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Moscone Convention Center,
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Late-breaking abstracts will be accepted for poster sessions to be scheduled on Wednesday, April 5, 2006. Late-breaking abstracts will be published in an addendum to the meeting program. The addendum will be distributed at the meeting. Late-breaking abstracts will NOT be published in *The FASEB Journal* and are not citable.

Abstracts must be submitted at www.asbmb.org/meetings with payment of $90. Payment and abstracts must be submitted on or before Wednesday, February 8, 2006. The submission site is now open.

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For information about the meeting, including preliminary program, housing, and registration information, go to www.asbmb.org/meetings

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ASBMB Today

AMERICAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY

JANUARY 2006,
Volume 4, Issue 10

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Comments

Please direct any comments or questions concerning *ASBMB Today* to:
John D. Thompson
Editor, *ASBMB Today*
9650 Rockville Pike
Bethesda, MD 20814-3996
Phone: 301-634-7145; Fax: 301-634-7126
E-mail: jthompson@asbmb.org

Evolution Is No 'Theory'

To the Editor:

On page 5 of the October 2005 issue of *ASBMB Today*, the first sentence "begs the question" and is exactly the wrong way to start out any discussion on "Evolution."

I contend that Evolution is no more a "theory" than Mendeleev's Periodic Chart or Henry's Law of Gases. As long as scientists persist in calling this "a theory", we are going to get hammered. I have been doing research in evolutionary biochemistry, genetics and genomics, and gene nomenclature of superfamilies since the late 1960s, and my work on evolution has nothing to do with theory. The radioactive decay of fossils and sediments surrounding fossils, the molecular decay (mutation rate) of A,C,T,G in coding and noncoding regions of orthololog-ous, parologous and homologous genes of various species, are all objective experimental findings, hard data, and scientific facts.

Professor Daniel W Nebert, MD
University of Cincinnati Medical Center

Intelligent Design?

To the Editor:

Ah, Galileo. Suppose that 98% of the people of this great republic believed the earth is flat. Should we argue? The theory of Universal Gravitation is a theory nonetheless, and even wrong in its details, and suppose 99% of people thought gravity did not exist. Would the moon stop circling the earth? Would it require any less energy to walk uphill than to walk down? Would apples no longer fall? And if 99% or 66% of the people in this great land think evolution is part of grand design, despite our appendix, despite our remnant of a tail, despite having our nose directly above our mouth, despite having a single orifice to both urinate and reproduce, despite all that, should we really care? The data for evolution in its broadest form is stronger, has more supporting data of more different kinds that does the Law of Gravitation. Flatlanders believe in a flat earth despite data to the contrary. Those who think evolution is the devils work will think so despite data to the contrary. It is only a pity that children and education are involved.

Arthur Yuwiler
Professor emeritus UCLA
Chief, Neurobiochemisty Lab, USDVA Brentwood (retired)
Research Scientist, USDVA, Washington (retired)

Tell Us What You Think

We appreciate receiving letters that are suitable for publication regarding issues of importance or commenting on articles appearing in *ASBMB Today*. Letters should be sent to the editor, John Thompson, at the address found at left. Letters must be signed and must contain the writer's address and telephone number. The editor reserves the right to edit all letters.

The Pipeline for the Future of Science Untapped Potential in Latin America

Dr. Judith Bond

As we begin a new year, we can reflect on how fortunate we have been as scientists working at time when there has been such excitement about the potential of science, advances in fundamental knowledge and promise for applications of that knowledge in medical, industrial, environmental and social science. The NIH budget doubled, there are increasing collaborations globally and between academia and the industrial sector, our trainees are learning to participate effectively in interdisciplinary projects, and the diversity of the workforce is increasing (although more slowly than we would like). But as we enter 2006, there are signs of doom and gloom as funding streams for research and training become tighter, mathematics and science education in our elementary schools fails to sustain the interest of the students, many of our high school science and math teachers are not well qualified in the discipline, and fewer domestic students chose science and engineering degrees. The result is a public lacking a good understanding of science and one that is vulnerable to pseudo-science claims. This is at a time when other countries, such as China and India, are investing heavily in the growth of science and successfully developing robust science institutes. Nobel laureate Richard E Smalley, professor of chemistry and physics at Rice University, predicts that if present trends continue, 90% of all the world's scientists and engineers will be living in Asia by 2010. It is clear we have to get this message to decision makers who can provide leadership in formulating national policies to improve science education so that American science can remain competitive in the world. Innovative strategies will be necessary, as in the days of Sputnik when the USA faced the competitive challenge of the USSR, to increase the commitment to home grown science and engineering. Industry too must step up to the challenge and invest in teaching and research for our future.

George Kenyon, President-Elect IUBMB; Judith Bond; Ernesto Podesta, President of the Argentine Society for Biochemistry and Molecular Biology Research; Vito Turk, IUBMB Committee on Symposia.

It is time for us all to identify means to increase the pipeline for the future of science. In that light, I was impressed with the quality of the students and postdoctoral workers in Latin America at a recent meeting of the Pan American Association for Biochemistry and Molecular Biology (PABMB) and the Argentine Society for Biochemistry and Molecular Biology Research in Pinamar, Buenos Aires Argentina 3-6 December 2005. The investigators and trainees were bright, enthusiastic, hard working, engaged in their projects, well read and forward looking. The majority of the participants at this meeting were young scientists from Argentina, Brazil and Chile with fewer numbers from other Latin American countries. The science was of high quality, even though some of these countries are experiencing political unrest and variable economies. The Latin American scientists and trainees are eager to interact with scientists throughout the world, especially in the USA and Europe. There would be many benefits to more opportunities for collaboration between North and South American scientists at all levels. Perhaps US Americans should look south for untapped potential talent. This may be one of many ways we can increase the pipeline for healthy growth in the sciences.

Best wishes for a happy and prosperous New Year!

Judith S. Bond
President, ASBMB

Right: Juan José Cazzulo, Chairman of the PABMB.

Below: Poster Session at the PABMB meeting, Dec 3-6, 2006, Pinamar Argentina

by Peter Farnham, CAE, ASBMB Public Affairs Officer

House Fails to Pass HHS Funding Bill… What Now for NIH?

In an action variously characterized as "unexpected," "stunning," and "unprecedented," the House of Representatives on November 17 rejected the Labor/HHS/Education funding bill, putting next year's funding for a variety of health and biomedical research programs—including NIH—in limbo, if not in jeopardy. The vote was 224 – 209, with 22 Republicans siding with a unified Democratic Party. This is the first time this funding bill has been rejected by the House since the Republicans gained control of the chamber in 1994.

The immediate outcome of the defeat was that the Senate, just before adjourning for Thanksgiving, went on record that the bill be returned to conference committee, and that $2 billion intended to subsidize heating bills for low income Americans be designated as "emergency spending," which means that the money would not count against the spending limits imposed by the 2006 budget resolution. This is not just an arcane budgetary shift; as FASEB Legislative Affairs Director Jon Retzlaff noted, "We hope that this will mean an additional $2 billion will be available to spend on L/HHS programs, including NIH . . . we will have to wait and see how the House reacts." Most observers, however, are not optimistic.

More to the point regarding NIH, the Senate also voted to instruct its conferees to seek an additional $797 million for NIH, thus returning the overall total for NIH to $29.4 billion, the same as in the Senate version. It is very uncertain how the House will react to this proposal.

The bill approved by the House/Senate conference committee totals $602 billion, $1.4 billion lower than last year's bill. It funded NIH at a total of $28.62 billion, an increase of just 0.5 %, the smallest in 36 years, and well below the 3.2% biomedical inflation rate expected in 2006. The bill also includes no spending for programs to combat avian flu, although the White House had requested an additional $8 billion for this purpose.

While Democrats were uniformly against the measure because they believed it shortchanged important health and education programs, the 22 Republicans who voted against it offered a variety of reasons for doing so. Rep. Ron Paul (R-TX), for example, routinely votes against most social spending bills (he is a former Libertarian candidate for President). Other reasons offered by GOP dissenters were concerns about rural healthcare spending, as well as overall spending priorities. Some voted against the bill because member earmarks were removed. Rep. Bill Thomas (R-CA), Chairman of the Ways & Means Committee, voted "no" because the bill blocked the federal government from paying for erectile dysfunction drugs, such as Viagra, for senior citizens under Medicare.

The bill's rejection came against a backdrop of growing conservative dismay at the amount of spending the Administration and Congress have approved in recent years. The last straw appeared to be the White House plan to simply spend an additional $52 billion on hurricane relief while making no effort to trim other spending, whether by proposing cuts in regular spending bills, spending less in Iraq, or revisiting its tax cut policies.

This lack of fiscal discipline enraged House fiscal conservatives, and emboldened them to propose a series of offsetting spending cuts to help pay for the relief effort. As FASEB's Retzlaff notes, "Former Majority Leader Tom DeLay (R-TX) actually apologized to the Republican Study Committee (a group of House fiscal conservatives) for allowing government spending to grow at a high rate while Republicans have been the majority party."

ASBMB members in Washington to visit congressional leaders are seen here with Senator Kay Bailey Hutchison (R-TX). From left are Bob Wells, Bettie Sue Masters, Senator Hutchison, William Brinkley, and ASBMB President-elect Heidi Hamm.

So Now What?

Given that the House could not pass this bill in its current form, the Senate has urged the House to recommit the L/HHS bill to conference committee and renegotiate the numbers to make it more politically viable, but it is not at all clear that the House will do that. There are in fact several alternatives.

First, Congress could put more money in the bill. Although this would be the best alternative for NIH and other programs funded under the bill, there is no indication at this point that the House would agree to such an action.

