleton.

Systems Biology, organized by Dr. Tobias Meyer (Stanford University School of Medicine), will include symposia on Experimental and Computational Approaches to Systems; Fluorescence Microscopy Approaches to Understand Apoptosis; Mathematical Biology; Microarrays; Systems Biology & Proteomics.

The individual symposia comprising each theme will be held in morning or afternoon sessions on four separate days of the meeting, with associated poster sessions occurring on the same days. Complementary themes will be coordinated to enable attendees to go to talks in non-overlapping symposia. Symposia will consist of three long talks from leading scientists, as well as three short talks selected from the poster abstracts. The latter are specifically designed to give emerging scientists— young investigators, post-docs and graduate students— the opportunity to present their research. In order to further promote the research and education of junior scientists, Dr. J. Ellis Bell (University of Richmond) has also organized an **Education and Professional Development** theme. This will consist of symposia on "Classroom of the Future II" (Sponsored by the National Science Foundation); "Science at Undergraduate Institutions" (Sponsored by the National Science Foundation); "Graduate Student/Postdoctoral Starting Faculty Transitions;" "Preparing for a Successful Career in Industry."

Dr. Michael Rosen

ASBMB also continues to emphasize educational, scientific and career development of minorities. To foster this effort, Dr. George Hill (Vanderbilt University) has organized a theme on **Minority Affairs**, consisting of symposia on Best Practices in Program Assessment; Environmental Diseases in Minority Populations— Asthma, Emphysema; Genetic Diseases in Minority Populations - Sickle Cell Anemia; Infectious Diseases in Minority Populations—Tuberculosis. Finally, in conjunction with the themes comprising the scientific program, and the Education and Minority themes, the ASBMB will provide numerous Travel Awards to sponsor the attendance of undergraduate and graduate students, and post-docs. There will also be a specific Undergraduate Poster Competition; and Outstanding Poster Awards will be given to selected graduate students and post-docs presenting their work in the thematic program.

As the ASBMB embarks on its second century as the premier organization supporting the biological chemistry research community, we invite you to join us at the 2007 annual meeting. By presenting a provocative range of Themes that address "Molecules Across Scales", we believe that this meeting will serve as a beacon that illuminates both how far we have come in our first 100 years, and the remarkable distance still left ahead of us, as we aim to explain the incredible complexity of life at the level of molecules, molecular networks, cells, and systems.

John G. Hildebrand Receives AIBS Award

ASBMB member John G. Hildebrand of the University of Arizona was awarded the American Institute of Biological Sciences' Outstanding Service Award at the annual gathering of the AIBS Council of Member Societies and Organizations on May 23, 2006 in Washington, DC.

Instituted in 2002, the award is given annually in recognition of individuals' and organizations' noteworthy service to the biological sciences, particularly to integrative and organismal biology.

Dr. John Hildebrand

The award consists of a plaque and lifetime membership in AIBS. Previous recipients of the Outstanding Service Award include Eugenie C. Scott and the National Center for Science Education, Gregory J. Anderson, Rita R. Colwell, and Jay M. Savage.

Hildebrand is Regents Professor and Professor of Neurobiology, Biochemistry & Molecular Biophysics, Entomology, and Molecular & Cellular Biology and Director of the Arizona Research Laboratories Division of Neurobiology at the University of Arizona. He has given service to many professional societies, government agencies, editorial boards, and research laboratory boards, including the Marine Biological Laboratory in Woods Hole and the Statione Zoologica in Naples. Most recently, Hildebrand serves as president for the Arizona Arts, Sciences and Technology Academy. This is a new effort to bring the intellectual forces in Arizona together with state leadership, and has already attracted the governor's attention and participation.

AAA's Highest Accolade Awarded to Mary J. C. Hendrix

Dr. Mary Hendrix

The American Association of Anatomists' Henry Gray Award was presented to ASBMB member Mary J. C. Hendrix this past April. The award, co-sponsored by the AAA and Lippincott Williams & Wilkins, is the Association's highest honor. It recognizes a lifetime of achievement, including unique and meritorious contributions to the field of anatomical science.

The Henry Gray Award is given annually to a member of the Association who has distinguished themselves in the field of anatomical sciences. Hendrix received the award during AAA's annual meeting, which was part of the Experimental Biology 2006 meeting in San Francisco. The award consists of a plaque, a $1500 honorarium, and travel reimbursement to the meeting. Past Henry Gray Award recipients include Edward Jones, Peter Satir, George D. Pappas, Bruce Carlson, and Roger R. Markwald.

Hendrix is currently President and Scientific Director of the Children's Memorial Research Center at Northwestern University. Her research involves identifying genes that contribute to cancer metastasis and other related diseases which exhibit similar biological activities. Her goal is to define important structure/function relationships which provide the biological basis for new therapeutic strategies. Hendrix was President of FASEB from 2000 to 2001 and also served on the ASBMB Public Affairs Advisory Committee from 2001 to 2006.

Joan Massagué Honored by New Awards Program

The inaugural Vilcek Prize in Biomedical Research has been awarded by the Vilcek Foundation to Joan Massagué, Chairman of the Sloan-Kettering Institute's Cancer Biology and Genetics Program. The prize is designed to honor foreign-born scientists who have made extraordinary contributions to biomedical research in the United States.

The only national award to honor outstanding creative achievement by immigrants to America, the Vilcek Prize is accompanied by a $50,000 cash award. In conjunction with the prize, the foundation launched an annual lecture series at New York University School of Medicine. Dr. Massagué, who was born in Barcelona, Spain, delivered the first Vilcek Foundation Prize lecture. His talk was entitled "Controlling Cell Behavior: From Cytostasis to Metastasis."

