OCTOBER 2003

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AMERICAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY

ALSO IN THIS ISSUE

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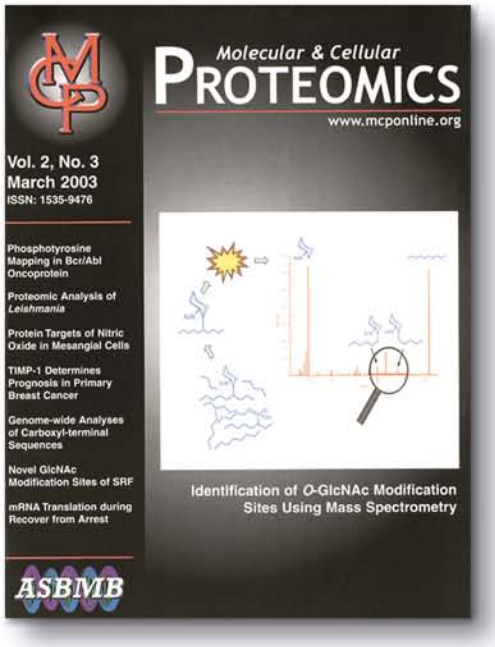
A:



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ASBMB Today

AMERICAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY

OCTOBER 2003,
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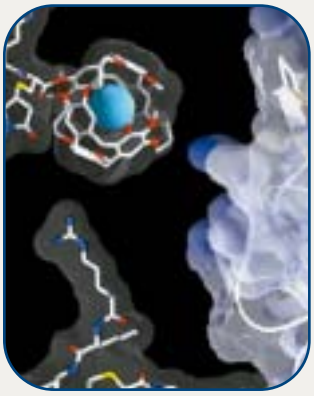
features



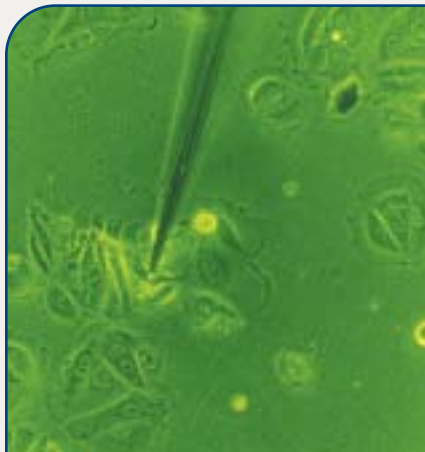
ON THE COVER:

THE EXCEL AWARDS FOR EXCELLENCE IN ASSOCIATION PUBLISHING

SOCIETY OF NATIONAL ASSOCIATION PUBLICATIONS SNAP

BRONZE AWARD WINNER 2003

departments



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Comments

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Making ASBMB Publications Available Online

Dear Colleagues:

The ASBMB has made concerted efforts in the last few years to make our publications available to scientists, trainees and the public via our online research journals (*The Journal of Biological Chemistry (JBC), Molecular and Cellular Proteomics (MCP), and the Journal of Lipid Research (JLR)*). As you know, we were pioneers with *JBC* Papers in Press that are published online and are available free of charge on the day they are accepted for publication. The final edited papers, available in hard copy, are also free of charge online at the end of each calendar year. In addition, the ASBMB has made all *JBC* back issues (back to 1905!) available online, free of charge, to anyone wishing to access them.

In addition, we provide free access to current and past journals to many developing countries without subscriptions. We have accomplished this through a partnership with HighWire Press, which created innovative search systems and links to other journals. We have covered the substantial costs of our peer-reviewed journals by subscription revenues from individuals and libraries and by page charges to authors.

Yet, in spite of the efforts made by our Society and others to provide access to our journals, there has been considerable criticism of the current models for publication and a demand that all journals should be immediately and freely available to anyone. The proponents of unconditional open access have suggested an alternative model for publication whereby the authors would bear the *entire* cost for peer-reviewed publications. However, many are questioning whether this alternative model will work.

Models that aim to have all the costs for publication provided by the authors have some negative aspects. For example, not all authors will be able to cover the costs (estimates are over $3,000 per article). While industrial scientists and academic scientists with large NIH grants will probably be able to manage these publication costs, those with smaller grants, at teaching colleges, or in periods of low funding, and foreign

authors, especially from developing countries, will be unable to publish their research in these 'open' journals. There are publishers that have already announced changes resulting in less open access. For example, the *British Medical Journal (BMJ)*, which has allowed free access to everything on its website for the last 10 years, has just announced that it can no longer afford to provide these services and, as of January 2005, charges will be instituted for online subscriptions.

We can expect that various publishers will test new models, and time will tell how best to handle written scientific communications. However, we would like to assure you that the ASBMB is committed, to our members, the scientific community and the public, to foster the exchange of information through high quality publications delivered efficiently and expeditiously while using the best economic model we can find.

Bettie Sue Masters, ASBMB President
Judith S. Bond, President-elect

In the Name of Fairness, Evolution Belongs in Schools

By Dr. William A. Brinkley

Once again, certain creationist groups are lobbying the Texas Education Agency (State Board of Education) to require publishers to revise what they consider factually incorrect information about the origin of life in high school science textbooks. These groups object to any material that indicates that all life forms, including humans, evolved to their current state over millions of years. Instead, they support the notion of intelligent design, a recent permutation of so-called creation science.

According to the intelligent design argument, molecular biology has now revealed that cells are formed from such a complex network of proteins and protein-generating processes that they could not exist without the intervention of a special outside intelligence. Proponents of this theory insist their proposal does not involve religious tenets and sidesteps the separation of church and state doctrine, on which the U.S. Supreme Court has based rulings that prohibit teaching creation science in public school science classes. Creationists are bombarding school board members with this new spin on old claims and, once again, stating their pleas for fairness. They claim that because evolution is a theory and cannot be proven, students, in all fairness, should have the opportunity to consider other theories (e.g., that all life on Earth was created in a relative brief period of time by a superior designer).

The fairness argument holds no water and has been rejected repeatedly in the past. As a cell and, molecular biology teacher and researcher for the past 40 years, I can state unambiguously that molecular biology provides overwhelming evidence supporting Darwinian evolution, especially at the cellular level of life.

For example: information from the human genome sequence database clearly shows the interconnections among all species. Moreover, many cultures in Houston and throughout Texas have diverse faith-based views and beliefs regarding life sciences. For example, some groups reject the fundamental notion that bacteria cause diseases or that blood transfusions can save lives. It would be impossible. and inappropriate to be fair by representing the beliefs of all cultural groups in textbooks of science and medicine.

In all fairness, therefore, I encourage the State Text Book Review Panel, the commissioner of education and the State Board of Education to resist pressure from proponents of intelligent design to change the teaching of any aspect of evolution science. In all fairness to the state's schoolchildren, let science speak.

This opinion piece by Dr. Brinkley was based on material provided by the National Academy of Sciences which encouraged members in Texas to provide support in the form of testimony and op-ed pieces to the NAS effort to assure that scientifically accurate information is retained in biology textbooks. It was published in the September 12, 2003, issue of the Houston Chronicle. *Dr. Brinkley, is Dean and Vice President of the Baylor College of Medicine Graduate School of Biomedical Sciences and Distinguished Service Professor of Cellular and Molecular Biology. He is Chair of the ASBMB Public Affairs Advisory Committee.*

LETTER TO THE EDITOR

Congratulations on The Centennial and *JBC* Archives Online

Dear Editor:

I was searching on the www for information on the history of diabetes and the discovery of insulin. Through the Google searcher I came across the historical article by I. S. Kleiner published in *The Journal of Biological Chemistry* in 1919. At the beginning I thought it was just the abstract and that, when clicking to download it, the usual message indicating that I had to pay, let's say, $20 or $30 to get it would appear. But it was for free! What a surprise!

I congratulate you on (a) the coming centennial of the journal; (b) the wonderful idea of putting all back issues of your journal online; (c) making such valuable material available to everybody.

I am vice president of the Catalan Association for Science Communication and will announce your way of celebrating the centennial of *The JBC* in our newsletter.