Second, the House could agree to the Senate's move to designate $2 billion in heating subsidies as emergency spending.

A third possibility is to attach the bill to the Defense appropriations bill, on the theory that no one would dare vote against a bill funding American troops in time of war. On the other hand, Rep. Nancy Pelosi (D-CA) has been quoted as saying that she expects this will happen, since the Defense bill is a "must pass" piece of legislation.

A fourth possibility, the one being talked about most widely, is putting the bill under a long-term continuing resolution that would fund the bill at the lower of either the 2005 or 2006 levels.

In any case, as FASEB's Retzlaff notes, "Reopening discussion on the L/HHS conference bill may be problematic for NIH because it is very unlikely that additional money will be provided to the Committee. Therefore, the only alternative may be to redistribute the money, which could reduce NIH's increase to fund programs that received a cut or pay for certain member's projects (earmarks)."

EVOLUTION WATCH

New FASEB Group Formed to Deal with Evolution, Education Issues

The inaugural meeting of the Subcommittee on Educating about Evolution took place via teleconference on December 1. This new subcommittee of the FASEB Science Policy Committee will be coordinating the FASEB response to the growing problem of attacks on the teaching of evolution in the public schools. It is chaired by Dr. Marnie Halpern, Carnegie Institution of Washington, and a member of the Society for Developmental Biology.

The Subcommittee (of which ASBMB Public Affairs Officer Peter Farnham is a member) will in coming months be coordinating such activities as assembling a list of FASEB member experts on evolution; sponsorship of evolution-related symposia at FASEB and other meetings; working with non-FASEB groups also concerned about evolution education; and developing a FASEB-wide statement on evolution education.

Biophysical Society Issues Statement on Evolution

On November 5, the Biophysical Society Executive Board adopted a statement on the teaching of evolution in the public schools. The "Statement Opposing the Teaching of Alternatives to Evolution in K-12 Science Classrooms" strongly opposes teaching the concepts of "intelligent design" and "biblical creationism" in the public schools as part of science classes.

According to the statement, "What distinguishes scientific theories from these theological beliefs… is the scientific method, which is driven by observations and deductions, leads to testable predictions, and involves the formulation of hypotheses that can be refuted . . . "The Biophysical Society is strongly opposed to any effort to blur the distinction between science and theology by teaching or presenting non-scientific beliefs in science classrooms."

The full statement is available by contacting the Biophysical Society at 301/634-7114, or on the web at http://www.biophysics.org/pubaffairs/press.htm.

The ASBMB Public Affairs Advisory Committee is currently working on a statement on the teaching of evolution; look for it to appear soon in *ASBMB Today*.

Don't Forget the ASBMB Symposium on Teaching Evolution next April in San Francisco

The ASBMB Public Affairs Advisory Committee is sponsoring a symposium called "Teaching the Science of Evolution Under Threat of Alternative Views" which will be held on April 4, 2006, during the ASBMB's centennial meeting in San Francisco, California. An outstanding group of speakers will address the issue of teaching evolution from a variety of perspectives, including the scientific, the theological, and the political. Watch this space for more information.

FASEB Expresses Concern Over Proposed Biodefense Agency

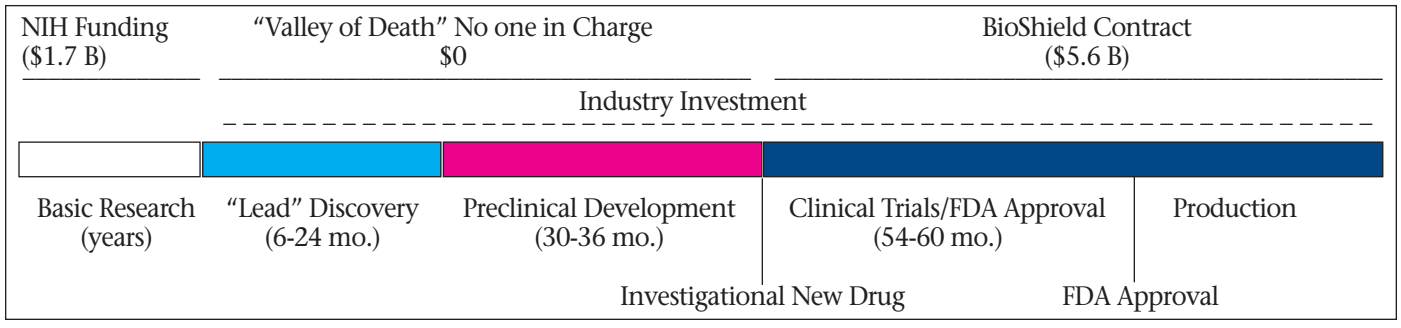
By Carrie D. Wolinetz, Associate Director for Communication, FASEB Office of Public Affairs

The "Biodefense and Pandemic Vaccine Production Act of 2005" (S.1873) was introduced with great haste in October and quickly passed through the Senate Health, Education, Labor and Pensions (HELP) Committee, as the Senate struggled to respond to growing concern over pandemic influenza. This legislation, the brainchild of Senator Richard Burr (R-NC), has a number of provisions, including industry incentives, market exclusivity stipulations and liability protections. It would also move the Armed Forces Institute of Pathology, destined to be eliminated in the most recent round of base closings, to the National Institutes of Health (NIH). However, the largest portion of the bill is dedicated to creation of a new agency, the Biodefense Advanced Research and Development Agency (BARDA).

The Federation of American Societies for Experimental Biology (FASEB) contacted the HELP committee, objecting to the swift movement of a bill, which has the potential to impact current research programs without the input of the scientific community. FASEB was invited to meet with Robert Kadlec, M.D., sstaff director director of the subcommittee on bioterrorism and public health. In justifying creation of BARDA, Kadlec characterized biodefense research (broadly described as protection from infectious disease, chemical, biological or radiological attack), as a continuum from basic research to product development (Figure 1). In this continuum, NIH, primarily through the National Institute of Allergies and Infectious Disease (NIAID), is responsible for the basic research and Project BioShield money is being used for the latter stages of product development and procurement. In Senator Burr's view, no one is addressing the middle segment of the process, what he dramatically terms "The Valley of Death," encompassing the advanced research and pre-clinical stages of research and development (R&D). Kadlec asserted that ten percent of the Project BioShield money was intended to fill this need. Because Congress gave BioShield only $5.6 billion instead of the $10 billion originally requested, the Department of Health and Human Services (HHS) is choosing to spend the money solely on procurement. According to Kadlec, Dr. Tony Fauci, NIAID Director, is using his biodefense money to fill in the gap. Burr envisions BARDA as an opportunity to remove $1 billion from Project BioShield, shift it into "The Valley of Death," thereby protecting NIAID's basic research money

BARDA would be set up in the mold of the Defense Advanced Research Projects Agency (DARPA). The staff currently working on advanced R&D at both NIH and HHS would be consolidated and moved under the leadership on a new director, likely to be recruited from industry. They would engage in project oriented, high-risk advanced research, aimed at moving the fundamental knowledge produced by NIH more quickly to product development. FASEB has met with NIAID, who is cautiously supportive of the new agency, provided it appropriately defines "advanced" research, so as not to duplicate existing programs, and that it comes with money attached, rather than burdening HHS with an unfunded mandate that could harm the current research enterprise.

FASEB, too, is concerned over the cost of creating a new agency at a time of constrained resources; it is questionable whether taking the money from Project BioShield, as Burr envisions, is a sustainable funding source. What is the likelihood of this bill going forward? There is little bipartisan agreement: the Democratic Senators on the HELP committee have introduced a competing biodefense bill which would not create BARDA. Moreover, if Congress agrees to fund the President's request to fight pandemic flu and a separate bill on liability protections moves in the House, it may remove the urgency to pass the Burr legislation. However, Burr remains committed to getting BARDA through, and plans to try to push it towards passage as early as January 2006.



Inside (the Beltway) Scoop

By Jon Retzlaff, FASEB

President Bush alienated many fiscal conservatives when he embraced what appeared to be an open checkbook policy to pay for the aftermath of Hurricane Katrina. When the President submitted to Congress a $51.8 billion emergency supplemental appropriations request and neglected to identify any corresponding spending offsets, it emboldened fiscal conservatives to take up the mantra of fiscal responsibility. In a matter of days, House leaders found themselves ceding to the fiscal conservatives' concerns. Former Majority Leader Tom DeLay (R-TX) actually apologized to the Republican Study Committee (a group of House fiscal conservatives) for allowing government spending to grow at a high rate while Republicans have been the majority party.

This backdrop of information helps explain why the Labor, Health and Human Services, Education and Related Agencies (L/HHS) conference report was provided a FY2006 allocation at $1.4 billion below last year's spending levels. Factoring in inflation, the real reduction was approximately $5 billion. Furthermore, House conferees refused to designate any spending as "emergency spending," including the $7.8 billion the President proposed to fight avian flu.

Reopening discussion on the L/HHS conference bill may be problematic for the National Institutes of Health (NIH) because it is very unlikely that additional money will be provided to the Committee. Therefore, the only alternative may be to redistribute the money, which could reduce NIH's increase to fund programs that received a cut or pay for certain member's projects (earmarks).

On the day after the House defeated the L/HHS conference report, the Senate voted 66-28 to instruct its conferees to designate the $2 billion reserved for low income individuals to help pay their energy costs as "emergency spending." We hope that this will mean an additional $2 billion will be available to spend on L/HHS programs, including NIH. However, we will have to wait and see how the House reacts to this proposal.