Dr. Massagué is a leader in the fields of cancer metastasis and growth factors that regulate cell behavior. He is also a Howard Hughes Medical Institute investigator and a member of the National Academy of Sciences, and he holds an Alfred P. Sloan Chair at Memorial Sloan-Kettering Cancer Center.

Dr. Joan Massagué

Massagué's work has shed light on the molecular mechanism of a crucial family of growth factors that regulate cell behavior and embryonic development. Disruption of these pathways can underlie cancers, inherited disorders, and other diseases. His work has also helped elucidate genetic changes in cancer cells that determine their ability to disseminate to distant parts of the body.

Daniel E. Koshland Jr. Wins Welch Award

University of California, Berkeley, biochemist Daniel E. Koshland Jr. has been named the 36th recipient of the international Welch Award in Chemistry for his life-enhancing contributions to biochemistry and medical science.

The honor was announced on May 16 by the Welch Foundation, a Houston-based organization that is one of the nation's oldest and largest sources of private funding for basic research in chemistry. The Foundation will present Koshland with a $300,000 award and gold medallion at a banquet in October.

Dr. Daniel Koshland Jr.

Koshland, an international leader in research on enzymes and receptors, and former editor of the journal *Science*, was honored for applying the fundamental principles of chemistry to gain new insights and develop novel ideas to explain complex biological reactions. He made his most notable discovery nearly half a century ago, when he proposed the "induced fit theory" to explain the role enzymes play in chemical reactions.

Koshland currently is a Professor in the Graduate School in the Department of Molecular and Cell Biology at UC Berkeley, where he has served on the faculty since 1965. His current work focuses on the world's energy problem. He is studying using sunlight to enhance the production of fossil fuels such as ethanol from biomass.

ASBMB Members Elected As AAAS Fellows

Michael R. Botchan of the University of California, Berkeley, was recently elected a fellow of the American Academy of Arts and Sciences (AAAS) for the class of 2006, and Cecile M. Pickart of Johns Hopkins University, who died April 5 after a long battle with kidney cancer, was elected posthumously.

Dr. Michael Botchan

Dr. Cecile Pickart

They were among 175 new Fellows and 20 new Foreign Honorary Members. Those elected include two former presidents of the United States; the Chief Justice of the United States; a Nobel laureate; winners of the Pulitzer Prize in poetry, drama, music, investigative reporting, and nonfiction; a former U.S. poet laureate; and a member of the French Senate.

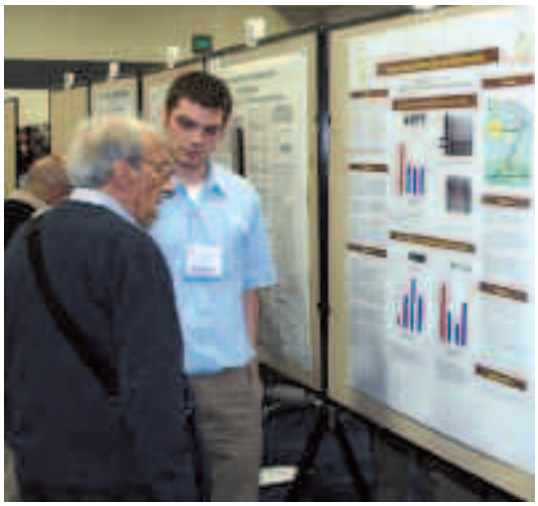
ASBMB Undergraduate Poster Competition

Ten years ago the American Society for Biochemistry and Molecular Biology initiated a poster competition for undergraduates to present their science. If you were in San Francisco for the Centennial meeting, you witnessed the return on the investment that the Society has made on undergraduate education during the past ten years. Over 160 undergraduates presented their research at this year's poster competition, the highest turn-out in the history of the event.

Now featured as an integral part of the opening day's activities, the Poster Competition has become a central feature of the meeting, attracting not only faculty mentors of the students but a notable audience which this year included Nobel Laureate Edmund Fischer. Dr. Fischer spent the whole afternoon walking around the posters talking with students.

The event was sponsored by *Molecular Cell* which, in addition, provided four awards for the best posters. A number of graduate programs sponsored tables for students to meet faculty and graduate students and learn about graduate school opportunities. A mid-afternoon break in the activities allowed everyone to visit the graduate tables, mingle and network, as well as take advantage of the refreshments provided.

During the course of the afternoon, the posters were "judged" by teams assembled by the organizers of the event, Mark Wallert, Phil Ortiz, Joe Provost and Marilee Benore-Parsons. At the end of the afternoon, the judges met to decide upon the four award winners. In addition to these winners, a number of "honorable mentions" were noted. The winners were presented certificates and prizes at the Sunday plenary session featuring a talk by the ASBMB Education Award winner, Tom Cech, who helped with the presentations to the students.



Nobel Laureate Edmund Fischer talks with a student.

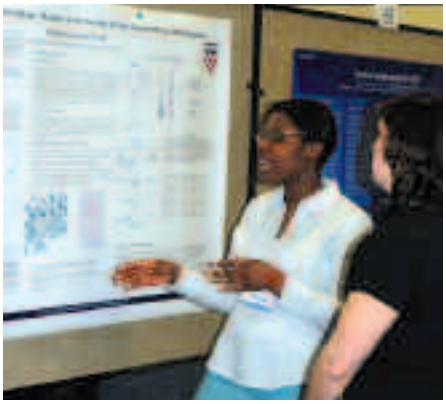
After Tom Cech's talk, many of the students gathered with Tom for a group photo.