Mercè Piqueras
Email: mpiq@retemail.es

Researchers Solve Structure of

"The most important thing about this structure is that we've shown it can be done, because people have shied away from attempting to structure these proteins for a long time," said Dr. H. Ronald Kaback, an ASBMB member.

Led by Dr. Kaback, Professor of Physiology and Microbiology, Immunology and Molecular Genetics at the David Geffen School of Medicine, University of California, Los Angeles (UCLA), and a Howard Hughes Medical Institute investigator, an international research team's 12-year mission to solve the structure of an important protein has paid off.

Dr. Kaback and his colleagues recently captured the three-dimensional structure of lactose permease, which moves lactose across the cell membrane of *E. coli*. Researchers are now unveiling the first detailed structural images of a type of protein that functions in a manner generally similar to the target of Prozac and Prilosec, two of the world's most widely prescribed drugs. The research findings reportedly could hold therapeutic implications for diseases such as lactose intolerance, diabetes, stroke and depression, which involve the malfunction of membrane transport proteins.

The protein belongs to a class of molecules called membrane transport proteins whose primary job is to move molecules as diverse as nutrients and neurotransmitters across the cell membrane. Membrane transport proteins play such a vital role in the cell that their disruption is thought to be involved in numerous diseases, including depression, stroke and diabetes. "We hope that the structure of LacY will offer a useful tool by enabling scientists to understand how other membrane transport proteins work," said Dr. Kaback

Dr. H. Ronald Kaback

In an article published in the August 1, 2003, issue of the journal *Science*, the team led by Dr. Kaback and co-authors So Iwata and Jeff Abramson, crystallographers at Imperial College London, reported that they have solved the three-dimensional structure of the bacterial membrane transport protein lactose permease (LacY). This protein is the most studied representative of the "major facilitator superfamily" of membrane transport proteins, said Dr. Kaback. LacY uses the energy from an electrochemical proton gradient to drive accumulation of lactose, a sugar, across the cell membrane.

He and his colleagues spent many frustrating years attempting to crystallize the normal, or "wild-type," LacY protein — an excruciatingly difficult process given the complexity and "floppiness" of the molecule. Meanwhile, extensive experiments in which they studied effects of subtle mutations in the protein yielded considerable indirect evidence of how the transport protein might work. Still, the researchers knew that only a three-dimensional structure would yield conclusive evidence of how the protein functioned to "cotransport" protons and lactose.

Finally, the researchers identified one particularly intriguing mutant protein—in which an amino acid had been altered. This mutant binds lactose-type sugars, but isn't able to transport .

"After 12 years, I began to think that if this mutant binds and it doesn't transport, it must be favoring one conformation, when it can't move around that much," said Dr. Kaback. Thus, he and his colleagues thought that the mutant protein might actually be stable enough to crystallize.

Sure enough, when Abramson attempted to crystallize the mutant protein, he was successful, enabling the Iwata laboratory to launch an effort to obtain a three-dimensional structure.

The result, said Dr. Kaback, was critically important for understanding how the protein works. "We needed that structure. Without structure you can't get mechanism, although we had an approximate idea of what it looked like."

He added that the resulting structure confirmed a surprising amount of information gleaned from previous indirect studies of the protein's structure and function. "It's amazing how much of it turned out to be right. The binding and the proton translocation part of it are almost right on. I consider this to be a wonderful example of what obsessive-compulsive behavior and pure dumb luck will do for you."

The structure revealed that LacY consists of an array of irregular heli-

Membrane Transport Protein

cal structures that wind their way through the cell membrane and anchor the protein. "The most striking thing is the irregularity of the helices," explained Dr. Kaback. "The previous dogma was that transmembrane helices have to be rigid bodies that run perpendicular to the plane of the membrane. But we saw helices that are arched, and s-shaped, and broken."

He said he was also surprised by the existence of a large water-filled cavity in the middle of LacY that faces the inside of the cell and the unanticipated symmetry in the two bundles of six helical protein segments that pierce the membrane.

Most importantly, the LacY structure suggests how amino acids from the protein bind sugar and a proton and escort them through the membrane. The process involves an intricate choreography of interactions in which the participating amino acids perform their precise functions as the protein's water-filled cavity flips from an outward-facing conformation to an inward-facing one. And finally, after the transport through the membrane is complete, the protein returns to its "ground" state, prepared for the next transport.

According to Dr. Kaback, solving the structure of LacY is an achievement that will likely have important implications for a broad range of studies of membrane transport proteins. "The most important thing about this structure is that we've shown it can be done, because people have shied away from attempting to structure these proteins for a long time. I think that this represents an important paradigm shift in the field, because these are incredibly important proteins. Thirty percent of the genome encodes membrane proteins, most of which are transport proteins. And I believe that we can expect that 20 years from now every soluble protein that can be crystallized is going to be crystallized."

By Peter Farnham, ASBMB Public Affairs Officer

NIH Funding Bill Passes Both Houses; 9.2%

On September 10, during Senate consideration of the 2004 Labor/HHS appropriations bill (that funds the NIH) the Senate rejected an amendment offered by Senators Arlen Specter (R-PA), Tom Harkin (D-IA) and Dianne Feinstein (D-CA) to increase NIH funding by an additional $1.5 billion. The bill as passed by the Senate Appropriations Committee increases NIH funding for 2004 by $1 billion (a 3.7 percent increase). Had the Specter/Harkin/Feinstein amendment been accepted, NIH funding would have increased by $2.5 billion, a 9.2 percent increase.

The amendment failed on a point of order raised against it because the amendment violated the terms of the Budget Act by increasing the deficit. Under Senate rules, waiving a point of order requires a 60-vote majority, and the proposed waiver only garnered 52 votes. 43 senators voted against it and five (four of whom were presidential candidates) did not vote.

Shortly after the defeat of the amendment, the Senate approved the overall bill by a vote of 94-0. The bill provides just under $28 billion for NIH for the fiscal year starting October 1. The House version of the bill, passed last July, provides a $681 million increase for NIH, approximately a 2.5 percent increase.

The failure of the Specter/Harkin/Feinstein amendment is yet another indication that NIH is highly unlikely to receive additional money during the appropriations process this year, although efforts continue to accomplish that goal.

ASBMB is supporting a "dear colleague" letter that will be sent to House-Senate conferees. The letter, which originated with Representatives Chris Bell (D-TX), Lois Capps (D-CA), Mark Foley (R-FL), and Jim Leach (R-IA), advocates an eight percent to ten percent increase for NIH in FY2004 and had been signed by some 150 House members as of mid-September. A similar effort was expected in the Senate. The hope is that this letter, when received by the House/Senate conferees, may spark at least some discussion of the NIH situation during final deliberations on the bill.

Advocates for NIH tried to put the best face on the situation in the days following the defeat. "The good news is that a majority of the Senate voted in favor of more funding for NIH," said Kevin Mathis, Executive Director of the Campaign for Medical Research. In addition, the vote in favor of NIH was bipartisan, with 16 Republicans voting to support the amendment. It is also worth noting that Senator Ted Stevens (D-AK), chairman of the Senate Appropriations Committee, voted with the majority.

ASBMB President Bettie Sue Masters wrote to Senators Specter and Harkin on September 15, thanking them on behalf of ASBMB for their efforts and stating:

"Your willingness to offer an amendment to increase NIH funding in 2004, and the hard work you put into generating support for that amendment, is deeply appreciated by all of us here at ASBMB. Although the amendment was unsuccessful, we know your efforts will be appreciated by everyone in this country who suffers from one of the many chronic diseases still afflicting humanity, or has a friend or family member who does."

The NIH advocacy community (of which ASBMB is a part) worked very hard for passage of this amendment, including buying full-page newspaper ads, generating letters and op-eds in major papers around the country, and generating thousands of letters to senators from individual scientists across the nation. However, the budget deficits this year, coupled with additional spending needed for U.S. efforts in Iraq and Afghanistan, and the fact that NIH just completed a five-year doubling of its budget, all combined to defeat the effort.

Unfortunately, the situation regarding NIH funding in FY 2005 is not looking any brighter. The administration is expected to seek only another two percent to three percent for NIH in the coming fiscal year, and if this level of funding is approved, the number of grants funded by NIH will begin to nosedive.