NIH Speaks About Reauthorization

The President of the Federation of American Societies for Experimental Biology, (FASEB), Dr. Bruce Bistrian, President-Elect, Dr. Leo Furcht, and Director of Legislative Relations, Jon Retzlaff, met with Marc Smolonsky, Director, NIH Office of Legislative Policy and Analysis to discuss how FASEB may be able to work more closely with NIH DirectorDr. Elias Zerhouni, NIH Director, regarding NIH Reauthorization. Zerhouni is interested in establishing (in statute) the new Office of Portfolio Analysis and Strategic Initiatives (OPASI). The purpose of OPASI is to provide the NIH institutionsInstitutes (ICs) with the methods and information necessary to improve the management of their large and complex scientific portfolios. It also is charged with identifying (in concert with multiple inputs) important areas of scientific opportunities. During a recent town hall meeting, Zerhouni remarked that OPASI will help NIH become more nimble, dynamic and responsive. He compared OPASI's role to a radar that scans the environment.

In addition, Dr. Zerhouni is interested in establishing a common fund at NIH. The common fund is not a transfer authority, but instead is a set-aside fund. Each year, NIH ICs institutions would provide a percentage of their annual budgets to this fund to support research identified through the OPASI planning process. The common fund's budget would be 1.1 percent% of the total NIH budget in FY2006. The goal is to grow the fund to 1.7% percent of the total NIH budget by FY2008. However, this will depend on the overall growth rate for the NIH budget. Zerhouni would like to see the common fund increase to five percent5% of the total budget over time, but this would happen only if NIH's budget increases (over many years) by a greater amount than the biomedical research inflation index.

A number of our readers have expressed interest in learning more about the activity of FASEB's Office of Public Affairs (OPA) in areas of particular interest to ASBMB members. Accordingly, we have decided to provide space in ASBMB Today for a regular series of news reports and analyses by OPA staff concerning actions and trends, in all three branches of government, that may have an impact on our membership. This is the first in this series.

Samuel W. Johnson, John J. Abel, and Russell

By Nicole Kresge, Staff Science Writer

The American Society for Biochemistry and Molecular Biology (ASBMB) was founded in December 1906 as the American Society of Biological Chemists (ASBC). Interest in the formation of the new society came primarily from members of the American Physiological Society (APS) who felt that the chemical side of physiology had attracted a significant and growing number of scientists and a separate society would be desirable. Among the many people involved in the creation of the ASBC, three men played central roles in laying the groundwork for the founding of the society: Samuel W. Johnson, John J. Abel, and Russell H. Chittenden.

Samuel W. Johnson

Samuel William Johnson (1830-1909) was an accomplished scientist and an individual of enormous impact on the shaping of biochemistry in America in the latter part of the 19th century. He was also a mentor to several of the Society's early leaders, including Chittenden, Thomas B. Osborne, and Lafayette B. Mendel, and was instrumental in inspiring them to form the ASBC.

Johnson was born in Kingsboro, New York and was a graduate of the Sheffield Scientific School at Yale University (1852). He spent several years in Germany completing his chemical education under Otto Linné Erdmann at Leipzig and Justus von Liebig at Munich. After returning from his European studies in 1856, Johnson was appointed professor of analytical chemistry at the Sheffield Scientific School, where he proceeded to apply chemical approaches to his research and to persuade, at the same time, the authorities at Yale to develop teaching and research programs in physiological chemistry. He was largely responsible for the creation of a course in physiological chemistry in 1874, marking the beginning of the incorporation of physiological chemistry into the medical curriculum in America.

Dr. Samuel W. Johnson

Johnson was also instrumental in establishing the first temporary agricultural experimental research station at Wesleyan University in 1875, and in creating a permanent station at Yale under his direction two years later. His many accomplishments in science and education include two books, "How Crops Grow" (1868) and "How Crops Feed" (1870) that were widely acclaimed internationally. His lectures and publications on soils, rotation of crops, fertilizers, methods of analysis, plant nutrition, food adulteration, and many other subjects exerted a great influence upon the development of scientific agriculture in America. By initiating a systematic examination of the chemical composition of commercial fertilizers, he became the founder of agricultural regulatory work in America.

Johnson was President of the American Chemical Society (1878, three years after its formation), the Association of Official Agricultural Chemists (1888) and the American Association of Agricultural Colleges and Experimental Stations (1896), a member of the National Academy of Sciences from 1866, and an associate fellow of the American Academy of Arts and Sciences. Although Johnson himself was not a member of the ASBC, which was formed shortly before he passed away, his work in promoting biochemistry in America and in mentoring many of the future leaders of the Society laid the foundation for the organization of the Society by Abel and Chittenden.

John J. Abel

John Jacob Abel (1857 -1938), who was born near Cleveland, Ohio, did his early training at the University of Michigan where he received a Bachelor of Philosophy degree in 1883. After graduation he spent a year in the Department of Biology at the Johns Hopkins University, studying with H. Newell Martin. He then went to Germany for a medical education. The first two years of what turned out to be a seven-year stay in Europe were spent in Carl Ludwig's Institute of Physiology in Leipzig. Abel then worked in Oswald Schmiedeberg's Laboratory of Pharmacology in Strassburg near Hoppe-Seyler's Laboratory of Physiological Chemistry. After receiving his M.D. at Strassburg in 1888, he went to Vienna for clinical training and spent 1888 to 1889 in Bern at the Biochemical Institute of Marceli Nencki.

Upon his return to the United States, Abel became lecturer (then professor) of materia medica and therapeutics at the University of Michigan. In 1893 he moved to the new medical school at Johns Hopkins University to be professor of pharmacology, with an obligation also to teach the course in physiological chemistry. He became professor emeritus in 1932, but continued his research work at Johns Hopkins until his death in 1938.

H. Chittenden: the Founding Fathers of ASBMB

Abel was a great scientist with many major accomplishments during an active 50-year career. Overall, his research can be characterized as being primarily directed toward the isolation and characterization of hormones. He and his collaborators worked for more than 10 years to describe the active secretion of the suprarenal gland that raised blood pressure, epinephrine. He also isolated and crystallized insulin following its discovery by Banting and Best.

Dr. John J. Abel

In addition to his scientific accomplishments, Abel was notable as an organization builder. In 1895 he founded the *Journal of Experimental Medicine*, and in 1905 he convinced Christian A. Herter to finance and co-edit the *Journal of Biological Chemistry* (JBC). Abel and Herter served as the first Editors, and Abel, following Herter's early death in 1910, continued as the Managing Editor for several years.

The first definite move for the establishment of a society of biological chemists was made by Abel on October 16, 1906, when he sent a letter to all 24 members whose names were listed on the front page of the newly formed JBC. The letter contained a proposal to form an American society of biological chemists. The organizational meeting of the ASBC took place in the second floor parlor of the Hotel Belmont in New York City on the afternoon of Wednesday, December 26, 1906. Twenty-nine individuals attended this first meeting. Abel called the meeting to order and immediately made the motion that Chittenden be elected Chairman and William J. Gies elected Secretary. Abel then addressed the group, stating his belief that a national society of biological chemists should be organized at once. His address was heartily approved and a formal motion was made to organize, at once and permanently, the society Abel suggested. The motion was passed unanimously and the ASBC was born. Chittenden was then elected President (by motion of Abel), Abel, Vice-president, Gies, Secretary, and Lafayette B. Mendel, Treasurer. Abel later served as the Society's second president in 1908.

Russell H. Chittenden

Russell H. Chittenden (1956-1943) was born in New Haven, Connecticut and obtained his bachelors degree in chemistry in 1875 from the Sheffield Scientific School at Yale. He was a student of Johnson's, and during his senior year Johnson put him in charge of the course he created in physiological chemistry. He continued to teach this course after graduation but then went to Heidelberg in 1879 to study physiology and physiological chemistry with Willy Kühne for a year. In 1880 he received a Ph.D. from Yale University and in 1882 he was appointed professor of physiological chemistry at Yale, a position he held until his retirement as emeritus in 1922. He was Director of the Sheffield Scientific School from 1898 to 1922, and was also appointed Professor of Physiology in the Medical School in 1900. During his twenty-four years as director, Chittenden greatly expanded both the faculty and the physical facilities of the Sheffield School, as an entity largely independent of Yale College.

Dr. Russell H. Chittenden

A prolific and influential author, Chittenden's research focused primarily on various aspects of the chemistry of digestion, particularly proteolytic processes, and the intermediate products and enzymes involved. As a member of the Referee Board of Consulting Scientific Experts, he carried out several investigations on the influence of certain agents on the normal process of the body, notably the influence of sodium benzoate.

Chittenden had been both a charter member and a past-President of the APS and his selection as the founding President of the ASBC assured good interactions between the two organizations. In keeping with this attitude, arrangements were made for the two societies to continue to meet together, and, when they were shortly joined by the American Society of Pharmacology and Experimental Therapeutics, which John Abel was also instrumental in founding in 1909, they formed the nexus for the eventual formation of the Federation of American Societies of Experimental Biology (FASEB) a few years later.

Say What?

Bacterial Conversation-Stoppers

While a chattering crowd of various species of bacteria is essentially a microbial tower of Babel, certain snippets of their chemical conversation are almost universally understood. HHMI researchers have found that bacteria of different species can talk to each other using a common language—and also that some species can manipulate the conversation to confuse other bacteria.

The interspecies crosstalk and misdirection could have important consequences for human health, said Bonnie L. Bassler,* an HHMI investigator in the Department of Molecular Biology at Princeton University whose study was published in the September 29, 2005, issue of *Nature*. "The ability of cells to communicate with one another and the ability to interfere with the communication process could have consequences in niches containing competing species of bacteria or in niches where bacteria associate with humans," Bassler said. "In the gut, you can imagine how the normal microflora might interfere with cell-cell communication to thwart bacterial invaders."