The four award winners were:

Emily Jacobs-Palmer, from Wesleyan University, for a presentation titled "Rapid Kinetic Measurements of MutS-mismatched DNA Interactions," Victor Fedorov, from the University of Richmond, "Elucidation of the Substrate Binding Site of Siah Ubiquitin Ligase," Kyle Eagan, from Cornell University, "On the Mechanism of Cocaine Inhibition of a Membrane Bound Neurotransmitter Receptor, the methyl-D-Aspartate Receptor," and Michael Manning, from Virginia Tech, "Genome-wide Screen of Dessication Essential Genes in *Saccharomyces cerevisiae*."

Nobel Laureate Tom Cech poses for a photograph with poster competition winners.

Attracts Students and Faculty



A student explains her poster.

This successful event gave the many undergraduates attending the meeting both the opportunity to present their research and to get together, meet each other, and network with faculty and graduate students from around the country.

In addition to the Poster Competition, four undergraduate student speakers were selected from submitted abstracts and featured in a symposium sponsored by the National Science Foundation. The symposium was held on Monday afternoon and chaired by Mark Wallert and Joe Provost.

Travel award winner Sarah Wacker with NSF Division Director Maryanna Henkart.

One of the featured speakers, and ASBMB Travel Award winner, Sarah Wacker, from the University of Richmond, was also selected by the Council on Undergraduate Research to participate in its annual "Posters on the Hill Event" in Washington DC. Sarah, who will attend Rockefeller University for Graduate School, recently received an honorable mention in the National Science Foundation Predoctoral fellowship program. She is shown here with NSF Division Director Maryanna Henkart from the Molecular and Cellular Biosciences Division of the Biology Directorate, which funded the laboratories that two of the Capitol Hill presenters, Sarah Wacker and James Cherwa of the University of Arizona, worked in as undergraduates.

A graduate school representative talks to an interested student about her options.

ASBMB would like to congratulate the following 2006 Best Presentation Awardees:

Undergraduate Students:

Michael Lee Manning
Virginia Tech

Graduate Students:

Michael John Bradley
Washington Univ., School of Medicine

John Burg
Johns Hopkins Univ., School of Medicine

Carolina Edith Caffaro
Boston Medical Center

Sergej Djuranovic
MPI for Developmental Biology

Francesco Faiola
Univ. of California, Riverside

Sonia Gulati
Columbia Univ. Medical Center

Michael Paul Killoran
The Univ. of Wisconsin, Madison

Sung Chang Lee
The Univ. of Texas Medical Branch

Zhaoyu Li
Univ. of Alberta

Elaina Marie Melton
Albany Medical College

Russell A. Miller
Univ. of Wisconsin, Madison

Abdiwahab Abdul Musse
Univ. of Guelph

Denise O'Donnell Ramirez
Univ. of Texas Southwestern Medical Center

Prajakta Pradhan
Georgia State Univ.

Jennifer R. Stevens
Dalhousie Univ.

Sean Stowell
Oklahoma Univ. Health Sciences Center

Allison Hillary Williams
Duke Univ. Medical Center

Tawn Ziebarth
Michigan State Univ.

Postdoctoral Fellows:

Teresa A. Garrett
Duke Univ. Medical Center

Gil-Soo Han
Rutgers Univ.

William Ja
California Institute of Technology

Choel W. Kim
Univ. of California, San Diego

Zuben Sauna
National Cancer Institute, NIH, Center for Cancer Research

Mina Wang
Yale Univ.

Kun Zhu
St. Jude Children's Research Hospital

By Nicole Kresge, Science Editor

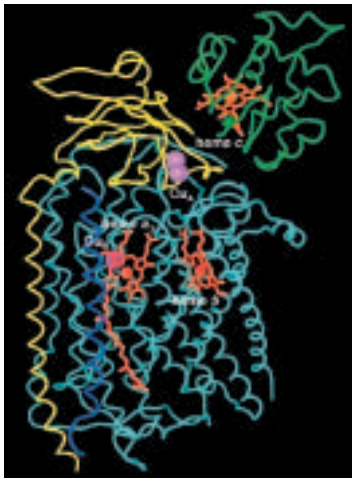
ASBMB Bio Bits

The Electron Transfer Complex between Cytochrome c552 and the CuA Domain of the Thermus thermophilus ba3 Oxidase

Lucia Muresanu, Primoz Pristovsek, Frank Löhr, Oliver Maneg, Marco D. Mukrasch, Heinz Rüterjans, Bernd Ludwig, and Christian Lücke

J. Biol. Chem. 2006 281: 14503-14513

The conduits by which electrons are transferred between two metalloproteins have been extensively studied by both theoretical and experimental approaches for the last decade. Despite this effort, there are very few cases in which electron transfer pathways have been established. In this paper, the authors utilize the power of high field NMR spectroscopy to establish a highly plausible route through which electron transfer occurs from the heme center of a c-type cytochrome to its partner copper center of a terminal oxidase. Using NMR-based chemical shift perturbation mapping, the researchers identified the contact regions between the redox complex of the soluble cytochrome c_{552} and the membrane-integral cytochrome ba_3 oxidase of *Thermus thermophilus*. They then produced a structure ensemble of 10 closely related conformers representing the complex between the cytochromes. Based on these structures, the authors predicted the electron transfer pathway from the heme of cytochrome c_{552} to the CuA center of the ba_3 oxidase.