While the House has approved all 13 appropriations bills, none has become law yet because the Senate has not completed its work and conferences have not begun. It is thus possible that a series of continuing resolutions will be needed after the start of the fiscal year, October 1, to keep the govern-

Increase Rejected

ment funded until all appropriations bills have been signed. Hill staffers also are beginning to discuss openly the possibility of an omnibus measure that would roll all unsigned appropriations bills into one gigantic bill. A decision on this is expected by mid-October.

What all this means is that it is likely that the largest increase NIH can expect this year is the Senate-approved figure of about 3.7 percent. While in past years more money has been added to NIH late in the year due to a breakdown in the appropriations process, this is unlikely to happen this year since both houses of Congress and the White House are controlled by one party, which has pledged to enforce budget caps.

House, Senate at Odds Over Project BioShield

By John D. Thompson, Editor

As this issue went to press, differences between the White House and Congress over key aspects of remained unresolved.

The Senate was still wrestling with Project BioShield, the White House's plan to accelerate development and production of new vaccines and countermeasures against bioweapons. On July 16, the House overwhelmingly approved the Project BioShield Act of 2003 (HR 2122), which would provide some $5.6 billion over the next 10 years to develop and produce vaccines and therapeutics against a range of pathogens and toxins that could be used as weapons. For FY 2004, the House set BioShield funding at $890 million.

The Bush administration wants BioShield to have a mandatory, permanent funding stream to spur research and development of new vaccines and therapeutics. However, numerous congressmen have balked at the idea, claiming that a mandatory funding mechanism would be an abdication of their oversight responsibility. The final House bill compromised on the issue by authorizing discretionary spending at the amounts requested but requiring that the administration regular reports on how the funds are being used.

In the Senate, a new version of the BioShield bill (S 1504) removes the mandatory funding language that had been included in an earlier version approved by the Senate Health, Education, Labor, and Pensions Committee in March (S 15). This change reflects the concerns of Senator Robert Byrd (D-W.Va.) who had blocked the bill from floor action because he objected to the mandatory funding provision.

The new version authorizes full funding in FY 2004 but would give the Senate liberty to make changes in future years upon a 60-vote motion. Byrd had not yet indicated whether the new provisions satisfy his objections.

Jeremy M. Berg Named Director of National Institute of General Medical Sciences

Dr. Jeremy M. Berg has been named director of the National Institute of General Medical Sciences (NIGMS). Dr. Berg is currently Director of the Institute for Basic Biomedical Sciences and Professor and Director of the Department of Biophysics and Biophysical Chemistry at Johns Hopkins University School of Medicine in Baltimore. He is also Director of the Markey Center for Macromolecular Structure and Function and Co-Director of the W.M. Keck Center for the Rational Design of Biologically Active Molecules, both of which are at Johns Hopkins. Dr. Berg is expected to begin his NIGMS appointment in early November.

Dr. Berg will replace Judith Greenberg, who became Acting Director of NIGMS in May 2002 following the departure of Dr. Marvin Cassman, who had led the institute since 1993.

As NIGMS director, Dr. Berg will oversee a $1.8 billion budget that funds basic research in the areas of cell biology, biophysics, genetics, developmental biology, pharmacology, physiology, biological chemistry, bioinformatics and computational biology. NIGMS currently supports more than 4,400 research grants—about 10% of the grants funded by NIH as a whole. NIGMS also supports a substantial amount of research training as well as programs designed to increase the number of minority biomedical scientists.

Dr. Berg's research focuses on the structural and functional roles that metal ions, especially zinc, have in proteins. He has made major contributions to understanding how zinc-containing proteins bind to the genetic material DNA or RNA and regulate gene activity. His work, and that of others in the field, has led to the design of metal-containing proteins that control the activity of specific genes. These tailored proteins are valuable tools for basic research on gene function, and such proteins could one day have medical applications in regulating genes involved in diseases, as well. Dr. Berg has also made contributions to our understanding of systems that target proteins to specific compartments within cells and to the use of sequence databases for predicting aspects of protein structure and function.

Dr. Berg has been a faculty member at Johns Hopkins since 1986. Immediately before his faculty appointment, he was a postdoctoral fellow in biophysics at Hopkins. He received B.S. and M.S. degrees in chemistry from Stanford University in 1980 and a Ph.D. in chemistry from Harvard University in 1985.

Dr. Berg is a coauthor of more than 100 research papers and three textbooks, Principles of Bioinorganic Chemistry, Biochemistry (5th Edition) and A Clinical Companion to Accompany Biochemistry. He also serves on the editorial boards of the journals Proteins: Structure, Function, and Genetics; Chemistry and Biology; and Current Opinion in Chemical Biology.

NIGMS has supported Dr. Berg's research since 1986.

Mouse Study Gives New

A large-scale study of anthrax in mice has yielded new information about immune system response to anthrax bacteria, according to scientists at NIH's National Institute of Allergy and Infectious Diseases (NIAID). The discovery that toxins released by the bacteria do not behave as previously believed should redirect approaches to anthrax drug design, noted NIAID Senior Investigator Stephen Leppla, whose research was published in the September issue of the *Journal of Clinical Investigation*.

Dr. Leppla and his colleagues injected hundreds of inbred mice with anthrax lethal toxin (LT), and took precisely timed measurements to determine how various organs and immune system processes responded. For example, they measured levels of chemicals called cytokines, which are released by immune system cells after a bacterial invasion. Dr. Leppla's team found no evidence of a persistent increase in cytokines, or of a link between cytokine increase and anthrax LT effects, contradicting earlier beliefs. This suggests that current efforts to design cytokine-suppressing drugs to treat lethal toxin-mediated events in late stages of anthrax may be misguided.

"Science has had a good understanding of anthrax toxins at

NIH Planning to Build Zebrafish Lab

In response to researchers call for an alternative to laboratory mice, NIH has announced plans to build a new facility to breed and house zebrafish (*Danio rerio*). Slated for completion in 2005, the new $10 million, 5,000-square-foot structure will house over a half million zebrafish in some 25,000 tanks. The building will be an addition to Building 6, an existing animal lab on NIH's Bethesda, Maryland, campus.

Demand for zebrafish at NIH has been increasing as researchers become aware that the tiny, black-striped creature makes an excellent supplement to lab mice. Paul Liu, a Senior Investigator with the Genetics and Molecular Biology Branch of the National Human Genome Research Institute (NHGRI) explained to *The Scientist,* "We feel the need for a centralized and more expanded facility to serve the needs of the NIH community."

Dr. Liu uses both mice and zebrafish in parallel studies. He has generated zebrafish mutants defective in myelopoiesis and screens fish embryos for the loss of expression of myeloid-specific markers.

Zebrafish have many advantages over mice. To study embryo development, pregnant mice have to be cut open and are frequently killed. But zebrafish embryos, which are relatively large, develop outside the mother's body in Petri dishes, making them readily observable. "For the first two days, the embryos are transparent and you can even see the circulating blood cells," Dr. Liu said.

Zebrafish are very prolific. A female can lay 100 to 200 eggs every 4 to 5 days. Zebrafish grow to maturity in about 3 months, allowing many generations to be produced quickly. Sequencing the zebrafish genome, which is roughly half the size of the mouse or human, began in 2001 at the Sanger Institute and is due to be finished by the end of 2005. While genetically more distant from humans, the vertebrate zebrafish nevertheless has comparable organs and tissues, such as heart, kidney, pancreas, bones, and cartilage. Zebrafish are also far less expensive to raise and to maintain than mice.

courtesy of Whitehead Institute.

Zebrafish embryos

Shawn Burgess, an investigator in NHGRI's Genome Technology Branch, uses zebrafish to identify and functionally characterize novel developmental genes, focusing on human ear development. "I'm a classical geneticist," he says, "and zebrafish provide a great opportunity to do this on a large scale with relatively little resources." Dr. Burgess has some 10,000 zebrafish in his lab, but he maintains that it is easier to care for that many fish than just a tenth as many mice.

The new NIH zebrafish facility is being built with funds supplied by NHGRI and the National Institute of Child Health and Human Development.