Using a chemical communication process called quorum sensing, bacteria converse among themselves to count their numbers and to get the population to act in unison. A synchronized group of bacteria can mimic the power of a multi-cellular organism, ready to face challenges too daunting for an individual microbe going it alone. Swelling populations trigger their quorum-sensing apparatuses, which have different effects in different types of bacteria. One species might respond by releasing a toxin, while another might cut loose from a biofilm and move on to another environment.

Each species of bacteria has a private language, but most also share a molecular vernacular that Bassler's lab discovered about 10 years ago. A chemical signal called autoinducer-2 (AI-2), originating from the same gene in all bacteria, is released outside the cell to announce the cell's presence. Nearby bacteria take a local census by monitoring AI-2 levels and conduct themselves as the circumstances warrant.

Researchers have speculated that AI-2 is a universal language, and the new study from Bassler's lab is the first to show those conversations taking place—and producing consequences—between co-mingling species.

"Bacteria can communicate between species, and they have evolved mechanisms to interfere with the communication. Probably this is but one of many cunning strategies they have for manipulating chemical communication."

—Bonnie L. Bassler

Postdoctoral fellow Karina Xavier mixed *E. coli*, beneficial bacteria that live in the human gut, with *Vibrio harveyi*, a marine species that naturally glows in the dark in the presence of a crowd. In the test tube, AI-2 production by either species turned up the marine bacteria's light and turned on the quorum-sensing genes in *E. coli*. That confirmed what the scientists already suspected: the linguistic versatility of AI-2.

Dr. Bonnie L. Bassler

But this common language does not guarantee the correct message gets through, the researchers discovered. In earlier work, Xavier had found that *E. coli* both produces and consumes AI-2. In this study, she set up an experiment where multitudes of *E. coli* first produced then devoured enough AI-2 to dim the lights of the marine bacteria, essentially fooling the thriving oceanic gang into thinking its members were few, thereby terminating its quorum-sensing behaviors.

In a more realistic encounter, Xavier mixed *E. coli* with *V. cholerae*, the cholera-causing bacteria that mixes with *E. coli* in human guts. When cholera bacteria sense a quorum, they

turn off their toxins and excrete an enzyme to cut themselves loose from the intestine, so they can move out of the body where they can infect another person. Here, *E. coli* squelched much of the quorum-sensing response of the cholera bacteria, although the effect was not as dramatic as with the marine bacteria.

"The real take-home point is the interference," Bassler said. "Consumption of the signal could be a mechanism that allows one kind of bacteria to block another kind of bacteria from counting how many neighbors they have and, in turn, properly controlling its behavior."

"This study moves us closer to really understanding how these interactions happen in nature," Bassler said. "Bacteria can communicate between species, and they have evolved mechanisms to interfere with the communication. Probably this is but one of many cunning strategies they have for manipulating chemical communication. You can imagine that, in niche one, the bacteria we consider good guys might be using AI-2 and winning. And unfortunately, in niche two, the bad guys might be using AI-2 and winning."

**ASBMB member.*

Researchers Find How Some Antibiotics Kill Bacteria

Researchers have uncovered how members of one family of antibiotics kill bacteria. This new knowledge may help drug developers make slight changes to these antibiotics to make them more effective against drug-resistant strains of bacteria, said Irina Artsimovitch,* a study co-author and Assistant Professor of Microbiology at Ohio State University.

The antibiotics studied belong to the rifamycin family. Until now, researchers believed that these antibiotics and their derivatives (there are at least a thousand) all killed bacteria in the same way.

But the new study used recent advances in X-ray imagery to obtain the highest resolution information ever available of how rifamycins bind to their targets. With these images, the researchers found that these drugs remove a key component of the bacteria they attack. The researchers also found that different rifamycins do this in slightly different ways.

"This is a major revision of how we thought these antibiotics functioned," Artsimovitch said. "The new molecular details help explain why bacteria that are resistant to one kind of rifamycin antibiotic might still be sensitive to another. That may help to narrow down the search for new synthetic derivatives to conquer resistance altogether."

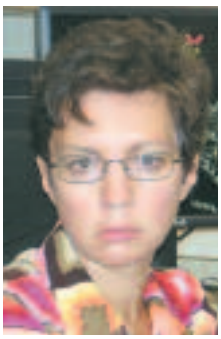
The study appeared in the August 2005 journal *Cell*.

Ryfamycin antibiotics are one of the first-line treatments for tuberculosis, a disease that is on the rise worldwide. The drugs are also relatively inexpensive to make, have a long shelf life and are nearly non-toxic to cells other than the pathogenic ones they target.

The problem with them, though, is the rampant development of bacterial resistance. "There is a voluntary restriction on the use of rifamycins in treating infections other than tuberculosis and meningitis due to the fear of spread of resistant mutations," said Vladimir Svetlov, a study co-author and a research associate in microbiology at Ohio State. "Those mutations could render these antibiotics ineffective against most of the serious health threats that they are being used to manage," he continued.

All rifamycins belong to one of two structural classes. The researchers used two clinically important rifamycins, rifapentin and rifabutin, that represent each structural class. They obtained samples of the antibiotics in their respective crystal structure form.

The researchers used X-ray crystallography to determine where individual atoms are located within a crystal structure. From this information they then created high-resolution computer models of each antibiotic, approximating what each substance looked like on the atomic level and exactly how each bound to and affected a RNA polymerase. With recent advances in X-ray crystallographic studies of RNA polymerase, the researchers could determine exactly where and how both antibiotics bound to RNA polymerase in E. coli, and what it did to that polymerase as a result.



Dr. Irina Artsimovitch

The study showed that rifamyacins inhibit pathogenic bacteria by removing the crucial magnesium ion (Mg2+) from a bacterium's RNA polymerase. The higher-resolution images also showed that rifapentin and rifabutin each bind just a little differently to *E. coli* RNA polymerase, but still bring about the same results.

"From these findings we can suggest how rifamycins that are currently used in therapy can be improved to be effective even against existing resistant strains of bacteria," Artsimovitch said

**ASBMB Member*

PITTCON TO HOST "BRIDGING THE SCIENCES" SYMPOSIUM

Coalition Seeks Federal Funding for Advancing Research for the Enabling Sciences

Pittcon (The Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy) announced today that it will host a special symposium, Funding U.S. Research: Challenges and Opportunities, arranged by the Coalition for Bridging the Sciences, at Pittcon 2006, March 11 – 17, 2006, Orlando, FL. The Bridging the Sciences Coalition represents more than 250,000 university and industry scientists from 16 research societies seeking federal support for research at the interface between the biomedical sciences and the physical and computational sciences. The Symposium will be held at the Orange County Convention Center, Thursday, March 16, 2006 at 8:30 a.m. and will include speakers from the National Science Foundation, National Institute of Biomedical Imaging and Engineering, as well as academia, industry, and government.

Energy Management In Cells May Hold Key To Cancer Defense

In an ongoing effort to fight disease by manipulating energy regulation of cells, a collaborative study led by Dartmouth Medical School (DMS) has demonstrated that cells lacking a tumor-suppressing kinase called LKB1 can still maintain healthy energy levels when they become stressed. This energy regulation is essential for keeping cells from dying off too quickly. The study's results could signal new advances for combating cancerous tumor growth, and also may lead to new treatments for type 2 diabetes and obesity.

The study, published in the August 12, 2005 issue of the *Journal of Biological Chemistry (JBC)*, was headed by Dr. Lee Witters,"* Eugene W. Leonard 1921 Professor of Medicine and Biochemistry at DMS and of Biological Sciences at Dartmouth College, who has researched kinases for over 25 years. Kinases encompass a large family of enzyme proteins that play key roles in the workings of most animal cells. He has focused much of his research on the AMP-activated kinase (AMPK) which responsible for managing energy within cellular pathways.

"A cell's energy level is critical to its survival," explained Witters, who likens a low-energy cell to a car with no gas in its tank. "In a previous study, we found that the cellular 'gas gauge,' AMPK, can turn around and alter any deficits in the cell if it is turned on by the kinase LKB1. In this study, we wanted to see if AMPK could also be turned on by something other than LKB1."

"We decided to work with cervical and lung cancer cells because LKB1 is absent from the cellular pathway," said Rebecca Hurley, lead author of the study and a graduate student in the Molecular and Cellular Biology Program at Dartmouth. Working closely with scientists at St. Vincent's Institute in Australia and Duke University, the DMS team concluded that two kinases in these cancer cells, CaMKK· and CaMKK, are able to regulate AMPK independent of LBK1.

"With the addition of these two kinases, we think we have all nearly the players responsible for energy regulation within the cell, which should offer new opportunities in cancer treatment," said Hurley. "If we can stifle a cancer cell's ability to adapt to an energy deficit, it might lose its growth advantage." "You need to know how all these proteins interact before you can make truly significant advances," echoed Witters "It's like poker; not only do you need to know what each card signifies individually, but in order to win you must have an understanding of how they play off each other."

In addition to cancer-fighting potential of AMPK regulation, the enzyme also responds to changes in insulin or glucose and mediates impaired energy metabolism, a hallmark of type 2 diabetes. "This indicates that AMPK is a very tempting target for the treatment of some forms of diabetes and even obesity," said Witters.

As Witters' laboratory continues to zero in on the central role of kinases in the treatment of disease, he acknowledges that this research is becoming more complex and multiple approaches are needed to find solutions. He believes that significant breakthroughs in science can only be achieved through open collaboration, citing partnerships between faculty and students, and between other institutes outside the Dartmouth community .

**ASBMB Member*

Dr. Lee Witter, at left, and Rebecca Hurley, lead author of the study. Photo by Mark Washburn.

