JULY 2002

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ASBMB Today

Constituent Society of FASEB

AMERICAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY

ALSO IN THIS ISSUE

Dr. Bettie Sue Masters,

new ASBMB President, discusses her goals for the Society

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Over 300 scientists will be selected from the abstracts submitted to ASBMB Topic Categories to make oral presentations. Scientific sessions corresponding to the above themes will be held each day in which speakers from the volunteered abstracts will present. Oral presenters will also present a poster at the meeting.

Opening Lecture
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For more information contact:
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ASBMB Today

AMERICAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY

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features

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Comments

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Curing, Not Cloning

By Gerald Ford

The following appeared in *The Washington Post* on June 5. Gerald Ford was the 38th President of the United States.

It is a troubling paradox of American politics: All too often the issues that most cry out for thoughtful, dispassionate consideration are reduced to sound bites. Further distorted in the name of ideology or partisanship, they can become oversimplified to the point of caricature. The public—and public policy—suffer, if only because there are some phrases virtually guaranteed to polarize any debate before it gets started.

Affirmative action. Reproductive rights. Gay rights. Now you can add cloning to the list. For many, the word conjures up sinister images of mad scientists laying claim to God-like powers. From there it is a short step toward a soulless state, wherein assembly-line man is robbed of his individuality by science run amok. It's hard to imagine a more frightening scenario.

But is it real? Growing up in Grand Rapids, Michigan, I was taught to put my faith in God, not government, and never to confuse the two. On the verge of my 89th birthday, I am not likely to change this view.

That's why I share the concerns of many about reproductive cloning, which in theory, at least, could lead to Dr. Frankenstein's vision of laboratory-manufactured humans. To me this is a perversion of science. Legislation has been introduced that would outlaw the cloning of human beings.

At the same time, this legislation would allow continued research into therapeutic cloning—more precisely known as somatic cell nuclear transfer, or nuclear transplantation—a very different branch of science that holds limitless potential to improve or extend life for 130 million Americans now suffering from some chronic or debilitating condition.

The anguish of these people is multiplied by the number of family members struggling to care for victims of heart disease, diabetes, Alzheimer's and Parkinson's, spinal cord injury and a vast array of other ailments. For every Ronald Reagan, cruelly deprived of the knowledge of his pivotal place in our history, there are millions of elderly, and not so elderly, citizens who will never get their names in the history books, although they are similarly imprisoned in memory's darkened rooms. They deserve more than our sympathy. They deserve the finest treatment imaginable by the world's best scientists.

Unfortunately, they may not get it. In stark contrast to the Human Cloning Prohibition Act sponsored by Sens. Arlen Specter, Dianne Feinstein, Orrin Hatch and Edward M. Kennedy, other members of Congress in both houses are trying to legislate an absolute ban on all cloning, therapeutic as well as reproductive.

Under terms of the Brownback-Landrieu bill in the Senate, and its House counterpart, H.R. 2505, promising regenerative therapies would be criminalized. This is not locking the lid on Pandora's box. It is slamming the door to lifesaving cures and treatments merely because they are new.

No fewer than 40 Nobel laureates have warned that such legislation "would foreclose the legitimate use of nuclear transplantation … and impede progress against some of the most debilitating diseases known to man."

Nor would it end there. Long in the vanguard of scientific discovery, American scientists and public policymakers have done much to shape sound scientific policies throughout the world. To walk away from the advances already achieved through therapeutic cloning is to surrender this leadership. It is to turn our back on the worldwide debate over harnessing, controlling and sharing these powerful new discoveries. It is to reject much of our history and still more of our future.

This is not an either/or question. It is a false choice that says we can have medical breakthroughs or we can safeguard human individuality — but we can't do both. No one knows this better than the scientific researcher. The frontiers of knowledge are often lonely and sometimes uncivilized. Government has a mandate to police these regions and to guard against unethical or exploitative conduct, without suffocating the instinct for exploration and self-improvement that defines the human race.

Notwithstanding the efforts of some scientists, men are not to be confused with sheep. So what is it that sets us apart? Among other things, it is our capacity for faith — complemented by our God-given curiosity, our dissatisfaction with limits and our stubborn refusal to acquiesce in early death or to suffer passively through debilitating illnesses thinly disguised as life.

Fortunately, we have recent precedent to help guide us through the forest of scientific and political uncertainty. During my presidency, similar questions were raised about research into recombinant DNA. After careful deliberation, safeguards were devised to ensure that this promising new line of inquiry would be closely monitored. It was a measured response to a sensitive issue, and it has resulted in advances that were unimaginable in the 1970s.

Former President Gerald Ford

A quarter-century later, would anyone turn back the clock? Would anyone discard vaccines traceable to recombinant DNA research? Would they dismiss the promising new strategies to prevent or combat AIDS, diabetes and cancer?

Bills have already been put forward that ban human cloning and provide stiff penalties for it, while allowing continued research into the promise of nuclear transfer research. I call on Congress to pick up the mantle of leadership on this important issue and craft a compromise solution that works.

House Vote Puts NSF on Track to Double Budget

By Peter Farnham, Public Affairs Officer

The House of Representatives approved, by a vote of 397 to 25, a bill to put the National Science Foundation on a track to double its budget in five years. H.R. 4664, the Investing in America's Future Act, authorizes a 15% increase for NSF's budget for each of the next three years, and at the same time, imposes new management requirements.

The bill authorizes a funding level of $5.5 billion for FY 2003 spending by the agency, compared with the $5 billion requested by the President. The bill would also authorize NSF to reach a funding level of $7.294 billion by FY 2005. At a congressional hearing in April, ASBMB President Robert Wells testified in favor of doubling the NSF budget.