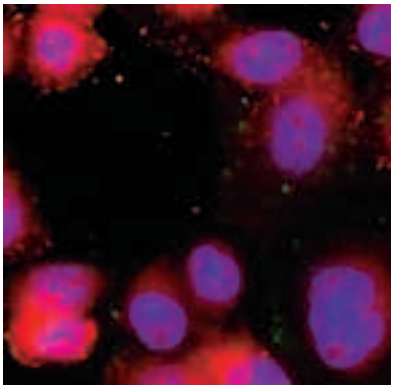
Model of the complex between cytochrome c_{552} and the ba_3 oxidase.

The Role of Decay-accelerating Factor as a Receptor for Helicobacter pylori and a Mediator of Gastric Inflammation

Daniel P. O'Brien, Dawn A. Israel, Uma Krishna, Judith Romero-Gallo, John Nedrud, M. Edward Medof, Feng Lin, Raymond Redline, Douglas M. Lublin, Bogdan J. Nowicki, Aime T. Franco, Seth Ogden, Amanda D. Williams, D. Brent Polk, and Richard M. Peek Jr.

J. Biol. Chem. 2006 281: 13317-13323

Helicobacter pylori is the cause of peptic ulcer disease and a contributory factor to gastric adenocarcinoma and non-Hodgkin lymphoma. Although the vast majority of *H. pylori* in colonized hosts is free-living, approximately 20% of the bacteria bind to gastric epithelial cells. This adherence is critical for induction of injury to the stomach. Decay-accelerating factor (DAF), a protein that protects epithelial cells from complement-mediated lysis, has been shown to function as the receptor for several microbial pathogens. The results of this paper now add *H. pylori* to this list of DAF-binding microbes. The authors show that *H. pylori* adheres to CHO cells expressing human DAF. They also demonstrate that *H. pylori* induces DAF expression in cultured gastric epithelial cells and that mice lacking DAF experience attenuated stomach inflammation. These results suggest that *H. pylori*, like several other microbial pathogens, co-opt DAF as a receptor to induce disease.



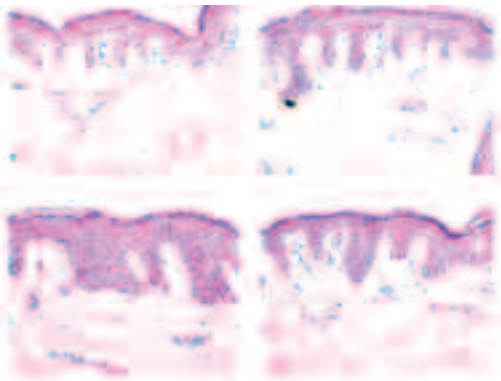
H. pylori adheres to CHO cells expressing DAF.

Photoprotective and anti-skin-aging effects of eicosapentaenoic acid in human skin in vivo

Hyeon Ho Kim, Soyun Cho, Serah Lee, Kyu Han Kim, Kwang Hyun Cho, Hee Chul Eun, and Jin Ho Chung

J. Lipid Res. 2006 47: 921-930

Skin aging can be attributed to either photoaging, which is induced by repeated exposure to ultraviolet (UV) light, or chronological aging, which is caused by the passage of time. Studies have shown that the destruction of collagen by matrix metalloproteinase is a contributing factor to both types of aging. The authors of this paper previously found that eicosapentaenoic acid, a fatty acid found in fish oil, inhibits UV-induced matrix metalloproteinase-1 expression in human dermal fibroblasts. In this paper, they show that topical application of eicosapentaenoic acid reduces UV-induced epidermal thickening and inhibits collagen decrease induced by UV light. Moreover, they found that eicosapentaenoic acid actually increased collagen and elastic fiber expression, suggesting that topical eicosapentaenoic acid has potential as an anti-skin-aging agent.



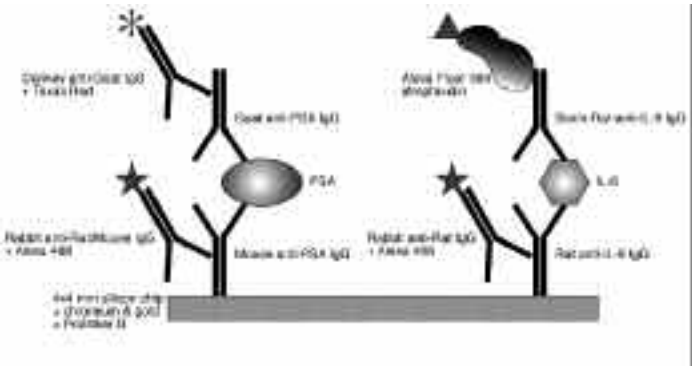
Eicosapentaenoic acid (EPA) inhibits ultraviolet (UV) light induced epidermal thickening.

Detection and Quantification of Protein Biomarkers from Fewer than 10 Cells

Saju Nettikadan, Korinna Radke, James Johnson, Juntao Xu, Michael Lynch, Curtis Mosher, and Eric Henderson

Mol. Cell. Proteomics 2006 5: 895-901

The use of antibody microarrays continues to grow rapidly due to the recent advances in proteomics and automation and the opportunity this combination creates for high throughput multiplexed analysis of protein biomarkers. However, a primary limitation of this technology is an inability to detect biomarkers that are found in relatively low concentrations. In this paper, the authors describe the construction of ultramicroarrays that combine the advantages of microarraying, including multiplexing capabilities, higher throughput, and cost savings, with the ability to screen very small sample volumes. Antibody ultramicroarrays for the detection of interleukin-6 and prostate-specific antigen were created and found to have a high specificity and sensitivity with detection levels in the attomole range.