New JLR Thematic Review Series to Focus on Lipid Posttranslational Modifications

By Nicole Kresge, Staff Science Writer

December marked the start of a new Thematic Review Series for the *Journal of Lipid Research* (*JLR*). The series, titled "Lipid Posttranslational Modifications," focuses on the posttranslational modification of proteins with lipids. The reviews are scheduled to run through July 2006 and will cover a variety of topics from the farnesylation of prelamin A to the removal of lipid modifications in lysosomes.

More than a dozen years ago, Patrick Casey of the Duke University Medical Center wrote a review for the *JLR* on a fledgling area of lipid biology—the biochemistry and enzymology of protein prenylation. His article and others on the same topic stimulated interest in the posttranslational modification of proteins with lipids. Since then, there have been many advances in understanding lipid modifications of proteins. These advances have spanned not only the enzymology and biochemistry of lipid modifications, but also genetic and pharmacologic studies linking lipid modifications to the pathogenesis of human disease, and even to therapeutic strategies. As a result, *JLR* Associate Editor Stephen G. Young of the David Geffen School of Medicine, University of California, Los Angeles, thought that it was a good time for the *JLR* to consider a thematic review series on lipid modifications. He was able to recruit several leaders in this field to write reviews on topics of their choosing.

The first article in the series was an editorial written by Stephen G. Young, who is also editor of the series. Young's editorial provided an overview of the upcoming Thematic

Review Series along with brief summaries of the review topics and how these topics relate to the pathogenesis of human disease.

The remainder of the series consists of eight reviews. The first three reviews will cover farnesylation and the inhibition of farnesyltransferase inhibitors. Young, along with Loren Fong of the University of California, Los Angeles, and Susan Michaelis of Johns Hopkins University, will lead off the reviews with an article on a hot field of research—the posttranslational processing of an abundant farnesylated protein in mammalian cells, prelamin A.

Next, Robert Bishop of the Schering-Plough Research Institute will review the current status of farnesyltransferase inhibitors and summarize the basic biology of farnesyltransferase inhibitors, the antitumor activity of farnesyltransferase inhibitors in preclinical models, and the current status of human clinical trials with farnesyltransferase inhibitors. The final article on farnesylation will be by Michel Gelb of the University of Washington who will review the possibility that farnesyltransferase inhibitors might be effective agents in fighting parasitic diseases.

Miguel Seabra of Imperial College, London will review the geranylgeranylation of the Rab proteins, which are critical for vesicular transport within cells, in his article, the fourth in the series. Then, Lorena Beese of Duke University will tie the topics of farnesylation and geranylgeranylation together in her review on the structural biology of protein farnesyltransferase and protein geranylgeranyltransferase type 1. These structures have clarified the specificities of the two enzymes for farnesyl diphosphate and gernanylgeranyl diphosphate and have defined how the enzymes are blocked by specific inhibitor drugs.

The final three reviews in the series will cover several additional topics pertaining to lipid modifications of proteins. Mark Philips of New York University will write a review on the targeting of isoprenylated proteins to membrane surfaces and Robert Deschenes of the Medical College of Wisconsin and Maurine Linder of Washington University, St. Louis, will review protein palmitoylation. The final installment of the thematic review series will be written by Sandy Hofmann of the University of Texas Southwestern. She will review the removal of lipid modifications in lysosomes.

The current and upcoming thematic reviews can be found both on the *JLR* website (www.jlr.org) and in the journal itself.

Compound in Wine Reduces Levels of Alzheimer's Disease-Causing Peptides

By Nicole Kresge, Staff Science Writer

A study published in the November 11 issue of the *Journal of Biological Chemistry* (2005, 280: 37377-37382) shows that resveratrol, a compound found in grapes and red wine, lowers the levels of the amyloid-beta peptides which cause the telltale senile plaques of Alzheimer's disease.

"Resveratrol is a natural polyphenol occurring in abundance in several plants, including grapes, berries and peanuts," explains study author Philippe Marambaud. "The polyphenol is found in high concentrations in red wines. The highest concentration of resveratrol has been reported in wines prepared from Pinot Noir grapes. Generally, white wines contain 1% to 5% of the resveratrol content present in most red wines."

One of the characteristic features of Alzheimer's disease is the deposition of amyloid-beta peptides in the brain. Philippe Marambaud and his colleagues at the Litwin-Zucker Research Center for the Study of Alzheimer's Disease and Memory Disorders in Manhasset, New York, administered resveratrol to cells which produce human amyloid-beta and tested the compound's effectiveness by monitoring amyloid-beta levels inside and outside the cells. They found that levels of amyloid-beta in the treated cells were much lower than those in untreated cells.

The researchers believe the compound acts by stimulating the degradation of amyloid-beta peptides by the proteasome, a barrel-shaped multiprotein complex that can specifically digest proteins into short polypeptides and amino acids.

However, eating grapes may not be a cure for Alzheimer's disease. "It is difficult to know whether the anti-amyloidogenic effect of resveratrol observed in cell culture systems can support the beneficial effect of specific diets such as eating grapes," cautions Marambaud. "Resveratrol in grapes may never reach the concentrations required to obtain the effect observed in our studies. Grapes and wine however contain more than 600 different components, including well-characterized antioxidant molecules. Therefore, we cannot exclude the possibility that several compounds work in synergy with small amounts of resveratrol to slow down the progression of the neurodegenerative process in humans."

Following up on their studies, Marambaud and his colleagues are trying to figure out how resveratrol exerts its effects in order to develop similar compounds to use in fighting Alzheimer's disease. "Our long-term goal is now to elucidate the exact molecular mechanisms involved in the beneficial properties of resveratrol as a necessary prerequisite to the identification of novel molecular targets and therapeutic approaches," says Marambaud. "The observation that resveratrol has a strong anti-amyloidogenic activity is a powerful starting point for screening analogues of resveratrol for more active and more stable compounds, a task in which our laboratory is actively involved. We have already obtained analogues of resveratrol that are 20 times more potent than the original natural compound. We are now aiming to find more stable analogues and to test them in vivo in mice."

Additional good news is that resveratrol may also be effective in fighting other human amyloid-related diseases such as Huntington's, Parkinson's and prion diseases. Studies by a group at the Institut National de la Santé et de la Recherche Médicale in Paris, France headed by Christian Néri have recently shown that resveratrol may protect neurons against amyloid-like polyglutamines, a hallmark of Huntington's disease.

NIH Launches Comprehensive Effort to Explore Cancer Genomics; Cancer Genome Atlas Begins With Three-Year, $100 Million Pilot

The National Cancer Institute (NCI) and the National Human Genome Research Institute (NHGRI) have launched a comprehensive effort to accelerate the understanding of the molecular basis of cancer through the application of genome analysis technologies, especially large-scale genome sequencing. The overall effort, The Cancer Genome Atlas (TCGA), will begin with a pilot project to determine the feasibility of a full-scale effort to systematically explore the universe of genomic changes involved in all types of human cancer.

"Now is the time to move forward with this pioneering initiative. Thanks to the tools and technologies developed by the Human Genome Project and recent advances in using genetic information to improve cancer diagnosis and treatment, it is now possible to envision a systematic effort to map the changes in the human genetic blueprint associated with all known forms of cancer," said NIH Director Elias A. Zerhouni, M.D. "This atlas of genomic changes will provide new insights into the biological basis of cancer, which in turn will lead to new tests to detect cancer in its early, most treatable stages; new therapies to target cancer at its most vulnerable points; and, ultimately, new strategies to prevent cancer."

NCI and NHGRI have each committed $50 million over three years to the TCGA Pilot Project. The project will develop and test the complex science and technology framework needed to systematically identify and characterize the genetic mutations and other genomic changes associated with cancer. The pilot will involve a few types of cancer that will be chosen for their value in helping to determine the feasibility of a possible larger-scale project. The process for determining the types of cancers to be studied is currently underway.

Cancer is now understood to include more than 200 different diseases. In all forms of cancer, genomic changes cause disruptions within cellular pathways that result in uncontrolled cell growth. TCGA will delve more deeply into the genetic origins leading to this complex set of diseases, and, in doing so, will create new discoveries and tools that will provide the basis for a new generation of cancer therapies, diagnostics, and preventive strategies.

"The goal of studying the human genome has always been to improve human health. The Cancer Genome Atlas Pilot Project represents another bold step in that direction," said National Human Genome Research Institute Director Francis S. Collins. "Such an ambitious venture requires significant planning. Given the genetic complexity of cancer, we are certain to face many daunting challenges in this pilot. But by pulling together some of the best minds in the cancer and genomics research communities, I am confident that the pilot will succeed, and we will go on to develop an atlas that will accelerate cancer research in ways we cannot even imagine today."

In the TCGA Pilot Project, a Human Cancer Biospecimen Core Resource will support the collection, processing, and distribution of cancerous and healthy, control tissue samples to Cancer Genome Characterization Centers and Genome Sequencing Centers. The genes and other genomic targets identified will be sequenced by the Cancer Genome Sequencing Centers using high-throughput methods similar to those employed in the Human Genome Project. The Cancer Genome Atlas Pilot Project seeks to identify genetic mutations in the DNA code that are specifically associated with the type of cancer being sequenced.

These data from TCGA Centers will be deposited in public databases supported by NCI's cancer Biomedical Informatics Grid (caBIG™) and the National Library of Medicine's National Center for Biotechnology Information.

The Cancer Genome Characterization Centers, Genome Sequencing Centers, and Biospecimen Core Resources will be selected in 2006. Applications and proposals will be reviewed by experts in the field, and awards will be based on merit and programmatic needs of The Cancer Genome Atlas Pilot Project.

For more details about The Cancer Genome Atlas, go to http://cancergenome.nih.gov.