"IT'S TIME TO GIVE NSF THE MONEY IT NEEDS," declared Science Committee Chairman Sherwood Boehlert.

A congressional staff member told *ASBMB Today* that NSF is "very well positioned" for major increases this year, "provided the budget allocation allows increases for even the highest priorities in the VA/HUD bill." Unfortunately, initial indications regarding the allocation for the bill are not encouraging.

Rep. Sherwood Boehlert (R-NY), Science Committee Chairman and one of the bill's primary sponsors stated, "When we look at the new fields of science and engineering that will boost our economy in this new century, fields like nanotechnology, where do we turn to ensure that our nation's researchers stay at the cutting edge? NSF.

"When we look at the field of information technology, which facilitates every activity in today's economy, where do we turn to ensure that the U.S. remains at the cutting edge? NSF.

"When we consider our ever more urgent need for a highly skilled, technologically literate workforce, where do we turn to ensure that our education system from kindergarten through post-graduate work is preparing the people we need? NSF.

"We turn to NSF to solve some of our most pressing problems; we can't turn from NSF when we decide where to invest federal funds. It's time to give NSF the money it needs."

Bill sponsor and Research Subcommittee Chairman Nick Smith (R-MI) added, "The expeditious movement of this bill through the House is a testament to the widespread support in Congress for the fundamental research of today that leads to the breakthroughs of tomorrow. As a relatively small agency that receives only 4% of federal R&D funding, the contributions of NSF-funded research-from development of the internet to fiber optics to medical diagnostic tools to plant genomics advances-have revolutionized our lives. This legislation demonstrates Congress' commitment to continuing these technological advancements."

Said Rep. Constance Morella (R-MD), "If we expect the technological advances we have achieved in recent years to continue, we must fund the underpinning science and engineering more robustly. In addition, we must provide adequate resources to produce the next generation of scientists and engineers. As the premier supporter of the overall scientific enterprise, the NSF has the ability to balance the research and education dollars needed to achieve both of these goals."

The legislation significantly boosts research into specific areas such as information technology and nanotechnology, and bolsters overall funding for science, technology, engineering, and mathematics education.

During its 50 years, NSF has supported the research of more than half of U.S. Nobel laureates in physics, chemistry and economics. The Bush administration lauded NSF last fall for its outstanding fiscal management.

An amendment offered by Rep. Lynn Rivers (D-MI) was accepted by voice vote on the House floor. The amendment makes clear that Computer, Science, Engineering, and Mathematics Scholarships (SCAMS) are open to part-time students.

An amendment regarding "biosafety" research, offered by Rep. Lynn Woolsey (D-CA), was rejected. This amendment would have set aside funding for research on the impact of biological research on organisms and the environment.

In opposing the amendment, Rep. Smith said he had no opposition to the research, but he objected to the arbitrary set-aside in this amendment. Rep. Ehlers added his concern that the amendment would create a slippery slope of Congressional priorities taking precedence over peer-reviewed research projects.

The bill now moves to the Senate for consideration.

Changes Reported in the Works for Senate Cloning Bill

The Washington Post reported on June 6 that a group of senators supporting S.2439, the Human Cloning Prohibition Act, are working on amendments that would specify in detail certain safeguards to ensure that cloning to produce a human child would not be allowed. These amendments were expected to be introduced later in the month when floor debate on cloning was due to begin. Subsequently, we heard that Senator Brownback is considering a proposed 2-year moratorium on cloning.

The amendments are being written mostly by the original cosponsors of S.2439, Senators Dianne Feinstein (D-CA), Edward Kennedy (D-MA), Arlen Specter (R-PA) and Orrin Hatch (R-UT). ASBMB supports S.2439, which would prohibit cloning to produce a child—so-called reproductive cloning—but would allow asexual production of blastocysts to produce stem cells for use in research and for the development of therapies. The amendments are being added in an effort to garner enough votes to assure passage of the bill.

Senator Brownback After repeated delays his bill nearing a vote.

An alternative bill, which ASBMB opposes, is S.1899, also called the Human Coning Prohibition Act. This bill was introduced by Senators Sam Brownback (R-KS) and Mary Landrieu (D-LA). While this bill, like S.2439, would ban reproductive cloning, it would also ban production of blastocysts to produce stem cells.

Supporters of the Feinstein-Hatch bill fear that since neither their bill nor the Brownback bill have enough votes for passage at the moment, there would be no legislative ban in place on reproductive cloning, which everyone in the Senate agrees should be banned.

Among the amendments being considered, according to *The Post*, is a requirement that unused blastocysts be destroyed after 12 days. Other countries around the world require destruction after 14 days, making the U.S. standard the toughest in the world—by 2 days. Another amendment would require the General Accounting Office to review the effectiveness of the legislation after one year, and for the Institute of Medicine to review the state of the science after five years.

The amendments also require ethical and scientific reviews of any proposed research involving human blastocysts, and would protect women whose eggs might be used for the research. Senator Feinstein indicated in an interview that these protections would be similar to those governing the use of aborted human fetal tissue in research.

"Our bill would very precisely ban human cloning," while maintaining "a potentially enormously rewarding area of research," Feinstein said.

Senator Feinstein Cosponsor with Senator Hatch of bill to ban reproductive cloning.

The Post also quoted Richard Doerflinger of the U.S. Conference of Catholic Bishops, which supports the Brownback bill. "Efforts to more tightly regulate embryo cloning only end up with the government more and more directly involved in requiring their destruction," he said. "That does not solve the problem at all."

Senator Brownback was promised a floor debate and vote on S.1899 late last year. After repeated scheduling delays, beginning shortly after the new year, Brownback had threatened to try and attach the bill to every piece of legislation that came to the Senate floor. The debate was subsequently programmed for mid-June.