System used to construct interleukin-6 and prostate-specific antigen ultramicroarrays.

by John D. Thompson, Editor

India's Wockhardt Eyes U.S., China Buys

In late May, India's *Business Standard* newspaper reported that Wockhardt, a global, pharmaceutical and biotechnology company headquartered in India, has focused on biotechnology companies in China and the U.S. It is reported to have been in talks with four research-based biotechnology companies in China and three biopharma companies in the U.S.

The *Business Standard* reported that two leading consultants, one of them Frost & Sullivan, have been appointed by the company to conduct due diligence on the proposed acquisitions. Wockhardt executives however declined to comment on the development.

Wockhardt has a market capitalization of $1.3 billion U.S. and an annual turnover of over $300 million U.S. It has a strong and growing presence in the world's leading markets, with half of its revenue coming from Europe and the United States. Wockhardt's market presence covers formulations, biopharmaceuticals, nutrition products, vaccines, and active pharmaceutical ingredients (APIs).

The company is headquartered in India, and has manufacturing plants in India and the UK; subsidiaries in the U.S., UK, and Brazil; majority-owned companies in South Africa and Mexico; and marketing offices in Africa, Russia, and Central and Southeast Asia.

Just days after the *Business Standard's* glowing report, the June 3-9 *Economist* posed the question, Can India Fly?

Long neglected by western corporations with their eyes on China, its giant neighbor, India now seems to be on almost every corporation's to-do list. The country is showing robust economic growth with its GDP averaging 8.1% over the past three years, and is set to capitalize on population growth that is expected to add 71 million people to its workforce in the next five years. At the same time, India is producing far more world-class companies than China. Indian companies control two-thirds of the market in offshore information technology, and nearly half of that in business-process-outsourcing or BPO.

Can anything keep India from flying? Possibly bottlenecks in the economy. For example, it now takes eight days, including 32 hours at checkpoints and toll stations, for a truck to make the trip from Kolkata to Mumbai. Equally serious are the nation's caste-based inequality in education, a banking system that extends credit where it shouldn't, labor laws that deter employment, a fiscal deficit resulting from ill-conceived price subsidies, and the reform-minded government's need to rely on the support of Communist parties.

India has taken off. Now, just think how high it might fly if such problems were resolved.

Novartis Spearheads Malaria Research in New Public-Private Partnership

Dr. Daniel Vasella, Chairman and CEO of Novartis, recently announced that the Novartis Institute for Tropical Diseases (NITD) will initiate research on malaria, which is estimated to kill more than one million people a year worldwide and is one of the top three killer diseases in tropical countries, as part of a new public-private partnership.

The partnership, which includes the NITD, Wellcome Trust, Singapore Economic Development Board (EDB), and Medicines for Malaria Venture (MMV), will all allocate resources to discover the next generation of malaria drugs.

Research at Singapore-based NITD will focus on the development of a one-dose cure for *Plasmodium falciparum*, the most dangerous form of malaria, and a curative modality for *Plasmodium vivax*, the most frequent and widely distributed cause of malaria.

Approximately U.S. $20 million in funding has been granted from the Wellcome Trust, EDB, and MMV. The NITD will manage the program and conduct research jointly with several institutions, including the Genomics Institute of the Novartis Research Foundation and the Swiss Tropical Institute.

"With 250 million people infected worldwide and more than one million deaths each year, malaria is one of the most pressing global health issues. This partnership will greatly increase our ability to fight the disease," said Dr. Vasella. "NITD brings together the best of industry and academic knowledge along with technology and strong scientific networks. This funding will allow us to utilize these capabilities in the fight against malaria."

Expert advice, project oversight and strategic support will be provided by the Wellcome Trust and Medicines for Malaria Venture.

Vaccines: Back on the Front Burner

Once a neglected field, vaccine research is taking off due to fear of pandemics, and units such as Novartis' Chiron are where the action is according to the May 30 *BusinessWeek*.

Compared with glamour drugs designed to battle cholesterol, high blood pressure, and depression, vaccines have long been the poor relations of the pharmaceutical industry. But now, as a result of the emergence of avian flu and other new viruses, as well as improved technology and better economics, vaccines are becoming the global drug industry's next hot sector.

For proof, simply visit the Siena, Italy, labs of Chiron, a unit of Novartis. It was here, tucked between vineyards and farms in the Tuscan hills, that the world's first avian-flu vaccine was developed in 1998. "Back then, no one was interested," recalls Rino Rappuoli, the scientist who led the research. "Now it's a totally different story." Scientists in Siena have developed a vaccine with an adjuvant that renders it more effective at low doses. That is a big advantage, given the current capacity constraints among vaccine manufacturers. Moreover, Rappuoli's team is responsible for what is likely to be Europe's first seasonal flu vaccine produced from cell-based manufacturing. Expected to hit the market later this year, the cell-based vaccine can be produced much faster than conventional types, which require growing flu viruses in millions of chicken eggs.

Such innovation is one of the main reasons Swiss pharmaceutical giant Novartis paid $5.4 billion for Chiron in April of this year. The global vaccine market is worth $10.8 billion today, and analysts believe the vaccine market will grow much faster than the market for prescription drugs. "We're in a period where pharmaceutical sales are growing at 5% to 6% a year," says Novartis Chief Executive Daniel Vasella. "In contrast, the vaccine industry is looking at nearly 20% annual growth over the next five years."