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Kevan Shokat, UCSF

Glycobiology and Extracellular Matrix
Carlos B. Hirschberg, Boston University Goldman School of Dental Medicine

Genome Dynamics

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Richard W. Hanson,
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Juliette Bell, Fayetteville State Univ.

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K.V. Venkatachalam,
Nova Southeastern University

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Juliette Bell,
Fayetteville State University

EPD/MAC Symposium – Undergraduate Student/Faculty Science
Joseph Provost,
Minnesota State University-Moorhead,
Mark A. Wallert,
Minnesota State University-Moorhead
and Phillip A. Ortiz,
Empire State College

EPD/MAC Symposium – Outreach and Public Education
Neena Grover, Colorado College

Public Affairs Advisory Committee Symposia

William R. Brinkley,
Baylor College of Medicine

Teaching the Science of Evolution Under the Threat of Alternative Views
William R. Brinkley, Ken Miller,
Don Johanson, Eugenie Scott, Ted Peters

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Focus on the Future, Shape the Debate
J. Ellis Bell, Univ. of Richmond

Undergraduate Poster Session and Plenary Lecture: My Life in Science
Edmond H. Fischer, University of Washington School of Medicine and
Edwin G. Krebs, University of Washington School of Medicine

Current Themes in Molecular Evolution
Michael M. Cox,
University of Wisconsin – Madison

Plenary Lecture: Integrity and Independence of Scientific Thought
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Joy A. McMillan,
Madison Area Technical College

The Classroom of the Future
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Al Burlingame, UCSF and
Sue Weintraub, UTHSC, San Antonio

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Eileen Lafer, UTHSC, San Antonio

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Surviving Early Life in Academic Biochemistry

Fred Guengerich, Department of Biochemistry, Vanderbilt University School of Medicine

As part of our Centennial Celebration, we recently asked members to contribute reminiscences of their early thoughts about becoming a scientist, their experience as postdocs, their first paper published, their first lecture at an ASBMB Meeting, the friendships and connections they formed with other ASBMB members, their impressions of the first ASBMB meeting they attended, and anything else they thought pertinent. Here is another contribution. We believe you will find it interesting, and we look forward to receiving and publishing more reminiscences. Please send to them to editor@asbmb.org.

I was asked to submit an article after I received the ASBMB William C. Rose Award last year. My early life and training are described briefly in IUBMB Life 57, 705-707 (2005), so I thought I would reflect on my early years on the faculty, in the hope that this advice is useful. In retrospect, I had not been sold on an academic career and could have gone into the pharmaceutical industry, but I probably made the best decision. I started at Vanderbilt when I was 26 and became a full professor when I was 34. I would not advise anyone to try to do exactly the way I did, but I have some general advice.

First, this is not an easy business and not for everyone. You will have to commit to a heavy workload. I came from a farm and had no problem with work ethic. You can take consolation that long hours are also required for success elsewhere.

Second, I tell my students that the real issue in your lab is not money. The scarce resources are time and people. If you have reasonably good ideas and can master time and people, money should not be a problem.

Third, you have to write and communicate well. I hope you have learned this by now. In retrospect I was fair but not great due to my youthful aversion to studying English and languages.

Dr. Frederick Guengerich (right) receiving 2005 William Rose Award from Dr. Minor J. Coon.

Fourth, the projects you pick to work on are very critical. I have always tried to do basic research on things that have real applications. You will have to go after the "big fish" and not settle for "incremental science." You have to attack difficult projects, but they do have to be workable.

Fifth, avoid distractions, which are sure to come your way. You have to set boundaries and learn to say no. Definitely stay out of department politics. Do not get any bright ideas about starting a company in your spare time. Time-consuming hobbies are not advised. As a corollary, a stable personal life helps.

Sixth, have high standards for people when you bring them into your lab. This may seem difficult when you start and feel desperate to get anyone in. If you expect high performance and treat people as professionals, your lab will be better in the long run.

Seventh, look around and see whom you should use as mentors on the faculty. Some will be good models and also give you advice. Others are examples of what you should not do.

Eighth, be wary of collaborations at this stage. Some can be extremely valuable but others will be a waste of time. Your tenure decision will be focused mainly on what you have done or your role in any collaborative efforts.

Ninth, try to work in the lab as much as you can. You are highly skilled and, at your stage, should be more efficient than most of the people who enter your lab. I have tried to keep doing this, although the pressures have increased over the years.

Tenth, take care of your equipment. Replacing equipment is very expensive and getting items approved on your grants is hard.

Eleventh, start writing your grants early. You need time to prepare and re-evaluate everything. Also, if you want input from other faculty, get it early. You are facing serious competition, and just like pro football, everything depends on preparation and execution.

Twelfth, never forget the excitement of discovery and why you do this.

There are more points but these are a few that may help. It was definitely all worth it.

The Recommended Undergraduate Curriculum For a Biochemistry & Molecular Biology Degree

Two years ago, after a three year review of the curriculum, the Education and Professional Development Committee came out with a new set of curriculum recommendations for Biochemistry and Molecular Biology undergraduate programs. The recommendations, which can be found at (http://www.asbmb.org/asbmb/site.nsf/Sub/UndergradCurriculum?Opendocument) focused on content and skills rather than being proscriptive about numbers or names of courses. The focus on skills is an increasingly important aspect of the recommendations. As has been discussed in several journals and publications (Bell, Nature Reviews, 2:221-225, 2001, Bio2010, 2002, Bialek & Botstein, Science, 303:788-790, 2004, Alberts, Cell, 123: 739-741, 2005) as students are educated for the challenges of the 21st century it is critical that they are taught in a manner that fosters independent learning as well as quantitative and analytical thinking skills. It is no longer acceptable to "teach" students content, the curriculum must educate students to be aware of both underlaying concepts as well as the challenges of the future.

Since the publication of the new curriculum recommendations in 2003 (Judith G. Voet, Ellis Bell, Rodney Boyer, John Boyle, Marion O'Leary, and James K. Zimmerman, Biochemistry and Molecular Biology Education 2003 31: 161-162) there have been a number of articles in Biochemistry and Molecular Bioogy Education (Rodney F. Boyer, Biochemistry and Molecular Biology Education 2003 31: 223-224, Ellis Bell, Biochemistry and Molecular Biology Education 2003 31: 225-227, John A. Boyle , Biochemistry and Molecular Biology Education 2003 31: 283-285, James K. Zimmerman , Biochemistry and Molecular Biology Education 2003 31: 375-377, Mark Wallert, Ellen Brisch, Chris Chastain, Michelle Malott, and Joseph Provost, Biochemistry and Molecular Biology Education 2004 32: 146-150, Bobich, Biochemistry and Molecular Biology Education 2004 32: 1-2, Joan L. Slonczewski and Rosemary Marusak, Biochemistry and Molecular Biology Education 2004 32: 151-155), focusing on how various types of Universities and Colleges have implemented the ASBMB Curriculum.

As indicated when the new curriculum was published, it was not meant to be proscriptive but rather a continuing evolution and discussion amongst educators as to how to best prepare students for their futures. During the coming months the Education and Professional Development Committee web site, and the Undergraduate Affiliates Network newsletter, Enzymatic, will post a series of editorials on issues facing educators implementing the ASBMB recommended curriculum and on how schools wishing to start a Biochemistry and Molecular Biology undergraduate program can make use of the recommendations to construct a curriculum that will both challenge and excite students interested in the molecular life sciences.

by John D. Thompson, Editor

Will Biotech Be Taiwan's Next High-Tech Success Story?

Taiwan has achieved remarkable economic success, having transformed itself in a few short decades to the technology-driven economic powerhouse that it is today. Over the past 20 years Taiwan has concentrated on developing its high-tech industries, and is now a world leader in the development and production of electronic, information technology (IT), computer and semiconductor products. Now, Taiwan is on course to achieve the same kind of success and global standing in biotechnology according to BioTech East, a Taiwan-based firm that provides news and analysis of the biotechnology industry.

Over the past 20 years, Taiwan has transformed itself into the technology-driven economic powerhouse that it is today. The island has done this by concentrating on developing its high-tech industries, with the resullt that it is now a world leader in the development and production of electronic, information technology, computer, and semiconductor products.

According to BioTech East, Taiwan has a variety of strengths that can give it an edge over its Asian competitors. It lists these strengths as including:

- Expertise in high technology that is easily transferred to biotechnology
- Strategic location; close to China and straddling Northeast and Southeast Asia
- Strong legal framework
- Highly educated workforce, particularly in IT and biology
- World-class research facilities
- Abundant capital and a vibrant venture capital industry
- Herbal medicine knowledge and experience

Taiwan's claim to be Asia's leader in biotechnology dates back to a November 2001 report by the Singapore office of the brokerage division of French-based Societe Generale Group. That report; entitled Asia's Biotechnology Dawn, identified Taiwan as the top biotechnology nation in Asia, reporting that it had in place many of the elements for a winning strategy. Second after Taiwan was Singapore, followed by Hong Kong/China, Korea, and India.

Biotechnology is generally understood in Taiwan as, the application of technological principles in life sciences. As such, Taiwanese view biotechnology as including the pharmaceutical industry. Furthermore, because of its ethnic Chinese heritage, Taiwan's pharmaceutical industry has always included the Chinese medicine industry. As a result, many manufacturers of Western pharmaceuticals in Taiwan are also producing Chinese medicinal ingredients and formulations. Similarly, many new biotech startups are conducting research on modern medical uses of traditional Chinese herbs and medicines.