Joining the Creationists

By John D. Thompson, Editor

"All voting is local," has long been a truism among politicians.

Perhaps two congressmen from Ohio were acting on that principle recently when they entered the fray in their home state over what children should be taught about the origin of humans.

Reprepresentatives John Boehner (R-OH) and Steve Chabot (R-OH), we hear, jumped into the Ohio School Board debate on the side of Intelligent Design. As support for their argument they quoted the Santorum Amendment, which passed overwhelmingly in the Senate, but failed in the House and is now in some sort of purgatory.

The driving force behind the School Board action is Jonathan Wells, a theologian who went for a second Ph.D. in biology because, as he put it, "My prayers convinced me that I should devote my life to destroying Darwinism."

Commenting on all this, the author of a letter to the editor of the *Columbus* (Ohio) *Dispatch* wrote, "do we really want public opinion to be the arbiter of science? Maybe we should put the laws of thermodynamics up for a vote."

ASBMB Decries Proposal To Boycott Israeli Science Exchanges

The ASBMB Public Affairs Advisory Committee adopted a statement in early June opposing in principle an effort recently launched by several British scientists to organize a boycott of scientific and cultural exchanges with Israel over concern with the Israeli government's actions regarding Palestine.

FASEB, in its own right, adopted a statement on the boycott proposal on June 4.

Former ASBMB President Elizabeth Neufeld (currently a member of ASBMB's PAAC) told *ASBMB Today* that "the proposed boycott is awful for at least three reasons: it represents politicization of science; it punishes the scientists, many of whom disagree with the government, for offenses of the government.; and it would prevent regional cooperative interactions, which are the best hope for a stable peace in the Middle East."

ASBMB Statement on Proposed Boycott of Scientific and Cultural Exchanges With Israel

Recently a group of scientists proposed a scientific and cultural boycott of Israel as a form of protest against some of the policies of the current Israeli government. The American Society for Biochemistry and Molecular Biology (ASBMB) disagrees with this view and hereby goes on record as opposing, as a matter of principle, any such boycotts of scientific and cultural exchanges with any nation. Such actions damage science and human progress by reducing open scientific communication, and damage peace and understanding by reducing the opportunities for collaboration and exchange between individual scientists. ASBMB strongly supports the similar position taken on this matter by the Federation of American Societies for Experimental Biology (FASEB).

Justice Department Report Calls New Database for Tracking Foreign Students Inadequate

The U.S. Justice Department released a report in May that calls the government's current system for tracking foreign students inadequate and says that a new computerized database designed to improve monitoring won't be ready by the January 30, 2003, deadline.

The report also says that the new database, the Student and Exchange Visitor Information System (SEVIS), will be an advance for the beleaguered Immigration and Naturalization Service, but "will not solve the problems of the ... tracking of foreign students." The INS must first recertify the 70,000 colleges and schools that enroll foreign students, and ensure that college officials know how to use SEVIS and that immigration officials know how to analyze the information derived from it, the report says.

Attorney General John Ashcroft requested the report, assembled by the department's office of the inspector general, to investigate why the immigration service had sent visa-approval notices to two men some six months after they were believed to have flown hijacked airliners into the World Trade Center.

The report calls for formal training programs for college officials who are responsible for complying with the immigration service's new record-keeping requirements. It also says that the agency must figure out a way to ensure that information in the database is accurate. "To date, the INS has not formulated any concrete plans for conducting or requiring verifications of the accuracy of the data that the schools enter into SEVIS," the report says.

The report details several additional problems that have nothing to do with the SEVIS delay. Immigration and Naturalization Service officials who review the certification of colleges seeking to enroll foreign students "do not adequately review the schools' applications," the report says. What's more, many colleges continue to issue I-20 forms, which indicate that a foreign student has been accepted for study, even though they no longer have federal approval to do so.

"The INS's prevailing philosophy in dealing with foreign students ... before Sept. 11 was that students were not a concern or a significant risk worthy of special scrutiny," the report says.

College officials have complained that they will have a difficult time meeting the requirement that they begin using SEVIS by January 30, 2003, given that many questions remain about how the system will operate.

Germany Amends Constitution to Protect Animals

By Alice Ra'anan, Public Affairs Officer, American Physiological Society

The Bundestag, Germany's lower house of parliament, has voted to give animals protection under the German constitution. The measure passed overwhelmingly, with 543 lawmakers supporting it, 19 lawmakers voting against it, and 15 abstaining.

The amendment will add the words "and animals" to a clause in the German Basic Law or constitution that obliges the state to respect and protect the dignity of "life." This passage was previously taken to refer only to human beings. According to news reports, the amended Article of the Basic Law will now read, "The state takes responsibility for protecting the natural foundations of life and animals in the interest of future generations."

The obvious concern is what this language means. The BBC reported that a German organization called the Society for Health and Research referred to the day of passage of the amendment as "Black Friday," and said that it would lead to legal insecurity in research and education. Animal activists were cited in news reports as saying that they would seek to use the new constitutional provision to reduce unduly long transport times for animals en route to slaughter. Some legislators said it was likely that the government would direct more funds to develop non-animal research methods. German scientists are the ones in the best position to say what impact this may have.

According to one German scientist, the only action still needed is the formality of the president signing it into law. This scientist noted that animal research was one of the intended targets of this amendment, which now opens the door to court cases that challenge animal research.

The full impact of the amendment is impossible to predict at this point. After the vote, Consumer Affairs Minister Renate Kuenast, a member of the pro-environmentalist Green party that backed the language, insisted that it would not place animals above humans. "People remain the most important," she is quoted as saying. However, no one knows how the language will be interpreted and how conflicts between the interests of humans and animals will be resolved.