Feds Charge Scientist, Bay Area Biotech Company with Fraud

A scientist and his biotechnology company were charged May 23 on 13 counts of mail fraud and false statements for allegedly shipping bogus research material to many corporate and academic researchers, including at the National Institute of Health and the Walter Reed Medical Center, federal prosecutors said.

The indictment unsealed in San Francisco federal court accused Chi Yang and employees at the Dublin, California-based company he owned, SynPep Corp., of falsifying scientific paperwork attesting to the purity of protein fragments in peptides that researchers ordered from the company between 1999 and 2004.

The indictment alleged that the peptides that were shipped were impure or crude replicas of what was ordered, jeopardizing research in cancer, AIDS and other diseases.

"Research institutions and others rely on the integrity of biotech companies to provide accurate specifications of their products," said Kevin V. Ryan, the U.S. Attorney for Northern California. "SynPep allegedly falsified graphs that were used in support of cancer or AIDS research, and that research may now be called into question."

Genetics Moves Corn Belt

For years, Iowa and parts of Minnesota were the nation's Corn Belt. But now, so is a good chunk of North Dakota, which was once considered too chilly for raising corn and soybeans. The same holds true for the Red River Valley in northwestern Minnesota; and Kansas, which features wheat on its license plates, now grows more corn than wheat despite its hot, dry summers.

What is changing the Midwest is plant genetics. High-tech varieties of corn and soybeans are letting farmers reliably grow row crops where they never could before, and the results are confounding the grain trade.

The change has been building for several years, but the magnitude of the shift hit home last fall when a severe summer drought wracked the eastern Corn Belt, yet the crop flourished.

"I thought there was no way corn could do well, given the heat," Joe Victor, Vice President of Marketing at Allendale Inc., a grain-trading firm in Illinois, told Knight-Ridder News Service. "Every day was 98 degrees, no rain. I thought, this crop is in trouble."

But a new generation of superplants has changed the game, and redrawn the map. While genetically modified crops remain controversial overseas, they have become commonplace in much of the U.S. A decade of biotechnology has allowed crop breeders to change a plant's genetic instructions, just as a chef changes a recipe.

Researchers Find Protein That Silences Genes

A team of researchers has discovered the key role one protein plays in a major turn-off, in this case, the turning off of thousands of nearly identical genes in a hybrid plant.

Studying the phenomenon of nucleolar dominance, in which one parental set of ribosomal genes in a hybrid is silenced, Craig Pikaard, Ph.D., Washington University professor of biology in Arts & Sciences, and colleagues have identified the protein HDA6 as an important player in the silencing. Using *Arabidopsis*, they have shown that HDA6 is located in the nucleus of *Arabidopsis* cells, and they have imaged it, characterized it, and defined its role in two cellular activities that help bring about gene silencing.

Genes can be turned off when acetyl groups are removed from histones and when methylation occurs. Pikaard and his collaborators found that one of many predicted histone deacetylases in *Arabidopsis*, HDA6 is a key player in both histone deacetylation and DNA methylation of ribosomal RNA genes.

In their paper, published in the May 15 issue of *Genes and Development*, Pikaard and his collaborators describe a systematic effort to examine the 16 predicted histone deacetylases in the *Arabidopsis* genome, to see if any play a role in nucleolar dominance. They made transgenic hybrids in which each of the deacetylases were knocked out one by one and then examined the effects on the plants. They found that knocking down HDA6 eliminated nucleolar dominance, such that the normally silent genes were now turned on.

To find out where HDA6 is located in the cell, the group then genetically engineered the protein to include a fluorescent tag. They found that much of the HDA6 shows up in the nucleolus, which is precisely the site where ribosomal RNA genes are regulated and where nucleolar dominance occurs. "We found HDA6 at the scene of the crime, which was reassuring," Pikaard said.

Keith Earley, a Ph.D. student in Pikaard's laboratory, characterized HDA6 biochemically and demonstrated that it was, in fact, a histone deacetylase, as predicted, and that the protein would remove acetyl groups from several different histones. A collaboration with mass spectrometry expert Michael Gross, Ph.D., Washington University professor of chemistry, helped define the precise locations of the acetyl groups that HDA6 can remove, down to which acetylated amino acids are involved.

"The bottom line is that HDA6 has very broad specificity. It can remove the acetyl groups from multiple histones and from multiple lysines of those histones" said Pikaard.

Using antibodies that recognize specific histone modifications that occur on the genes when they switch from off to on, the group was able to confirm that the deacetylation specificities they observed for HDA6 in the test tube fit with the changes in acetylation that occur on ribosomal RNA genes in living cells.

They also found that the mechanism behind the silencing involves both modifications of histones and changes in DNA methylation, and that HDA6 affects both.

"Somehow these modifications are linked together," Pikaard said. "We know that they work together and that HDA6 is a key player. They are intimately linked in a circular, self-reinforcing pathway. Each specifies the other. For instance, in modifying the histones a pathway is set in motion to recruit enzymes to perform DNA methylation. Likewise, changing DNA methylation leads to changes in histone modification."

ASBMB member Craig S. Pikaard earned a B.S. degree in Horticulture from the Pennsylvania State University in 1980 and a Ph.D. in Plant Physiology from Purdue University in 1985. He then conducted postdoctoral research as an NIH fellow with Ronald Reeder at the Fred Hutchinson Cancer Research Center in Seattle. Pikaard joined the faculty of Washington University in 1990, where he now holds the rank of professor in the Biology Department.