The government's Promotion Plan for the Biotechnology Industry, identifies these major goals:

- To establish Taiwan as the center for genomic research and development in Asia.
- To establish Taiwan as the leading location for human clinical trials in Asia
- To establish Taiwan as a worldwide subtropical floriculture center
- To establish in Taiwan the most vibrant biotech-focused venture capital industry in Asia.
- Reach US$4.5 billion in new biotech/pharmaceutical industry investment by 2010
- The establishment by 2010 of at least 18 international-standard biotech companies in Taiwan, either locally owned, or mixed local-overseas joint ventures or collaborations.

Novartis Curbs Development of NKS104

Novartis has stopped development of NKS104 (pitavastatin), a lipid-lowering agent in Phase II for the treatment of elevated total cholesterol, after data from recent investigational trials showed the compound was no longer competitive enough for Novartis to invest further resources.

As a result, Novartis recorded an impairment of $266 million in the fourth quarter of 2005 to fully write off the remaining value of this asset. The European rights to this compound were acquired under a licensing agreement from Kowa. Novartis already recorded an impairment of $66 million in the third quarter related to the acquired and capitalized marketing rights for NKS104. Despite these charges, and barring unforeseen events, Novartis said it expects to report record group operating and net income for the full year based on continued favorable business developments in 2005.

IT Vendors Join to Design Healthcare Network Prototype

Accenture, Cisco, IBM, Microsoft, Northrop Grumman, Oracle, and Sun are among a wide range of technology and consulting companies tapped to design an $18.6 million Nationwide Health Information Network (NHIN) for the U.S. Health and Human Services (HHS) Department. The NHIN is HHS's plan for an internet-based network that links disparate healthcare organizations, such as local clinics, city hospitals, universities, and government health agencies to share and have secure access to clinical data.

"This effort will help design an information network that will transform our healthcare system resulting in higher quality, lower costs, less hassle, and better care for American consumers," HHS Secretary Mike Leavitt said in a statement.

The NHIN will be designed and rolled out through four consortia, each consisting of several IT, consulting, security, and healthcare companies and organizations. The four consortia, each of which are responsible responsible for NHIN coverage in specific areas of the country, are Accenture, Computer Science Corporation (CSC), IBM, and Northrop Grumman.

Each consortium will put together a protytype IP-based network prototype during the coming year. These networks will include patient identification and information services combined with user authentication and security features. When the prototypes are finished, the results will be given to the American Health Information Community, an advisory committee to the HHS and focused on digitizing and network-enabling healthcare records.

Medidata Picked for EDC in Cancer Trials

After a grueling two-year vendor-selection process, there is a winner: Medidata of New York City. That's the word from Britain's National Cancer Research Network (NCRN), which is hoping to simplify processes for 500 staff members throughout the UK. The NCRN is the British counterpart to the National Cancer Institute (NCI) in the U.S.

GE Healthcare, Saneron to Collaborate On Umbilical Cord Blood Processing

GE Healthcare, a unit of General Electric Company (NYSE: GE), and Saneron announced an R&D agreement to optimize GE Healthcare's Ficoll-Paque for the isolation of stem cells from umbilical cord blood. This cell population contains stem cells with the potential to be used to treat more than 80 malignant, genetic and acquired diseases, such as leukemia, lymphoma, sickle cell anemia, thalassemia and immunodeficiency.

"Umbilical cord blood is playing an increasingly important role in the use of cell therapy in the successful treatment of human disease," said Nigel Darby, Vice President of Research and Development, Protein Separations at GE Healthcare. "Saneron and GE Healthcare are working together to provide a solution for a sterile density medium manufactured under GMP conditions to meet the growing need for processing umbilical cord blood so that it may be used in cell therapy."

Ficoll-Paque, a sterile density medium, has been used for 30 years to isolate high yields of mononuclear cells from peripheral blood and bone marrow. However, the cell composition in umbilical cord blood, being significantly different from peripheral blood and bone marrow, demands different separation characteristics. The version of Ficoll-Paque being developed by GE Healthcare and Saneron will specifically process stem cells from umbilical cord blood. The new Ficoll-Paque will be manufactured under GMP standards .

"Saneron has developed a proprietary processing technique for the isolation of a heterogeneous population of cells from umbilical cord blood that has shown promising results in preclinical studies of stroke, myocardial infarction, spinal cord injury, and ALS (Lou Gehrig's disease). The cell separation media from GE Healthcare already provides exceptional gradient separation of cells and the new version of Ficoll-Paque will be extremely valuable to Saneron in the completion of proof of principle studies prior to the initiation of future clinical trials," said Dr. Cyndy Davis Sanberg, vice president of research, Saneron. "This represents an important milestone in Saneron's cord blood stem cell processing."

The new Ficoll-Paque is being developed at GE's Global Research Center in Niskayuna, New York, and tested at Saneron's facilities at the University of South Florida's research park. GE Healthcare will commercialize the final product. Financial terms were not disclosed.

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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.

Manufacturers and suppliers, to include your products in For Your Lab contact Molly at adnet@faseb.org or 301-634-7157 (direct) or 1-800-433-2732 ext. 7157.

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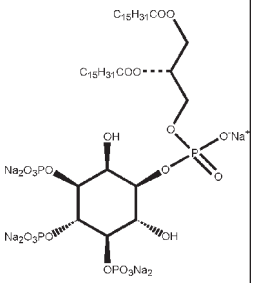

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Cancer Research UK to Offer Fellowships To Chinese Cancer Researchers

Cancer Research UK's Dr. Tim Hunt, a Nobel Prize winner visited Beijing in November with colleagues from Cancer Research UK and leading Chinese cancer experts to award up to 10 fellowships to the top young cancer scientists in China.

Cancer Research UK is the world's leading independent organisation dedicated to cancer research, funding over 3,400 scientists, doctors and nurses based throughout the UK. The charity's total research spend for last year was £217 million ($384 million).

The charity has introduced the Cancer Research UK China Fellowships Programme as part of its ongoing mission to help foster the next generation of leaders in cancer research in China.

This competitive program will enable outstanding young Chinese postdoctoral researchers to obtain a further three years training at a leading Cancer Research UK institute.

The successful students will be based at the Beatson Institute for Cancer Research, Glasgow; Cambridge Research Institute, London Research Institute, and the Paterson Institute for Cancer Research, Manchester.

Dr. Hunt explained, "We hope to build strong partnerships between leading cancer researchers in the UK and their counterparts in China. Cancer is a global problem and must be tackled on a global scale, so bringing together some of the most promising researchers in four of the world's most renowned cancer research centres offers a tremendous opportunity for discovering more about the disease.

"This is a new approach to recruiting postdoctoral fellows coming to the UK. The best universities and institutes across China are excellent. Inevitably, those who reach the top of such a magnificent education system serving a population of 1.3 billion people are outstanding.

"Critical to the long term success of the programme will be the provision of research support for these postdocs on their return to China. Cancer Research UK looks forward to working with the Chinese authorities to organise this."

MIT Professors Receive National Medal of Science

President Bush has presented the 2004 National Medal of Science, this nation's highest science honor to two MIT faculty members: Stephen J. Lippard, the Arthur Amos Noyes Professor of Chemistry, and Institute Professor Phillip A. Sharp* are among eight honorees selected for the award.

Lippard was cited "for pioneering research in bioinorganic chemistry, including the interaction of metal compounds with DNA, preparation of synthetic models for metalloproteins, and structural and mechanistic studies of methane monooxygenase."

"I am very pleased to receive this honor for it recognizes the work of the many wonderful graduate students and post-doctoral associates who have contributed to the science that we were able to accomplish," Lippard said. "It was most unexpected."

Sharp said, "I am greatly honored to receive the National Medal of Science. It is the highest honor this country bestows on a scientist and the legendary names of previous winners make the recognition very special. I want to thank MIT and my colleagues for creating such a productive environment for education and research."

Sharp's current research includes investigations into RNA interference (RNAi), a method of turning off genes using short pieces of RNA. In 1993 he shared the Nobel Prize in physiology/medicine for discovering that some of the genes of higher organisms are "split," or present in several distinct segments along the DNA molecule.

The National Medal of Science was established in 1959 to be given to individuals "deserving of special recognition by reason of their outstanding contributions to knowledge in the physical, biological, mathematical or engineering sciences." In 1980 Congress expanded this recognition to include the social and behavioral sciences.

The two join 43 other current and past members of the MIT community who have been awarded the National Medal of Science.