The language could be applied to everything from animal testing to medical research. If applied too zealously, it could interfere with international collaborations. The provision itself can only be reversed by a two-thirds vote of the legislature, but there may be some room for the government to reconsider how it intends to apply the amendment, particularly if it might have a deleterious effect on German science.

ASBMB Today would be interested in hearing from our German readers how this change in the German constitution may impact their laboratories or institutions. Please contact the editor, John Thompson, at jthompson@asbmb.faseb.org.

Group Praises Legislators for Recognizing Dr. Kirschstein's Contributions to Medical Research

The Ad Hoc Group for Medical Research Funding Chairman Richard Knapp, Ph.D., today praised Senators Tom Harkin (D-IA) and Arlen Specter (R-PA) and Congressmen Ralph Regula (R-OH) and David Obey (D-WI) for renaming NIH's National Research Service Awards after NIH Deputy Director Ruth L. Kirschstein. "The Ad Hoc Group and the advocacy community were seeking a way to honor Dr. Kirschstein's brilliant NIH career and commitment to future generations of scientists," Dr. Knapp said. "This is a fitting tribute to Dr. Kirschstein for her service to the nation, and for her recent lengthy tenure as Acting Director of NIH, and we applaud the Congress for providing her this recognition."

Senator Harkin announced that he and his colleagues would name NIH's most important research training grants the Ruth L. Kirschstein National Research Service Awards as he chaired a Senate Labor/HHS Appropriations Subcommittee meeting on Parkinson's Disease. Harkin said the legislative change would be inserted into the Supplemental Appropriations bill that the Senate begins marking up this week.

Currently, NIH supports over 16,700 pre-doctoral students and post-doctoral fellows through National Research Service Awards, investing over $650 million in helping to develop the nation's future biomedical researchers.

The Ad Hoc Group for Medical Research Funding <http://www.aamc.org/research/adhocgp/> is a coalition of more than 300 patient and voluntary health groups, medical and scientific societies, academic and research organizations, and industry.

Welch Award Recipient Honored for Insights Into Physical Chemistry, Cell Membranes

Harden McConnell, Robert Eckles Swain Professor of Chemistry Emeritus at Stanford University, has been chosen to receive the 2002 Welch Award in recognition of his lifetime contributions to basic chemical research. He will be presented with the Welch Award gold medallion and $300,000 prize in October at a banquet hosted by the Welch Foundation in Houston. That will be the second Welch Award in a row for an ASBMB member from Stanford, Dr. Roger Kornberg having been the 2001 recipient.

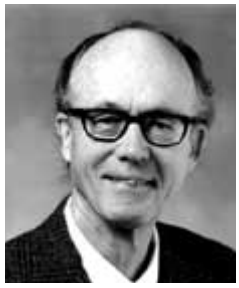
In announcing the Award, the Welch Foundation stated that, due in part to the pioneering work of Dr. McConnell, scientists are beginning to understand a number of fundamental molecular properties of cell membranes, including those related to the regulation of cholesterol and the activation of the body's immune system.

Dr. McConnell, an ASBMB member since 1971, has made significant discoveries related to cellular behavior at the molecular level by applying physical chemical principles to problems of ongoing interest in biological and medical research. His research has increased the understanding of the interactions between cholesterol and the fatty acid chains of phospholipids, and the reactions between proteins and peptides by which the body activates its immune system.

"These discoveries set the stage for further research that will bring new insights into immune surveillance and in understanding the function of cholesterol in cells," said Richard J. V. Johnson, Welch Foundation Chairman.

"Dr. McConnell has made a series of pioneering discoveries concerning the physical state of liquid membranes, providing principles used every day by many scientists," said Norman Hackerman, Chairman of the Welch Scientific Advisory Board. "His combination of physical chemistry and biology has immediate relevance to contemporary research on cell membranes."

Dr. McConnell's first breakthrough came when he applied quantum mechanical methods to chemical problems, developing theoretical methods for relating nuclear magnetic resonance (NMR) data to the structure of molecules. He modified the equations governing NMR to include the effects of chemical reactions, and used the results to measure chemical kinetics, i.e., the speed at which reactions take place. He has also pioneered research on free radicals - an extremely reactive type of chemical that occurs in chemical and biological settings; this ultimately led to the development of the McConnell Relation, which describes the distribution of electron spin in free radicals.



Dr. Harden McConnell, who has been chosen to receive the 2002 Welch Award in recognition of his lifetime contributions to basic chemical research.

When McConnell moved to Stanford University in 1964, he began to use the methods of physical chemistry to study biological problems. There, he introduced a method called spin labels, in which electron and NMR spectra are used to study the structure and kinetics of proteins and lipids. His work showed how to measure the movement of molecules through and within membranes in the laboratory; this was later shown by many researchers to apply to living cell membranes. His research also showed how a protein present in the body combines with that of a foreign peptide on the cell membrane to enable the body to recognize a pathogenic invader.

"Some of these discoveries are critical to understanding many properties of membranes," says McConnell, "and a large portion of biology takes place in and on membranes, so understanding them is crucial."

McConnell's recent work has focused on the behavior of cholesterol in membranes. Discoveries by his team concerning the properties of monomolecular films on the surface of water have shed light on cholesterol-phospholipid interactions that previously had puzzled scientists in several different fields of research.

The Houston-based Welch Foundation is one of the oldest and largest sources of private funding for basic research in chemistry. Since its founding in 1954, it has provided more than $465 million in support of science.