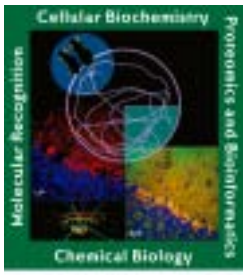
View of Anthrax Toxin

molecular and subcellular levels," said Dr. Leppla. "What has been lacking is a picture of the much more complex effects of toxins on tissues and animal models. Ours is one of the first comprehensive studies to critically examine what is actually happening at these higher levels of complexity."

In a natural infection, inhalational anthrax begins after anthrax bacteria spores enter the body, germinate and release toxins. Scientists can create artificial infection by injecting animals with anthrax LT. The accumulation of toxins precipitates events that lead to death. For more than a decade, scientists based their understanding of LT actions on the results of a few studies that employed a limited number of mice. Because of the high cost of doing anthrax toxin research and the small number of anthrax researchers, theories about LT action went largely unquestioned.

"We still do not know how LT brings about the hypoxia and shock-like death we see in mice," said the paper's first author, Dr. Mahtab Moayeri. The next important step, she added, will be to identify the cell targets of LT and determine precisely how it initiates the chain of events leading to death.

Cutting-edge Research at the Interface of Biochemistry and Human Health



The goal of the IUBMB/ASBMB 2004 meeting is to integrate cellular biochemistry, molecular recognition, chemical biology, and bioinformatics, to address the unifying theme, "A Molecular Exploration of the Cell." To this end, nine thematic meetings have been organized that converge on understanding the molecular mechanisms of life and each theme will be highlighted in forthcoming issues. Here, we highlight the thematic Meeting IX, Signaling Pathways in Disease, organized by Alexandra Newton, the University of California, San Diego, and John Scott, HHMI Investigator, Vollum Institute. This meeting brings together cutting-edge research at the interface of biochemistry and human health. Specifically, sessions will focus on novel technologies to chemically intervene with signaling, to image signaling in cells and organisms, and to provide diagnostic profiling in disease; it will also cover the latest discoveries in specific signaling pathways, including those in stress response, neuronal signaling, and cancer. In organizing this theme, the meeting organizers have aimed at highlighting how biochemical exploration of signaling mechanisms provides the foundation for therapeutic approaches to disease.

Signaling Pathways in Disease Meeting Organizers Alexandra Newton and John D. Scott.

One symposium in Meeting IX, will be Stress Signaling Pathways, chaired by Michael Karin, of the University of California, San Diego, who will also speak on "IKK - A Master Regulator of Innate and Adaptive Immunity."

"The survival of all cells," he notes, "depends on their ability to respond to changes in their environment. This is of importance to unicellular and multicellular organisms alike-plants and animals. A central role in the ability of cells to adapt to sudden changes in their environments is played by stress signaling pathways, the topic of this session. These pathways allow organisms to respond to physicochemical and biological challenges, such as radiation, oxidants, starvation and infectious organisms.

"The goal of this session is to discuss recent progress in understanding the molecular and biochemical organization of Stress Signaling Pathways as well as their biological and pathophysiological functions. In addition to the basic biology of these pathways we will cover recent progress in identification of drug candidates that modulate the ability of cells and organisms to withstand certain types of stress, both negatively and positively. Such drugs would be useful in the treatment of cancer, degenerative and infectious diseases."

ASBMB Welcomes New Ph.D.s

ASBMB extends its congratulations to these individuals who recently received their Ph.D. degrees. In recognition of their achievement, ASBMB is presenting them with a free one-year membership in the Society. The new Ph.D.s are listed below with the institution from which they received their degree.

Jennifer E. Fox
Tulane University

Andreas Gille
University of Kansas

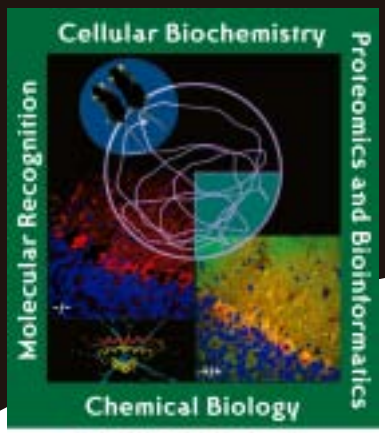
F. Enrique Gomez
University of Wisconsin - Madison

Amitabh Nimonkar*
University of Miami

Sara C. Rathman
University of Florida, Gainesville

Jonathan D. Violin
University of California, San Diego

** Previous Associate member who met the requirements for a free one-year membership.*



"A Molecular Exploration of the Cell"

ASBMB Annual Meeting
and 8th IUBMB Conference
June 12 - 16, 2004
Boston, Massachusetts

Signaling Pathways in Disease Meeting

Organized by **Alexandra Newton**, *UCSD*
and **John D. Scott**, *HHMI, Vollum Institute*

Chemical Intervention of Signaling Pathways

Exploring signaling in neural development in small molecules and conditional alleles
Gerald Crabtree, *HHMI, Stanford Univ.*

Dissecting cytoplasmic (nutrient response) and nuclear (chromatin) signaling networks using small molecules
Stuart L. Schreiber, *HHMI, Harvard Univ.*

Stress Signaling Pathways

IKK – A master regulator of innate and adaptive immunity
Chair, Michael Karin, *UCSD*

Signaling transduction by stress-activated MAP kinases
Roger Davis, *HHMI, Univ. of Massachusetts*

Signal transduction in T cells
Doreen Cantrell, *Univ. of Dundee, Scotland*

Cancer and Cell Cycle

Conditional signals and protein kinase C
Chair, Peter Parker, *Imperial Cancer Res. Fund, London*

Regulation of the mitotic kinase Aurora-A, a potent oncogene
Joan Ruderman, *Harvard Med. Sch.*

TOR signaling and control of cell growth
Michael Hall, *Univ. of Basel*

Diagnostic Profiling in Disease

Genomic and proteomic analyses of insulin signaling in metabolic disease
Chair, Michael P. Czech, *Univ. of Massachusetts Med. Ctr.*

Phosphopeptide profiles for diagnostics based on signaling state
Matthias Mann, *Univ. of Southern Denmark*

Molecular portraits of human breast tumors
Charles M. Perou, *Univ. of North Carolina, Chapel Hill*

Imaging of Cells and Organisms

Mechanisms of Golgi breakdown and reassembly during
Chair, Jennifer Lippincott-Schwartz, *NIH*

Whole body in vivo imaging of lymphocyte movement
Owen N. Witte, *HHMI, UCLA*

PKC targeting mechanism and its physiological significance
Naoki Saito, *Kobe University, Japan*

Molecular Basis of Aging

Cdk5, the missing link between plaque and tangle pathology in Alzheimer's disease?
Chair, Li Huei Tsai, *Harvard Med. Sch.*

Glycine receptor signaling definciencies causing neuromotor disease
Heinrich Betz, *Max Planck Inst., Frankfurt*

Rho GTPases and neuronal development
Linda Van Aelst, *Cold Spring Harbor Lab.*

Additional Speakers will be chosen from the abstracts submitted to the ASBMB Signaling Pathways topic categories.

Travel Awards Available for Undergraduates, Graduates, Postdoctoral Fellows and Undergraduate Faculty

More Information:
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Abstract Deadline: February 4, 2004

QB3 Brings the Science of Numbers to Biology

By Lisa Samols

Ask the average scientist to predict the future, and he or she may describe therapeutic cloning, artificial wombs or engineered plants. However, there are some who see something on a completely different scale. The California Institute for Quantitative Biomedical Research (QB3) has seen the future of biology, and it is made of numbers.

"We are currently living through a revolution in biomedical knowledge," says Marvin Cassman, Executive Director of QB3. "Biomedical research and the quantitative sciences—mathematics, physics, chemistry, and engineering—are teaming up to unravel the complexities of whole living systems."

Dr. Cassman joined QB3 in May 2002 after nine years as Director of the National Institute of General Medicine Sciences (NIGMS). The group that he leads consists of researchers from the departments of biological sciences, chemistry, mathematics, physics and computer sciences at the University of California Berkeley, UC San Francisco and UC Santa Cruz.