Dr. Craig S. Pikaard

Pikaard's laboratory is currently interested in chromatin-mediated gene silencing. One sub-group within the lab is focused on understanding the genetic and epigenetic mechanisms responsible for nucleolar dominance, the uniparental silencing of rRNA genes in a genetic hybrid. A second sub-group is focused on understanding the role of nuclear RNA polymerase IV in siRNA-mediated DNA methylation and heterochromatin dynamics in plants.

For Your Lab/For Your Lab/For Your Lab

The information in For Your Lab has been provided by manufacturers and suppliers of laboratory equipment. For further information about any of these products listed contacts are listed at the bottom of each panel. When contacting any of these companies, please mention that you saw their product in *ASBMB Today*. Please note that a listing in *ASBMB Today* does not imply an endorsement by the American Society for Biochemistry and Molecular Biology or by any of its members or staff.

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Louisianna State University Health Sciences Center — Shreveport

FACULTY POSITION IN MASS SPECTROMETRY AND PROTEOMICS

Applications are invited for a faculty position at the rank of **RESEARCH ASSISTANT PROFESSOR**. The Feist-Weiller Cancer Center at Louisiana State University Health Sciences Center-Shreveport (LSUHSC-S) is engaged in a major expansion of its basic and clinical research programs in Translational Control of Gene Expression in Cancer, Viral Oncology, Transcriptional Control of Gene Expression, and Invasion and Metastasis. The mission of the FWCC is to foster interdisciplinary approaches to translational cancer research with emphasis in breast, prostate, head and neck, and lung cancers. In order to accomplish this, the FWCC seeks a research-track faculty member with broad expertise in mass spectrometry and proteomics research. The successful candidate will have an academic appointment in the Department of Biochemistry and Molecular Biology and will have laboratory and office space in the Research Core Facility (RCF). The RCF maintains and operates state-of-the-art technologies primarily for the benefit of LSUHSC-S researchers that include Affymetrix" DNA arrays, MALDI-TOF and LC-MS-MS mass spectrometry, flow cytometry, confocal and epifluorescence digital imaging, real-time PCR, laser-capture microdissection, and small animal MRI. The successful candidate is expected to operate the mass spectrometry component of the RCF. This will involve active collaborations (involving both macromolecules and small molecules) with other LSUHSC-S researchers, establishing additional mass spectrometry techniques at LSUHSC-S, developing proteomics capabilities, and writing, in cooperation with other LSUHSC-S faculty members, extramural grant proposals for new instrumentation to augment existing mass spectrometry capabilities. Applicants should have a doctoral degree, postdoctoral research experience in mass spectrometry and/or proteomics, and a commitment to excellence in research. More information can be found on the FWCC (http://www.fwcconline.org/) and Departmental (http://www.shreve-biochem.com) websites. Review of applications will begin in April 2006. Please send *curriculum vitae*, a brief statement of current research interests and experience in mass spectrometry, and the names of three referees to: **Robert E. Rhoads, Ph.D., Professor and Head, Department of Biochemistry and Molecular Biology, LSUHSC-S, 1501 Kings Highway, Shreveport, LA 71130-3932.** LSUHSC-S is an Equal Opportunity/Affirmative Action Employer.

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Virginia Commonwealth University School of Medicine

TENURE TRACK FACULTY POSITION, DIRECTOR OF FUNCTIONAL LIPIDOMICS/METABOLOMICS INITIATIVE

Virginia Commonwealth University School of Medicine is developing a new initiative in functional lipidomics/metabolomics and invites applications for a tenure-track faculty position Nos. F1996 and F1997 to spearhead this initiative. Candidates should have a research program with a record of sustained productivity and current extramural funding. Substantial resources are available to support recruitment of an outstanding investigator in the general area of lipidomics or metabolomics. Candidates will be considered for the rank of Assistant, Associate or full Professor, based upon qualifications and experience. Applicants should have a M.D., Ph.D. or equivalent degree and will be expected to contribute to the University's teaching mission as well as develop vigorous collaborative efforts with other VCU researchers. VCU's research expertise is spread across several programs having national prominence in terms of NIH-funded research ranking. VCU has a very active and expanding critical mass of investigators whose research is focused on metabolism and signaling of bioactive lipids in cancer, inflammation, atherosclerosis, heart and lung disorders, cholesterol and bile acid metabolism in liver disorders, and insulin resistance and fatty liver disease. These programs have a history of strong and successful research and training programs. However, this search is not necessarily focused on existing areas of strength and invites outstanding applications covering any aspect of lipidomics or metabolomics. More information about the School of Medicine and Departments, and this open position can be found at www.vcu.edu/biochem/department/pos.shtml and www.pubinfo.vcu.edu/facjobs/facjob.asp?Item=2290. Applicants should submit by email a CV, names and e-mail addresses of three references, and a summary of research and teaching interests to: Dr. Robert F. Diegelmann (rdiegelm@vcu.edu), Department of Biochemistry, Virginia Commonwealth University School of Medicine.