Nitric Oxide Joins Oxygen and Carbon Dioxide As Third Key Gas in Human Respiration

Investigators from Duke University Medical Center and the Howard Hughes Medical Institute (HHMI) have demonstrated that red blood cells play a crucial and active role in responding to the oxygen needs of tissues and that furthermore, the chemical nitric oxide is key to this process, leading the researchers to conclude that the chemical should be considered as the third major blood gas—along with oxygen and carbon dioxide—to be monitored in patients.

In their studies, the scientists tested the responses of the circulatory systems of human subjects in specialized chambers where the scientists could control atmospheric pressure and gas concentrations. The scientists raised or lowered oxygen levels in the chambers and analyzed the response of the subjects' blood cells. From such analyses, the scientists demonstrated that nitric oxide in the blood cells is an active regulatory molecule that causes the oxygen-carrying hemoglobin molecules in red blood cells to undergo subtle shape changes in response to varying concentrations of oxygen in tissues. Nitric oxide works by relaxing or contracting blood vessels.

The scientists said that their discoveries help explain why some treatments—such as blood transfusions or drugs like erythropoietin that boost red blood cell production — either don't work, or even lead to death. The findings could also explain why there is a direct relationship between high red blood cell counts and stroke, heart attack and hypertension, said the scientists. Additionally, the findings could offer new avenues of research in treating a whole range of those disorders, as well as sickle cell disease and pulmonary hypertension.

"One of the prevailing precepts of biology is that every cell regulates its major function," said ASBMB member Jonathan Stamler, M.D., HHMI investigator at Duke and senior member of the research team. "For red blood cells, their function is the delivery of oxygen to tissues, so the fact that it couldn't regulate blood flow, as was previously thought, seemed to me to make no sense. Now, we see the crucial role nitric oxide plays in the respiratory cycle, which is the basis of life for all mammals."

Dr. Jonathan Stamler, an ASBMB member, was senior member of the research team which concluded that nitric oxide should be considered as the third major blood gas—along with oxygen and carbon dioxide—to be monitored in patients.

According to the paper's first author, Duke University Medical Center pulmonologist Timothy McMahon, M.D., "The ability to monitor and manipulate nitric oxide along with oxygen and carbon dioxide should prove to be very useful in the diagnosis and treatment of many human diseases. Specifically, the knowledge that nitric oxide is intimately involved with red blood cells in blood flow regulation opens up huge new fields of research.

"As we develop further understanding of nitric oxide's role in oxygen delivery, these insights will be integrated into routine care of our patients," Dr. McMahon added.

The research effort was supported by the National Institutes of Health and the National Science Foundation.

The results of the teams' experiments provide insight into two long-running paradoxes faced by physicians: first, the oxygen content of blood often doesn't always correlate with the actual delivery of oxygen to the tissues. And secondly, the results provide a mechanism for well-known ability of blood vessels to respond to oxygen tension. The key finding, they said, is that individual red blood cells can respond quickly and locally to the oxygen needs of cells in the body's tiny capillaries, or microvasculature.

Continued on page 13

New Beginnin

by Bettie Sue Masters, ASBMB President

One might ask, "Why should I belong to a professional society?" My reply would be that there are at least five compelling reasons to be a member of one's own professional society. These five reasons for membership constitute in large part my own motivation for assuming the responsibility of presiding over the American Society for Biochemistry and Molecular Biology (ASBMB or the Society) for the next two years. It is an honor to have been chosen for such a leadership role in a Society to which I aspired as a trainee and which I've served in a number of capacities over the years. But why does one assume such an onerous responsibility? I believe, for myself, it is to serve the community of my peers and to create new avenues of cooperation and collaboration among ourselves, as well as with other societies and organizations both nationally and internationally.

In discussing these five reasons for becoming an ASBMB member, in particular, I will define my own goals for the Society. These can be enumerated as membership, publications, public policy, meetings, and outreach. First, the sense of belonging that membership brings can be very rewarding but only if that membership means involvement or engagement in Society activities. A feeling of openness and inclusiveness needs to pervade the organization throughout. Too often, members feel they have not been participants in the decision-making process. Not only should we continue our efforts, which have been emphasized during the recent past presidencies, to expand our membership, but we should also strive to include individuals who represent the many scientific areas that biochemistry and molecular biology underpin. Certainly, the fields of influence have expanded beyond our imaginations 40 years ago. We must provide attractive incentives, to be discussed later in this article, for "specialists" or practitioners in other disciplines to want to join our ranks. Since we are now an international organization, we should vigorously recruit our foreign colleagues to join ASBMB in order to participate in its meetings and other activities. We must continue to offer them more opportunities in scientific exchange and education.

While some might dispute the wisdom of rapidly expanding the publication arm of ASBMB, I feel this is one of the most important efforts we have launched as a Society in many years. As a result of several retreats held two and a half years ago in the Washington area, the decision was made to begin expansion in new directions to provide more complete dissemination of scientific information and educational materials and tools. Under Dr. Robert Wells' presidency, a new publication was launched (*Molecular and Cellular Proteomics*), the publication but not ownership of another was assumed (*Biochemistry and Molecular Biology Education*, owned by the International Union of Biochemistry and Molecular Biology), and still another was placed on a trial basis to determine its viability and suitability as another journal of the ASBMB (*Journal of Lipid Research*). This journal will be transferred as an official publication of the ASBMB next year. At the same time, it was decided that the old *ASBMB News* needed an overhaul. It has been completely redesigned as *ASBMB Today* and its contents have been increased and enhanced to serve ASBMB members more completely. While some of these decisions were most certainly opportunistic, they have resulted in the recruitment of excellent editors and boards of reviewers who have begun a completely new phase in publication activities for the benefit of ASBMB members. For example, the acquisition of the *Journal of Lipid Research* will serve more completely a group of scientists whose publication needs were only partially met by the *Journal of Biological Chemistry*.