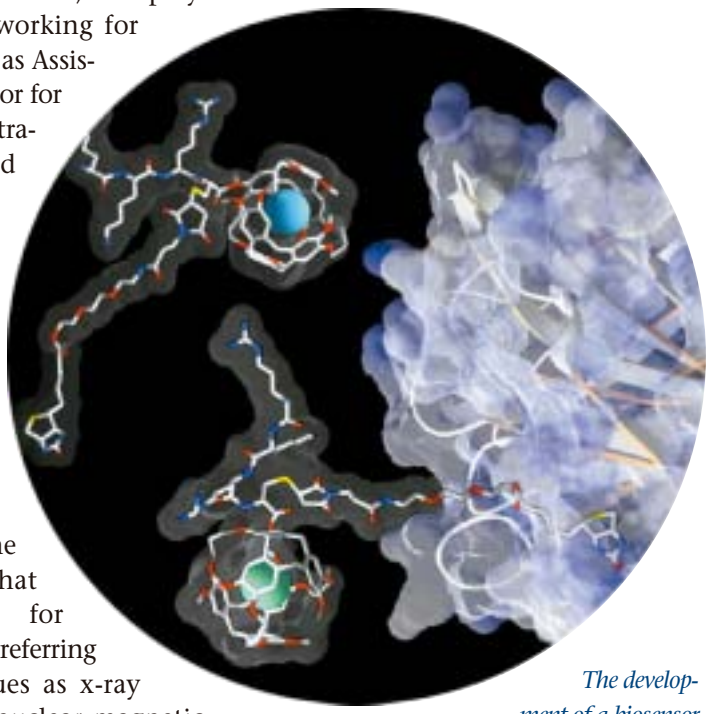
QB3 envisions biology as a multi-disciplinary science that uses the ideas behind chemistry, engineering, mathematics, and computer science to organize and enhance the utilization of biological information. Given the amount of information that has been accumulated so far in the history of modern biology and the rate at which new information is being gathered, the researchers at QB3 see a hard science approach as the only way to make sense of all of these ideas.

"In a day's experiment, you could accumulate more data than you could handle in weeks, and it takes computational science to organize it and make that data meaningful," says W. Sue Shafer, Deputy Director of QB3. Dr. Shafer was also at NIGMS, as Deputy Director, before working for UC San Francisco as Assistant Vice Chancellor for Research Administration. She joined QB3 in June 2002.

According to Dr. Cassman, the idea of blending the physical sciences with biology is not a completely novel idea. "We're implementing the kinds of things that have happened for decades," he says, referring to such techniques as x-ray crystallography, nuclear magnetic resonance and other types of spectroscopy, all well-developed fields of research that are based on the theories of chemistry and physics.

Using computer models to examine the interactions of proteins and algorithms to find patterns in the human genome, the researchers at QB3 intend to examine biological systems at all levels down to the component atoms and quarks. In cross-disciplinary, interdepartmental groups, they will investigate bioengineering and biotechnology; bioinformatics and computational biology; structural and chemical biology; and experimental genomics, proteomics and biochemistry.

QB3 is one of four interdisciplinary institutes created as the California Institutes for Science and Innovation (CISI) to stimulate the California economy through research. Despite the current budget crisis that threatens to drastically reduce funding for all academic institutions in California, Communications Manager Beth Martin at QB3 is confident that the institute will



The development of a biosensor using hyperpolarized xenon atoms, nuclear magnetic resonance (NMR) and protein binders represents the interdisciplinary collaboration that QB3 intends to foster.

be set up as planned, and that it will have a positive effect on the state's economy in the long run.

UC Berkeley broke ground this May for the new Stanley Bioscience and Bioengineering Facility for QB3. At UC San Francisco, QB3 will soon be housed in a new building at Mission Bay, and the Physical Sciences building at UC Santa Cruz, part of which will house QB3 researchers, is currently under construction. The close proximity of the institutions is meant to encourage collaboration. For example, while the bioengineering and biotechnology group builds a microarray chip, the bioinformatics and computational biology group could work on identifying the gene, while the structural and chemical biology group would collect data on the gene's expression.

"The idea of three major universities coming together to pool their resources and tackle a wide class of fundamental problems in biomedical sciences is extraordinarily exciting," according to David Agard, UC San Francisco QB3 Director.

In addition to such collaboration, QB3 will make available its facilities and work with California industry on basic science projects. By buying into a consortium or paying a fee per use, companies can gain access to QB3's light microscopy facility, microarray service and protein expression facility, among many others.

"We have the ability to move quantitative bioscience into the mainstream, train a new generation of researchers, and bolster the California economy through job creation and product development," said Dr. Cassman.

Artificial Sight

Dr. Wentai Liu, Professor of Electrical and Computer Engineering at UC Santa Cruz, is developing a way to help the blind see again. By replacing photoreceptors in the retina with a device that sends electronic impulses to the neurons of the eye, Dr. Liu and his team hope to imitate what happens in a normal eye.

"The point of the research is to try to understand the visual process and come up with a device to help the brain restore vision," said Dr. Liu.

In retinitis pigmentosa and age-related macular degeneration, the leading causes of blindness, photoreceptors die off, but the neurons to which they are connected frequently survive. Photoreceptors detect light from the outside world and stimulate neurons, which send the message to the brain to be translated into an image. When the photoreceptors are damaged, no visual information gets to the brain.

When Dr. Liu and his team found that visual sensation can be elicited by electrically stimulating the neurons just as the information from the photoreceptors did, the next task was to develop a device that could stimulate a number of neurons individually, as if they were several separate photoreceptors.

"In the beginning, it sounded like science fiction," he recalled. As the idea progressed, however, his team found that restoration of sight using electronic impulses was an attainable goal.

The result of years of engineering research is a 4.5 mm by 4.5 mm chip that picks up signals sent by a camera embedded in a pair of glasses that the patient wears. The camera translates light into electronic information, which it transmits to the chip in the eye. The chip can then stimulate the appropriate neurons with 64 electrodes, simulating the actions of the photoreceptors.

Dr. Wentai Liu of UC Santa Cruz, is developing a way to help the blind see again.

Initial clinical trials of the first generation of the retinal implant have yielded promising results. Three patients received permanent implants at Doheney Retina Institute, University of Southern California, and all three can sense motion, recognize objects and read large letters, though only in gray level.

Using Biomemetics Microelectronic Systems, a program involving labs from University of Southern California, UC Santa Cruz, and the California Institute of Technology, Dr. Liu hopes to design a chip with 1000 electrodes that would allow formerly blind patients to read and recognize faces.

Diagnostic Chemistry

The development of a biosensor using hyperpolarized xenon atoms, nuclear magnetic resonance (NMR) and protein binders represents the interdisciplinary collaboration that QB3 intends to foster.

ASBMB member David Wemmer and Alexander Pines, both Professors of Chemistry at UC Berkeley, have combined their fields of research to develop a sensitive biosensor that can determine the amount and location of certain target biological substances. Dr. Peter Schultz at Scripps Research Institute is playing a key role in implementing the ideas.

The biosensor is built on the concept that hyperpolarized xenon atoms give particularly bright NMR spectra that

change significantly when they interact with other substances. Dr. Pines' lab had been working with xenon to probe various materials, using the hyperpolarized version to generate the brightest NMR spectrum. Dr. Wemmer's lab then helped find a way to make the sensitive hyperpolarized xenon interact with biological substances.

"This is going from atomic physics to do the hyperpolarization, to biology to use it, while going through chemistry in the middle," said Dr. Wemmer.

To make the xenon, a noble gas, interact with biological substances, a cryptophane was used to provide an artificial pocket for the xenon. The cryptophane, a 'cage' comprised of six benzene rings, was tethered to a ligand, which can bind to a specific

ASBMB member David Wemmer (above) and Alexander Pines, both Professors of Chemistry at UC Berkeley, have combined their fields of research to develop a sensitive biosensor that can determine the amount and location of certain target biological substances.

target substance. When the ligand portion is bound to a particle such as a protein, a different NMR spectrum is read for the xenon which is being carried along. So far, a version of the biosensor has been chemically synthesized in Dr. Schultz's lab that uses a biotin ligand to bind to avidin, but in theory, anything from antibodies to ligands for proteins on cell surfaces can be used to detect the presence of cancerous cells or foreign bacteria or viruses in the human body.