** ASBMB member.*

Calendar of Scientific Meetings

JANUARY 2006

Pacific Symposium on Biocomputing

January 3-7 • Wailea, Maui
For information contact: http://psb.stanford.edu/
Email: psb@helix.stanford.edu; Phone: (650)725-0659

Building Bridges, Forging Bonds for 21st Century Organic Chemistry and Chemical Biology

January 7-9 • Pune, India
Tel.: 202-872-4523; Email: t_nameroff@acs.org
Website: http://www.ncl-india.org/occb2006/index.htm

Gordon Research Conference on Biology Of Aging

January 29 - February 3 • Ventura, CA
Chairs: Monica Driscoll, driscoll@mbcl.rutgers.edu
Roger J McCarter, rjm28@psu.edu
For more information: www.grc.uri.edu/06sched.htm

FEBRUARY 2006

The 11th Annual Proteomics Symposium

February 3-5 • Erskine on the Beach, Lorne, Australia
Email: mp@asnevents.net.au
www.australasianproteomics.org.au/lorne.htm

The 31st Lorne Conference on Protein Structure and Function

February 5-9 • Erskine on the Beach, Lorne, Australia
email: mp@asnevents.net.au; www.lorneproteins.org/

Third International Conference on Ubiquitin, Ubiquitin-like Proteins, and Cancer

February 9-11 • The University of Texas M. D. Anderson Cancer Center, Houston, Texas
This meeting will celebrate the Nobel Prize awarded to Avram Hershko, Aaron Ciechanover, and Irwin Rose for their discovery of the ubiquitin pathway and the 10th anniversary of the discovery of SUMO/Sentrin and NEDD8
Application and Abstract Submission Deadline: Friday, November 11, 2005; For information contact: Amy Heaton
Program Manager, Department Of Cardiology
University of Texas M. D. Anderson Cancer Center
Tel: 713-745-6826; Fax: 713-745-1942
Website: www.sentrin.org

ABRF 2006—Integrating Science, Tools and Technologies with Systems Biology

February 11-14 • Long Beach, California
For Information: www.faseb.org/meetings/abrf2006

G Protein- Coupled Receptors: Evolving Concepts and New Techniques

February 12-16 • Keystone, Colorado
For information contact:
Ph.: 800-253-0685 / 970-262-1230
Email: info@keystonesymposia.org
http://www.keystonesymposia.org/Meetings/ViewMeetings.cfm?MeetingID=807

MARCH 2006

Gordon Research Conference (GRC) on New Antibacterial Discovery & Development

March 5-10 • Ventura Beach Marriott, Ventura, California
For Information: Email:trevor.trust@astrazeneca.com
Website: www.grc.org/programs/2006/antibact.htm

DNA Structure, Genomic Rearrangements, and Human Disease

March 12-14 • Institute of Biosciences and Technology, Houston, Texas
Organizers: James R. Lupski, Baylor College of Medicine and Robert D. Wells, Institute of Biosciences and Technology
Keynote Lecturer: Dr. Evan Eichler, University of Washington, Seattle
This three-day symposium will focus on DNA structure and how atypical DNA conformations result in human genetic disease. More detailed information including program and registration information can be found on the ASBMB website, www.asbmb.org/meetings

RNAi2006: Advances in RNA Interference Research

March 22-23 • St. Anne's College, Oxford, UK
Conference Organizer: Muhammad Sohail
Biochemistry Department, University of Oxford
Tel: +44 1865 275225; Fax: +44 1865 275259
Email: muhammad.sohail@bioch.ox.ac.uk
Website: http://libpubmedia.co.uk/Conferences/RNAi2006HomeMay2005.htm

American Chemical Society 231st National Meeting

March 26 – 30 • Atlanta
Contact: Charmayne Marsh; Ph: 202-872-4445
Email: y_marsh@acs.org; Website: www.acs.org/meetings

Compartmentalization of Cyclic AMP Signalling

March 29-30 • King's College, Cambridge, UK
Contact: Meetings Office, Biochemical Society, 3rd Floor, Eagle House, 16 Proctor Street, London, WC1V 6NX
Email: meetings@biochemistry.org
Website: www.biochemistry.org/meetings

Biochemical Society Annual Symposium The Cell Biology of Inositol Lipids and Phosphates

March 29-31 • University of Birmingham, UK
Organizer: Michael Wakelam, University of Birmingham
Early registration deadline: February 28, 2006
For more information: www.biochemistry.org/meetings

APRIL 2006

American Society for Biochemistry and Molecular Biology Centennial Meeting in Conjunction with Experimental Biology 2006

April 1–5 • San Francisco
For information contact: www.asbmb.org/meetings
Email: meetings@asbmb.org
Ph: 301-634-7145; Website: www.asbmb.org/meetings

Recomb 2006 - The Tenth Annual International Conference on Research in Computational Molecular Biology

April 2-5 • Venice, Italy
For information contact:Email: info@veneziacongressi.com
Ph: +39 0415238995; Website: http://recomb06.dei.unipd.it/

47th ENC Experimental Nuclear Magnetic Resonance

April 23-28 • Asilomar Conference Ctr., Pacific Grove, CA
Contact: ENC, 2019 Galisteo Street, Building I-1
Santa Fe, New Mexico 87505; Ph: 505-89-4573
Fx: 505-989-1073; Email: enc@enc-conference.org
Web page: http://www.enc-conference.org

MAY 2006

CSBMCB International Meeting on Membrane Proteins in Health and Disease

May 31- June 4 • Niagara-on-the-Lake, Ontario, Canada
This Canadian Society of Biochemistry, Molecular and Cellular Biology sponsored meeting, held in Canada's wine country close to Niagara Falls, will feature cutting-edge sessions on Structural Biology of Membrane Proteins, Regulating Membrane Permeability, Dynamics of Membrane Proteins, Transporters and Disease, Trafficking Defects in Membrane Proteins, and Assembly and Disassembly of Membrane Proteins. Meeting organizer: Dr. Reinhart Reithmeier
Email: r.reithmeier@utoronto.ca
Website: www.csbmcb.ca/e_index.html

JULY 2006

Gordon Conference on Enzymes, Coenzymes & Metabolic Pathways

July 16 -21 • University of New England, Biddeford, Maine
For information contact:
Email: grc@grc.org
Ph: 401-783-4011 ext 100
Website: www.grc.uri.edu/06sched.htm#GRC

Bioscience 2006: Bioscience for the 21st Century and Biochemical Journal Centenary Symposium

July 23-27 • Glasgow, UK
For more information: www.biochemistry.org/meetings

SEPTEMBER 2006

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; Web Page: www.facss.org

OCTOBER 2006

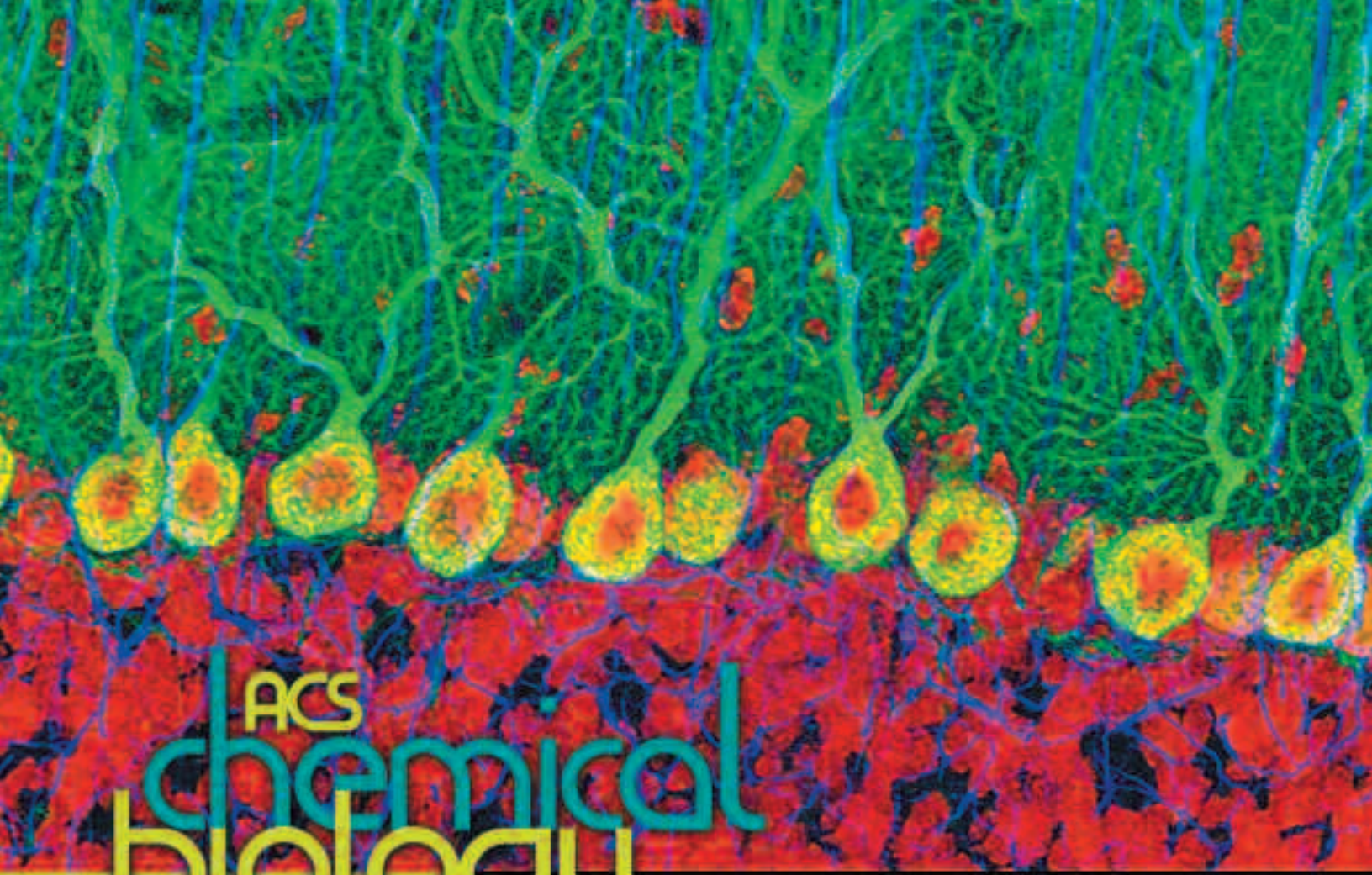
International Conference of Immunogenomics and Immunomics

October 8-12 • Budapest, Hungary
A joint meeting of 2nd Basic and Clinical Immunogenomics and 3rd Immunoinformatics (Immunomics) Conferences
Email: diamond@diamond-congress.hu
Website: www.bcii2006.org

OCTOBER 2007

34th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS)

October 12–18 • Memphis Convention Center, Memphis, TN
Contact: FACSS, PO Box 24379, Santa Fe, NM 87502.
Phone: 505-820-1648; Fax: (505) 989-1073
Email: facss@facss.org; Web Page: www.facss.org



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