Public policy matters have become a more consuming activity of the ASBMB in recent years. The Society has engaged

New ASBMB President Bettie Sue Masters is seen here with, at left, Dr. Linda Roman, Assistant Professor of Biochemistry and, at right, Yuzuru Ishimura, M.D., Ph.D., Visiting Professor in Dr. Masters' laboratory and former Chairman of Biochemistry at the School of Medicine, Keio University, and former President of the Japanese Biochemical Society. In the background is the lab's stopped-flow spectrophotometer.

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in a number of advocacy activities relating to increased funding of biomedical research at the National Institutes of Health and more recently to increased support of the chemical and physical sciences at the National Science Foundation. This effort is ongoing and we participate both individually and in concert with the Federation of American Societies for Experimental Biology. Other matters have arisen in which ASBMB has chosen to have a voice as well, including matters of research

The impact of over 10,000 ASBMB scientists is important.

integrity, human embryonic stem cell research, somatic cell nuclear transfer vs. human cloning, and bioterrorism, to name only a few. This is an activity in which many of our members identify a role for themselves and, even if their involvement is only a letter now and then to members of Congress expressing concern about some issue, they feel a part of a larger goal. The impact of over 10,000 ASBMB scientists is important and it is multiplied with our participation in FASEB public affairs issues.

Attendance of our membership at the national meetings has become a concern of the Council of ASBMB for the past few years. Attempts to identify any single cause of the decline in attendance have met with failure. There is now a Task Force on Membership constituted by Dr. Wells to address this issue from a variety of viewpoints. It is apparent that the membership has not been involved to the degree possible and the value of belonging has not been made apparent. Therefore, the value added to a scientist of belonging to ASBMB, whose interests can be identified with any number of fields in which biochemistry and molecular biology play a significant role, should be made obvious and enticing. Meetings, regardless of format, should be organized under ASBMB sponsorship to include many areas of interest. These could range from very small, special interest conferences to larger meetings, encompassing a number of areas. They should be organized with other societies, interest groups, or international organizations. To this end, I was instrumental in arranging for the 2004 ASBMB Meeting in Boston to be joined with the 8th IUBMB Conference. Due to our new international membership policy, it is appropriate to include and involve our foreign membership. The organization of meetings should be flexible enough to include all of these contingencies and more. The Society should draw young members into its fold, who wish to be identified as biochemists/molecular biologists to their colleagues in the biomedical sciences. There are many who identify themselves as such but are not members of biochemistry faculties, industrial research groups, or research institute divisions with biochemistry as an identifier. For example, with newly emerging activities in the area of proteomics, ASBMB should recruit more structural biologists and mass spectrometrists, among others, and provide outlets for their interests. There are many of these individuals in industrial settings.

Finally, I have mentioned previously in this writing that outreach is an interest and concern of mine. This word has many meanings but, in my view, it concerns the provision of services of the Society to those individuals in other countries, as well as our own, who have not benefited from belonging previously. For example, I can envision the *Biochemistry and Molecular Biology Education* journal as a vehicle for delivering the latest in information on a given topic with access to slide materials and computer programs that will enhance any teaching program. As of 2003, these materials will become available online as the editors take advantage of the digital capabilities of HighWire Press, Inc., with which the first biomedical journal to be pub-

lished and edited online, *The Journal of Biological Chemistry*, was launched. It is important to include our foreign members in our committee and task force activities so they can also contribute.

I suppose if one were to pick a theme for what I hope my presidency will represent, I would chose the words, involvement and outreach of the members of ASBMB in its activities. It is my belief that individual scientists will not participate in organizational activities unless they feel there is value added. Therefore, it is up to us to convince them that a sense of belonging is guaranteed by participation in the activities and services that ASBMB provides. We must make these activities and services attractive to present and potential members. I hope you will join me in making this a better Society for all of us by finding a niche for yourself and contributing to your favorite activity. I look forward to serving you during the next biennium.

Bettie Sue Masters, President
American Society for Biochemistry and Molecular Biology
July 2002

About Bettie Sue Masters

The new ASBMB President, Bettie Sue Masters, is the Robert A. Welch Foundation Professor in Chemistry at the University of Texas Health Science Center in San Antonio.

She received her Bachelors of Science in Chemistry from Roanoke College, Salem, Virginia, and her Ph.D. in Biochemistry, from Duke University, where her dissertation was entitled, "The Mechanism of Hepatic Microsomal Triphosphopyridine Nucleotide-Cytochrome c Reductase."

Dr. Masters was elected a Fellow of theAmerican Association for the Advancement of Science in 2001, and among her many awards are the FASEB Excellence in Science Award, Sandoz Lectureship of the Uniformed Services University for the Health Sciences, and the Bernard B. Brodie Award of the American Society for Pharmacology and Experimental Therapeutics.

She has served on the FASEB Board of Directors since 1998 and the Advisory Committee to the Director of the National Institutes of Health since 2000-2004, and as a member of the Editorial Board of the *Journal of Biological Chemistry* from July l976 to June l98l.

Dr. Masters' research interests fall into three general categories: l) the functional characterization and physical properties of the flavoprotein, NADPH-cytochrome c (P-450) reductase, purified in large quantities from E. coli-expressed cDNAs. Techniques include NMR and x-ray crystallography; 2) the structure-function relationships of cerebellar nitric oxide synthase utilizing microdissection by molecular cloning techniques and a variety of biophysical techniques including electron paramagnetic resonance spectroscopy, electron-nuclear double resonance techniques, stopped-flow spectrophotometry, and x-ray crystallography; 3) the cellular origin, biochemical mechanisms of formation, and role of hydroxylated prostaglandins E and F and -hydroxyeicosatetraenoic acids (HETEs formed by cytochromes P-450) in liver, kidney, and lung. Structure-function relationships of these cytochromes P-450 and chimeric constructs and site-directed mutants expressed in E. coli are being studied by a variety of spectroscopic techniques.