According to Dr. Wemmer, the biosensor relies on the ligand binding specificity to differentiate between similar substances. He believes that different versions can be made which can be read out in parallel to detect different compounds, although many practical issues remain to be worked out. At present, biosensors have been used only to determine the relative amount of the substance present, and its location in the solution. However, Dr. Wemmer's research may eventually lead to new, non-invasive techniques for detecting disease.

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ART-829	Ceramide trihexosides [galactose-6-3H]	10 μCi	$479
ART-460	Dihydrosphingosine D-erythro [4,5-3H]	250 μCi	$949
ART-618	Dihydrosphingosine-1-phosphate, D-erythro [4,5-3H]	10 μCi	$459
ART-634	Dihydrosphingosine phosphocholine [4,5-3H]	50 μCi	$899
ART-1191	Dimethylsphingosine, [3H]	50 μCi	$1049
ART-830	Galactosyl ceramide [galactose-6-3H]	10 μCi	$599
ARC-1331	Glucocerebroside [glucosyl ceramide (stearoyl-1-14C)]	10 μCi	$1199
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ARC-1073	N-Octanoyl-D-erythro-sphingosine [octanoyl 1-14C]	50 μCi	$949
ART-599	N-Octanoyl-D-erythro-sphingosine [octanoyl 8-3H]	50 μCi	$949
ARC-818	N-Oleoyl-D-sphingosine [oleoyl 1-14C]	50 μCi	$1449
ARC-831	N-Palmitoyl-D-sphingosine [palmitoyl 1-14C]	50 μCi	$1449
ART-899	Palmitoyl, [9,10-3H] D-erythrosphingosine	50 μCi	$1099
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ARC-850	Phosphatidylcholine-L-α-dioleoyl [dioleoyl 1-14C]	10 μCi	$419
ARC-376	Phosphatidylcholine-L-α-dipalmitoyl [choline methyl-14C]	10 μCi	$649
ARC-657	Phosphatidylcholine-L-α-dipalmitoyl [dipalmitoyl 1-14C]	10 μCi	$349
ART-284	Phosphatidylcholine-L-α-dipalmitoyl [choline methyl-3H]	250 μCi	$599
ART-532	Phosphatidylcholine-L-α-dipalmitoyl [2-palmitoyl 9,10-3H(N)]	250 μCi	$629
ART-533	Phosphatidylcholine-L-α-1-0 hexadecyl-1-2-arachidonyl [arachidonyl -3H(N)]	10 μCi	$499
ARC-852	Phosphatidylcholine-L-α-1-palmitoyl-2-arachidonyl, [arachidonyl 1-14C]	10 μCi	$699
ARC-853	Phosphatidylcholine,L-α-1-palmitoyl-2-linoleoyl [linoleoyl 1-14C]	10 μCi	$699
ARC-854	Phosphatidylcholine, L-α-1-palmitoyl-2-oleoyl [oleoyl 1-14C]	10 μCi	$469
ARC-772	Sphingomyelin (bovine) [choline methyl-14C]	10 μCi	$469
ART-481	Sphingomyelin (bovine) [choline methyl-3H]	50 μCi	$679
ART-490	Sphingosine D-erythro [3-3H]	50 μCi	$599
ART-859	Sphingosine D-threo [3-3H]	50 μCi	$719
ART-778	Sphingosine, D-erythro-[3-3H]-1-phosphate	10 μCi	$1199
ARC-1048	Sulphatide [stearoyl 1-14C]	50 μCi	$1299
ARC-1492	N,N,N-Trimethylsphingosine, [N-methyl-14C]	10 μCi	$599
ART-1138	N,N,N-Trimethylsphingosine, [N-methyl-3H]	10 μCi	$599

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by John D. Thompson, Editor

Institute for Systems Biology Names Roger Perlmutter Board Chairman

The Institute for Systems Biology (ISB), a non-profit research institute dedicated to the study and application of systems biology, has appointed ASBMB member Roger M. Perlmutter as Chairman of its Board of Directors.

Dr. Perlmutter currently serves as the Executive Vice President, Research and Development, at Amgen Inc., where he oversees the company's worldwide research and development operations. He has a longstanding relationship with ISB, and has been a member of the board since the Institute's inception in January 2000.

"Roger has had two exceptionally successful careers—first as an academic interested in immunology and now as a leader in pharma and biotech research," said Dr. Leroy Hood, ISB President and also an ASBMB member. "He has exhibited throughout a remarkable ability to organize and integrate diverse skills and opportunities. Accordingly, Roger will bring deep insights into the interplay between academia and industry and striking and integrative leadership skills."

Dr. Perlmutter joined Amgen as Executive Vice President, Research and Development, in January 2001. Before joining Amgen, he was an executive vice president at Merck Research Laboratories. From 1984 to 1997 he was a faculty member in the Departments of Medicine and Biochemistry, and later Professor and Chairman of the Department of Immunology at the University of Washington, where he continues as an Affiliate Professor. He was also an HHMI Investigator at the University of Washington during this period. A graduate of Reed College, Portland, Oregon, Dr. Perlmutter received his M.D. and Ph.D. degrees from Washington University, St. Louis, Missouri in 1979. He is a past president of the American Association of Immunologists, and a Fellow of the American Academy of Arts and Sciences.

"The concept of systems biology is moving to the forefront, and the Institute is on the cutting edge," stated Dr. Perlmutter. "I look forward to working more closely with the team of scientists at the ISB, and welcome this opportunity to take an expanded leadership role in an effort that holds enormous promise for scientific advances that will transform biology and medicine in the years to come."

Dr. Roger Perlmutter

Systems biology combines biology, technology, and computer modeling to study biological information (DNA, RNA, protein, protein interactions, biomodules, cells, tissues, etc). Using this approach, scientists plan to identify strategies that will personalize medicine, both by predicting illness in the individual, and by prescribing preventative remedies.

"We look forward to partnering with Roger in this exciting adventure of realizing the enormous potential and catalyzing the revolutionary changes embedded in the mission of the Institute," stated Dr. Hood.

Washington University, Monsanto Share Crop Protection Patent

Washington University in St. Louis and Monsanto Co., Creve Coeur, Missouri, have received a patent for a technique that protects crops from devastating viral diseases that currently threaten or harm many important food crops. The inventors are ASBMB member Roger Beachy, President of the Donald Danforth Plant Science Center and Professor in the Department of Biology in Arts & Sciences at Washington University; and Robert T. Fraley, Monsanto Chief Technology Officer; and former Monsanto research scientist Stephen G. Rogers.

"We are delighted that this technology, as one of the first applications of biotech, is helping to advance science throughout the globe," said Monsanto's Fraley.

The technique was conceived, developed and tested in the 1980s when Dr. Beachy was Professor of Biology at Washington University. The research began with attempts to make tobacco plants resistant to a virus called tobacco mosaic virus (TMV). This involved constructing target genes containing a viral-coating protein and inserting them into tobacco leaf tissue. Plants regenerated from this tissue were able to resist the virus. In 1987, they tried the technique with tomatoes and became the first team to successfully genetically engineer a food crop with a disease resistance trait.

Continued on page 22

Critical Therapeutics Receives Patent For Anti-inflammatory Technology

Critical Therapeutics, Inc. (CTI) has received a U.S. patent covering therapies designed to control destructive inflammatory processes by regulating a key reflex pathway between the central nervous system and the major organs.

The patent covers methods of treating a broad range of serious inflammatory diseases. The invention described in the patent embodies novel approaches to inhibit the cellular release of pro-inflammatory cytokines through administration of cholinergic receptor agonists or direct stimulation, including electrical stimulation of the vagus nerve. The vagus nerve is a major signaling pathway for the anti-inflammatory signal between the brain and major organs such as the heart, stomach, liver and small intestine.

For decades, researchers thought the vagus nerve was involved chiefly in the process of regulating the function of internal organs. In recent years, however, scientists have discovered that the vagus nerve plays a vital role in regulating the immune system. Specifically, vagus nerve stimulation has been shown to release a substance known as acetylcholine, which in turn inhibits the production by macrophages of pro-inflammatory, potentially lethal proteins called cytokines. It is the immune system's overproduction of these cytokines, including tumor necrosis factor (TNF), that can contribute to illnesses such as rheumatoid arthritis, Crohn's disease, ulcerative colitis and sepsis.