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Calendar of Scientific Meetings

JULY 2006

Third Annual World Congress on Industrial Biotechnology and Bioprocessing

July 11–14 • Toronto, Canada
Sponsored by the Biotechnology Industry Organization (BIO), American Chemical Society (ACS), National Agriculture Biotechnology Council (NABC), Agri-Food Innovation Forum, and BIOTECanada.Email: worldcongress@bio.org; Ph: 202-962-9200

ASCB 2006 Summer Meeting: Stem Cell Niches

July 15-18 • Boston University
Organized by Sean Morrison, HHMI/University of Michigan
Keynote: Allan Spradling, Carnegie Institute of Washington/HHMI
Session 4: Hematopoietic Stem Cell Niches (Cont.)
Session Chair: Fiona Doetsch
Session 5: New Niches for Stem Cells
Session Chair: David Scadden

17th International Symposium on Plant Lipids

July 16–21 • Michigan State University Campus, East Lansing
Organizer: Christoph Benning
For registration information, preliminary program, instructions for submitting abstracts, and for information on financial aid available for young scientists to attend the meeting, go to: www.ispl2006.msu.edu/. Members of underrepresented groups are especially encouraged to apply for financial aid.

Bioscience 2006: Bioscience for the 21st Century

July 23–27 • Glasgow, Scotland
Abstract Submission Deadline: April 13, 2006
Early Registration Deadline: May 22, 2006
For information: www.BioScience2006.org

Biochemical Journal Symposium Literature, Legacy, Life

July 24 • Glasgow, Scotland
Celebrating 100 Years of Biochemistry
For information: www.BioScience2006.org

AUGUST 2006

20th Annual Symposium of the Protein Society

August 5–9 • San Diego, CA
E-mail: cyablonski@proteinsociety.org; www.proteinsociety.org
Tel.: 301-634-7277

ISMB 2006: Intelligent Systems for Molecular Biology

August 6–10 • Fortaleza, Brazil
E-mail: admin@iscb.org; ismb_2006.cbi.cnptia.embrapa.br//
Tel.: 858-822-0852 .

9th Annual Scientific Forum of the Southeast Lipid Association

August 11–13 • Amelia Island, FL
www.lipid.org/chapters/sela
Email: ssheridan@lipid.org

Kern Aspen Lipid Conference

August 19–22 • Aspen, CO
www.uchsc.edu/kernconference/
Email: Julie.morris@uchsc.edu

ISPMB 2006 – 8th International Congress of Plant Molecular Biology

August 20–25 • Adelaide Convention Centre, South Australia
Abstract and Early Registration Deadline: Friday, March 3.
Online registration and abstract submission pages:
www.sallyjayconferences.com.au/ispmb2006/registration.htm
www.sallyjayconferences.com.au/ispmb2006/abstract.htm
Abstracts cannot be accepted without registration and payment. All abstracts must be submitted online, abstracts sent as attachments will not be accepted.
www.sallyjayconferences.com.au/ispmb2006/program.htm

1st FECS European Chemistry Conference

August 27–31 • Budapest, Hungary
E-mail: narasza@para.chem.elte.edu
www.fecs-budapest2006.hu/

17th International Mass Spectrometry Conference

August 27–September 1 • Prague, Czech Republic
www.imsc2006.org; E-mail: info@imsc2006.org
Tel.: 420-241-062-645

SEPTEMBER 2006

7th Siena Meeting from Genome to Proteome: Back to the Future

September 3–7 • Siena, Italy
www.unisi.it/eventi/proteome/

29th European Peptide Symposium

September 3–8 • Gdansk, Poland
www.29eps.univ.gda.pl; E-mail: 29eps@chem.univ.gda.pl
Tel.: 48-58-3450363

5th European Conference on Computational Biology

September 10–13 • Eliat, Israel
www.eccb06.org/; E-mail: eccb06@diesenhaus.com
Tel.: 972-3-5651313

American Chemical Society National Meeting and Expo

September 10-14 • San Francisco
For Information: Department of Meetings & Expositions Services; Kathleen Thompson, Assistant Director, Melissa Redd, Assistant
Fx: 202-872-6128; Ph: 202-872-6061
E-mail: k_thompson@acs.org; E-mail: m_redd@acs.org

5th European Congress of Biogerontology

September 16-20 • Istanbul, Turkey
Tel: +90 216 347 35 35 Pbx; Fax: +90 216 347 78 50
Email: okarabel@symcon.com.tr; Website: www.symcon.com.tr
Congress President Prof. Serif Akman, Etlik, Ankara , Turkey
Tel: +90 312 304 3306; Fax: +90 312 304 3300
E-mail: sakman@gata.edu.tr

The 33rd Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS)

September 24–28 • Disney's Contemporary Resort, Lake Buena Vista, FL
Contact: FACSS, PO Box 24379, Santa Fe, NM 87502
Phone: 505-820-1648; Fax: 505-989-1073
Email: facss@facss.org; www.facss.org

NOVEMBER 2006

Transcriptional Regulation by Chromatin and RNA Polymerase I I

November 2–6 • Kiawah Island, South Carolina
Organizer: Ali Shilatifard, Saint Louis, University School of Medicine, Email: shilatia@slu.edu

Annual meeting of the Society for Glycobiology

November 15-18 • Los Angeles
Contacts: Linda Baum, President; lbaum@mednet.ucla.edu
Kelley Moremen, Secretary; moremen@uga.edu
Website: www.glycobiology.org

APRIL 2007

American Society for Biochemistry and Molecular Biology Annual Meeting in Conjunction with EB2007

April 28 – May 2 • Washington, DC
Contact: ASBMB 2007, 9650 Rockville Pike, Bethesda, MD 20814-3008
Ph: 301-634-7145
Email: meetings@asbmb.org
Website: www.asbmb.org/meetings