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.

Marilyne Audette-Stuart,
University of Montreal

Marion L. Carroll,
Louisiana State University Health Sciences Center

Tommy Guettouche,
University of Miami

Shih-Ming Huang,
University of California

Prabha P. Iyer,
Pennsylvania State University

Brian H. Lower,
Virginia Tech

Isabel D.C. Markl,
University of Southern California, Keck School of Medicine

Thalia Nittis,
University of Utah

Linda Palko,
Florida State University

Irina Rudik,
University of Delaware

Gurveen S. Saberwal,
Institute for Research in Reproduction, Bombay, India

Qi-An Sun,
University of Nebraska, Lincoln

Qin Yan,
University of Oklahoma Health Sciences Center

Nitric Oxide . . .

Continued from page 9

Hemoglobin, the molecule to which oxygen binds in red blood cells, occurs in two shapes, known as the R and the T shapes, that differ in their affinity for the three gases. Hemoglobin changes shapes in response to local oxygen concentrations, with nitric oxide playing the key role in either relaxing the capillaries to allow a more ready exchange of gas, or constricting the capillaries, found the scientists.

"Instead of the total oxygen saturation of blood in the circulatory system, the key determinant of the efficiency of oxygen delivery is the flow of blood in the microvasculature," said Dr. Stamler.

"Our data raises the possibility that the level of nitric oxide in the blood may provide physicians a keen insight into the state of a patient's microcirculation," he continued. "The ability to monitor and manipulate levels of nitric oxide in red blood cells should be useful in assessing blood gases, in the diagnosing and treating disease of the heart, lung and blood, and in the rational development of therapeutics."

The findings help explain why many patients, especially those with heart disease, may not always benefit from blood transfusions and why some may actually be hurt. Recent data has even suggested increased deaths in a subset of these patients, Dr. Stamler said. Typically, heart patients with a hematocrit (concentration of red blood cells in a sample of blood) of less than 30 are automatically given transfusions in hopes of improving the ability of oxygen-starved tissues to be nourished, even though there is no generally accepted threshold for transfusion therapy.

"There is more to the story than just improving the amount of oxygen in the system — if the mechanisms moderated by nitric oxide are not functioning properly, the oxygen can never leave the red blood cells and enter the tissue needing oxygen," he said.

The Duke team has initiated small clinical trials to test their findings, particularly in disease states characterized by abnormal functioning of endothelial cells lining blood vessels.

"We will be trying to correlate the pathophysiology of these disorders with the activity of the red blood cells to get a better idea of how nitric oxide participates in these diseases," said Dr. McMahon. "We hope this will allow us to develop better ways of diagnosing and treating these diseases."

Currently, the technology to measure the levels of nitric oxide in the blood is complicated and time-consuming, the researchers say, and is not yet ready for clinical application. However, the researchers believe that technology used to measure nitric oxide in red blood cells can easily be adapted for future use in clinical settings and research.

Most of the sophisticated measurements made by the team took place in Duke's specialized hyperbaric chambers, in which researchers can change the pressures and concentrations of atmospheric gases and measure their effects on blood gas exchange.

"The hyperbaric chamber allowed us to manipulate oxygen levels of human volunteers," Dr. McMahon said. "By studying blood samples during hypoxia (too little oxygen) through hyperoxia (too much oxygen), we were able to measure the shape changes in hemoglobin and correlate them with the oxygen uptake and delivery by the red blood cells."

Duke pulmonary specialist Claude Piantadosi, M.D., directed the hyperbaric chamber studies.

Other members of the team were, from Duke, Richard Moon, M.D., Martha Carraway, M.D., Anne Stone, Bryant Stolp, M.D., Andrew Gow, Ph.D., John Pawloski, M.D., and Paula Watke. Ben Luschinger, Ph.D., and David Singel, Ph.D., Montana State University, were also members of the team.

Website Offers Pointers On Security For Labs

Researchers at the U.S. Department of Energy's Lawrence Berkeley National Laboratory have developed a concise, relatively jargon-free Website offering the best up-to-the-minute scientific advice on how to respond in the case of such an attack against a building and its occupants: http://secure buildings.lbl.gov.

Developed by scientists at Berkeley Lab's Environmental Energy Technologies Division (EETD), the website contains pointers for emergency service personnel in two areas: How to reduce the vulnerability of buildings to chemical/biological agents before an attack in the long- and short-term timeframes.

What actions to take using a building's heating, ventilation, air conditioning (HVAC) system to control the spread of these agents into and inside the building during an emergency.

"The advice on the site represents the consensus of scientists who have had extensive experience studying the physics and chemistry of the indoor environment, and the diffusion of air and pollutants through building interiors," according to Ashok Gadgil, senior staff scientist and leader of EETD's Airflow and Pollutant Transport Group.

The researchers plan to update the site as new research results on protecting buildings from chemical and biological attacks become available. The site is not designed to address large-scale, accidental releases such as those at a chemical manufacturing plant, nuclear facility, or oil refinery.

New Beamlines Planned for Synchrotron Radiation Research

The National Center for Research Resources (NCRR), a component of the National Institutes of Health (NIH), has announced an agreement between the Argonne National Laboratory's Advanced Photon Source (APS) and the NCRR-supported Northeastern Collaborative Access Team, or NE-CAT, to build three experimental stations, known as beamlines, at the APS for synchrotron radiation research.