The patent stems from research conducted by the inventor, CTI co-founder Kevin J. Tracey, an ASBMB member, and his colleagues at the North Shore-Long Island Jewish Research Institute's Laboratory of Biomedical Research. CTI in-licensed exclusive rights to the patent from the Institute. In an article published in the December 22, 2002 online edition of *Nature*, Dr. Tracey and his team identified the essential chemical receptor that dispatches a signal that inhibits the production of TNF. That receptor, which contains the nicotinic a-7 cholinergic receptor subunit, is necessary to inhibit the release of TNF and other pro-inflammatory cytokines.

"Dr. Tracey's research underscores the potential of pharmacological and electrical stimulation therapies that target subunits on peripheral immune cells," said Walter Newman, CTI's Chief Scientific Officer, who is also an ASBMB member. "This patent enables us to leverage our worldwide exclusive license to develop treatment methods based on one or more approaches."

Cambridge, Massachusetts-based Critical Therapeutics is a privately held biopharmaceutical company focused on critical care medicine. Its mission is the discovery, development and commercialization of novel therapies for the treatment of acute trauma, cardiopulmonary disease and infectious and inflammatory illnesses.

Wake Forest to Assist Seven UNC Schools with Technology Commercialization

Wake Forest University Health Sciences has established a new company to assist seven universities in the University of North Carolina (UNC) system with technology commercialization, also known as "technology transfer." The new company, called Seed Stage Associates LLC, is a wholly owned for-profit subsidiary of Wake Forest University Health Sciences.

"Seed Stage Associates has entered into a contract with the UNC General Administration to provide technology transfer related services to the seven UNC schools in the western part of North Carolina," said Spencer Lemons, director of the Office of Technology Asset Management at Wake Forest.

The firm will serve Winston-Salem State University, the N.C. School of the Arts, UNC Greensboro, UNC Asheville, N.C. A&T State University, Appalachian State University and Western Carolina University.

"Our objective is the development of new products and services that may benefit the public through technology transfer," said Lemons. "Commercialization may be through licensing to existing companies or through the creation of new businesses."

Seed Stage Associates in turn has contracted with Wake Forest University Health Sciences for the part-time services of three professionals in the Office of Technology Asset Management. The company also had contracted with an outside consultant, Gina Stewart, of Sage Technology Management Inc., for additional services.

Washington University, Monsanto continued

Continued from previous page

The group of scientists developed a gene that, when introduced to plant cells, would cause the cells to produce the virus "coat," a protein normally made by the virus to ensheath the virus's genetic information. Tomato plants that were produced from the modified cells?transgenic plants?produced the coat protein in very small amounts in comparison to the amount of coat protein that is produced during virus infection. While these plants were "challenged" by tobacco mosaic virus inoculation and its close relative, tomato mosaic virus, they were highly resistant to infection. Work conducted since the original discovery has demonstrated that the "coat protein" in the transgenic plants restricts infection and thwarts the ability of the virus to infect the plant.

Aphids spread many different types of plant viruses, and it is common practice to control virus infection by using chemical insecticides to limit spread of viruses. The "coat-protein mediated resistance" technology, like other disease resistance genes, can substantially reduce farmers' reliance on chemical insecticides.

Dr. Beachy is internationally known for his groundbreaking research on virus-resistant plants. He is the founding president of the not-for-profit Donald Danforth Plant Science Center in St. Louis. The center, established in 1998, is affiliated with many businesses and universities and focusses on interdisciplinary research in genetics, chemistry, cell biology, biochemistry, computational genomics and structural biology.

Career Opportunities

BIOCHEMIST
Moravian College

Moravian College, a 260 year old, highly selective, liberal arts college with an ACS approved chemistry program, and 1400 undergraduates, seeks applications for a tenure-track assistant professorship in biochemistry beginning September 2004. The successful candidate will hold a Ph.D. in chemistry or biochemistry and have the ability to teach a variety of chemistry courses. The position requires a commitment to teaching and research in an undergraduate environment that emphasizes close student-faculty interaction. The primary teaching responsibility is the creation of an upper-level biochemistry course, including the laboratory, for our newly developed biochemistry major. Other courses may include an upper-level course in the area of expertise, a course for non-science majors, an interdisciplinary social impact of science course, or involvement in the general chemistry course. Moravian College is located in the historic Lehigh Valley of Eastern Pennsylvania near Philadelphia and New York City. Send a curriculum vita, graduate and undergraduate transcripts, statements of teaching philosophy and research plans including equipment and facility needs, and three letters of recommendation to Professor R. Daniel Libby, Chair, Department of Chemistry, Moravian College, 1200 Main St., Bethlehem, PA 18018. Thorough consideration will be assured to applications completed by January 12, 2004. Moravian College, an equal opportunity employer, especially encourages applications from women and minority candidates.

EXECUTIVE OFFICER
American Society for Biochemistry and Molecular Biology (ASBMB)

A Member Society of the Federation of American Societies for Experimental Biology (FASEB)

The ASBMB is a leading international scientific society representing over 11,000 research scientists, academicians and scientists in training. The ASBMB seeks an Executive Officer due to the imminent retirement of Charles C. Hancock, Jr., following 24 years of outstanding service.

The mission of the ASBMB is to promote understanding of the molecular nature of life processes. This mission is accomplished through:

- publication of the *Journal of Biological Chemistry*, *Molecular & Cellular Proteomics*, *Journal of Lipid Research*, *Biochemistry and Molecular Biology Education* and its magazine, *ASBMB Today*.
- organization of an annual scientific meeting and specialized meetings.
- science advocacy and communication with public and private agencies.
- support of scientific education and training at all levels and promoting diversity.

The Executive Officer is responsible for the management of business affairs and implementation of actions initiated by ASBMB Council. Responsibilities include coordination of Council and other ASBMB meetings, elections, interactions with FASEB and other professional societies, congressional committees, scientific meeting coordination, budgetary and regulatory aspects of publication and contract negotiations. Offices of the ASBMB are located on the FASEB Campus in Bethesda, Maryland. The Executive Officer directs a staff of approximately twenty full-time employees resident in the ASBMB Offices. Frequent travel to scientific and society-related meetings is expected.

Qualified applicants should have excellent communication, interpersonal and administrative skills with a record of achievement and leadership in management of academic, association or other non-profit organizations. Experience in communication with leaders in the scientific, philanthropic and publishing communities is desirable. Applicants should provide a résumé, the names of three or more references and a cover letter indicating their strengths for this position. Applications will be reviewed beginning November 1, 2003. Applications provided as electronic attachments are preferred. Please email application materials to: maureen@hr.faseb.org and mail materials to: ASBMB Executive Officer Search, Human Resources, Federation of American Societies for Experimental Biology, 9650 Rockville Pike, Bethesda, Maryland 20814-3998.

ASBMB is an Equal Opportunity Employer.

Calendar of Scientific Meetings

OCTOBER 2003

OARSI's 2003 World Congress on Osteoarthritis

October 12–15 • Palais am Funkturm, Berlin
Contact: OARSI Headquarters; Ph: 202-367-1177; Fx: 202-367-2177
Email: oarsi@oarsi.org; Website: http://www.oarsi.org

AAPS Workshop on Method Validation and Measurement of Biomarkers in Nonclinical and Clinical Samples in Drug Development Cosponsored with Clinical Ligand Assay Society

October 24–25 • Salt Lake City, Utah
Contact: AAPS Meetings Department
Ph: 703-243-2800; Fx: 703-243-9532; Email: meetings@aaps.org
Website: http://www.aapspharmaceutica.com/meetings

AAPS Annual Meeting and Exposition

October 26–30 • Salt Lake City, Utah
Contact: AAPS Meetings Department
Ph: 703-243-2800; Fx: 703-243-9532; Email: meetings@aaps.org
Website: http://www.aapspharmaceutica.com/meetings

Cytokines, Signalling & Diseases

Oct. 26–30 • Cairns, Australia
Event Host: International Society for Interferon and Cytokine Research; Website: http://www.cytokines2003.conf.au/

American Association of Pharmaceutical Scientists Annual Meeting and Exposition

October 26–30 • Salt Lake City
Ph: 703-243-2800; Fx: 703-243-9650; Email: aaps@aaps.org
Website: http://www.aapspharmaceutica.com/meetings/annualmeet/am03/index.asp

NOVEMBER 2003

Biomedical Information Science and Technology Initiative (BISTI) 2003 Symposium Digital Biology: The Emerging Paradigm

November 6–7 • Natcher Conference Center, NIH, Bethesda, MD
Contact: Saundra Bromberg, Capital Consulting Corporation
Ph: 301-468-6004, ext. 406
Email: sbromberg@md.capconcorp.com.

Protein Symposium and Joint Meeting of the Argentinean Biophysical Society (SAB) and the Argentinean Society for Research in Biochemistry and Molecular Biology (SAIB)

November 17-21 • San Carlos de Bariloche, Argentina
This meeting is sponsored by: The National Agency for the Promotion of Science and Technology (ANPCyT), The National Research Council of Argentina (CONICET), Fundación Antorchas, Fundación Instituto Leloir, University of Buenos Aires, University of Quilmes, and The Protein Society.
Contact: Prof. José M. Delfino (delfino@qb.ffyb.uba.ar)
Prof. Fernando A. Goldbaum (fgoldbaum@leloir.org.ar)
Prof. Gonzalo de Prat Gay (gpratgay@leloir.org.ar)
Prof. Alejandro J. Vila (vila@arnet.com.ar)
Fx: (54 11) 4962 5457
Website: http://www.biofisica.dna.uba.ar/pssabsaib

DECEMBER 2003

American Society for Cell Biology 43rd Annual Meeting

December 13–17 • San Francisco, California
Late Abstract Submission/Revision Deadline: October 14, 2003
Ph: 301-347-9300; Fx: 301-347-9310
Website: http://www.ascb.org/meetings/am2003/main03mtg.htm

FEBRUARY 2004

Biophysical Society 48th Annual Meeting

February 14–18 • Baltimore, Maryland
Abstract Deadline: October 5, 2003
Early Registration Deadline: December 12, 2003
Ph: 301-634-7114; Fx: 301-634-7133
Website: http://www.biophysics.org/annmtg/site-index.htm

50th Anniversary Gordon Conference on Isotopes in Biological and Chemical Sciences

February 15–20 • Ventura, California
Chair: David N. Silverman, Vice Chair: Charles L. Perrin
Email: silvrmn@ufl.edu
Website: http://www.grc.org/programs/2004/isotopes.htm

The 1st Gordon Research Conference on The Biology of 14-3-3 Proteins

February 22–27 • Ventura, California
Chairs: Haian Fu & David Klein, Vice-Chair: Alastair Aitken
Email: hfu@emory.edu
Website: http://www.grc.org/programs/2004/14-3-3.htm

APRIL 2004

Experimental Biology 2004

April 17–21 • Washington, DC
Deadline for Submission of Abstracts: November 12, 2003
Website: http://www.faseb.org/meetings/eb2004/

JUNE 2004

American Society for Biochemistry and Molecular Biology Annual Meeting and 8th IUBMB Conference

June 12–16 • Boston, Massachusetts
Contact: Kelly Gull; Ph: 301-634-7145; Fx: 301-634-7126
Email: kgull@asbmb.faseb.org; Website: www.asbmb.org/meetings

AUGUST 2004

12th International Conference on Second Messengers and Phospoproteins

August 3–7 • Montreal, Canada
Contact: smp2004@eventsintl.com
Website: http://www.secondmessengers2004.ca

NOVEMBER 2004

4th International Congress on Autoimmunity

November 3–7 • Budapest, Hungary
Deadline for Receipt of Abstracts: June 20, 2004
Contact: 4th International Congress on Autoimmunity Kenes International—Global Congress Organisers and Association Management Services
17 Rue du Cendrier, PO Box 1726
CH-1211 Geneva 1, SWITZERLAND
Ph: +41 22 908 0488; Fx: +41 22 732 2850
Email: autoim04@kenes.com
Website: www.kenes.com/autoim2004

JULY 2005

30th FEBS Congress — 9th IUBMB Conference, 2005 The Protein World; Proteins and Peptides: Structure, Function and Organization; Science is Fun: A Conference for Your Creativity

July 2–5 • Budapest, Hungary
Contact: Ms. Franciska Morlin, Chemol Travel Congress Dept.
H-1366 Budapest, P.O.Box 28, Hungary
Ph:+36-1-266-7032, Fx: +36-1-266-7033
Email: incoming@chemoltravel.hu; www.febs-iubmb-2005.com

Department Heads Take Note:

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ASBMB is now offering a free one-year Associate membership to all students who have, within the past year, earned a Ph.D. degree in the molecular life sciences or related areas.

ASBMB implemented this program as a way to recognize the significant accomplishment of earning the Ph.D., and to provide new Ph.D.s with something tangible and of economic value. Membership in ASBMB brings with it a free subscription to the online versions of the *Journal of Biological Chemistry* and *Molecular and Cellular Proteomics,* as well as subscriptions to *The Scientist* and the Society's magazine, *ASBMB Today*, discounts on other publications, and a host of other benefits.

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Kathie Cullins
Membership and Subscriptions Manager
American Society for Biochemistry
& Molecular Biology
9650 Rockville Pike
Bethesda, MD 20814
Email: asbmb@asbmb.faseb.org

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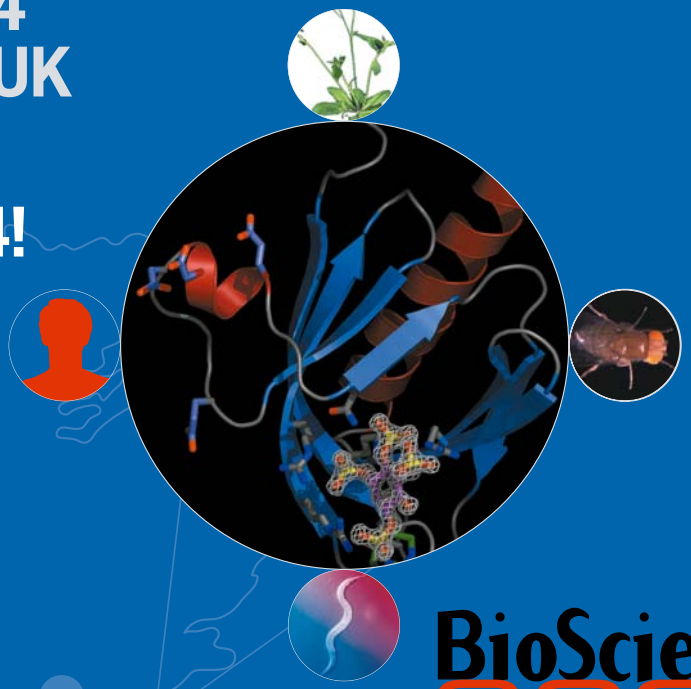
www.BioScience2004.org

18–22 July 2004
SECC Glasgow, UK

THE life science meeting of 2004!



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EARLY REGISTRATION DEADLINE: TUESDAY 18 MAY 2004

Focus topics for the meeting:

- Lipids, Rafts and Traffic
- Structure Related to Function: Molecules and Cells
- Signalling Outwards and Inwards
- Genes: Regulation, Processing and Interference
- Energy: Generation and Information
- Ethics, Education and Employment

Biochemical Society Annual Symposium
Lipids, Rafts and Traffic

Plenary Speakers:

- Roger Y. Tsien (Howard Hughes Medical Institute La Jolla, CA, USA) – Opening Lecture
- Stephen O'Rahilly (Cambridge, UK)
- Tony Pawson (Toronto, Canada)
- Chris Dobson (Cambridge, UK) – The EMBO Lecture
- Karen Vousden (Beatson Institute, Glasgow, UK)
- Graham Warren (Yale, New Haven, CT, USA)

Registration Fees:

- Biochemical Society and Nutrition Society full members – £190
- Student members of Biochemical Society and sister Societies – £65
- BioScience Federation and RSC members – £250
- Non-members – £350

Please note: the registration fees will increase after 18 May 2004.

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