These beamlines will harness the brilliant X-rays generated at the APS and apply them to the study of protein complexes and other biomolecular structures. Detailed understanding of molecular shapes and interactions has allowed scientists to devise improved therapies for diseases ranging from AIDS to the flu.

Synchrotron X-rays have an incomparable ability to reveal the three-dimensional structures of biological molecules at high resolution. Therefore, access to synchrotron research facilities is in great demand by the biomedical research community. Currently synchrotron radiation can be generated at fewer than a dozen facilities in the United States. Of the 40 beamlines operational in the United States, NCRR supports 24—not including the new NE-CAT stations—for use by NIH-supported investigators and other biomedical researchers.

"NE-CAT will provide biomedical scientists with urgently needed access to synchrotron radiation, which is an unsurpassed tool for probing biomolecular structures" says NCRR Director Dr. Judith L. Vaitukaitis. "Information from detailed structural studies will lead us toward an understanding of how proteins function and interact and will, in some cases, be the basis for designing new therapeutics for human disease."

The NE-CAT research team comprises faculty from six academic institutions: Cornell University, Columbia University, Harvard University, Memorial Sloan-Kettering Cancer Center, Rockefeller University and Yale University. The NE-CAT director is Dr. Stephen E. Ealick, professor of chemistry and chemical biology at Cornell University in New York. NCRR supports the NE-CAT resource with a $19.6 million, five-year, competitive renewable grant. In addition, NE-CAT will receive $6.6 million from member institutions and $1.5 million from the APS. Construction of the three stations will be incrementally completed between 2002 and the beginning of 2006.

NCRR supports biomedical research resources at four of the five major synchrotron facilities in the United States. Among these synchrotron resources are the Biophysics-CAT and the Biological Consortium for Advanced Radiation Sources-CAT, both also located at APS. The APS particle storage ring, built by the Department of Energy, is one of the world's most powerful X-ray facilities.

NIGMS Program Provides Support for New Investigators

In 1997, NIGMS embarked on a program to ensure that adequate numbers of new investigators are supported. Under these policies, an applicant's status as a new investigator is one of the criteria used in funding decisions made by the Institute—NIGMS staff are encouraged to identify and give special consideration to new investigators. In addition to receiving special consideration for funding, R01 grants to new investigators are awarded for 5 years (instead of the average 4-year award) to allow new investigators additional time to establish their research careers.

A NIGMS statement said that the number of new investigators supported by NIGMS in recent years suggests that these policies have been effective in maintaining an influx of new investigators into the system. In fiscal 2001, NIGMS supported about 200 new investigators, an increase of 17% over the number supported in FY1997, while the total number of investigators supported by NIGMS research project grants increased only 11%. NIGMS' level of support for new investigators has increased by 85% since fiscal year 1997, compared to to a 52% increase in NIGMS' competing research project budget.

New Funding Opportunities

NIGMS has announced two new grant opportunities, a Joint DMS/NIGMS Initiative to Support Research in the Area of Mathematical Biology (NOT-GM-02-005), and Genetic Architecture, Biological Variation, and Complex Phenotypes (PA-02-110).

Information about the joint DMS/NIGMS initiative is available on the web at http://grants.nih.gov/grants/guide/notice-files/NOT-GM-02-005.html.

For information about the genetic architecture grant opportunities go to http://grants.nih.gov/grants/guide/pa-files/PA-02-110.html

Top 25 Institutions Receiving NIH Awards in FY 2001

Listed below in rank by dollar amount, are the top 25 institutions that received NIH awards in Fiscal Year 2001. For a complete listing of all institutions receiving awards, the number of awards and total amounts, including training grants, fellowships R&D contracts, and other awards, go to the NIH website.

Rank	Organization	All Awards	Research Grants	R&D Contracts
1	Johns Hopkins University	457,361,528	408,697,294	18,681,597
2	University of Pennsylvania	376,031,622	349,043,098	5,714,695
3	University of Washington	356,240,621	312,110,435	22,470,439
4	University of California, San Francisco	350,417,900	292,103,420	39,183,538
5	Washington University	303,649,861	283,468,262	4,846,781
6	University of Michigan	302,311,405	273,575,232	9,131,611
7	University of California Los Angeles	273,487,582	251,631,514	6,011,818
8	Harvard University	270,225,972	243,710,837	125,000
9	University of Pittsburgh	264,561,026	250,340,551	6,114,611
10	Yale University	256,664,005	238,667,048	1,162,103
11	Columbia University	248,891,500	231,838,032	2,261,949
12	University of North Carolina Chapel Hill	236,803,562	200,194,356	22,822,396
13	Duke University	232,179,874	217,503,361	4,562,106
14	Stanford University	224,780,728	204,766,474	4,253,056
15	Baylor College of Medicine	221,611,093	205,439,317	5,890,700
16	University of California San Diego	217,228,948	202,587,209	2,470,023
17	Science Applications International Corp.	209,390,496	———	209,390,496
18	Massachusetts General Hospital	208,957,323	195,413,894	7,888,086
19	University of Minnesota	192,081,653	173,834,465	9,872,080
20	Case Western Reserve University	191,352,595	162,321,490	20,275,572
21	University of Alabama at Birmingham	189,833,497	164,925,752	18,297,255
22	University of Wisconsin Madison	187,013,494	172,292,888	3,209,636
23	Brigham and Women's Hospital	177,566,210	164,768,897	5,922,718
24	Fred Hutchinson Cancer Research Center	172,999,246	152,740,187	19,333,080
25	Scripps Research Institute	158,536,852	154,761,212	———

by John D. Thompson, Editor

Supreme Court Widens Scope for Patent Claims

A supreme court ruling in a patent dispute may have settled that particular case, but there is still dispute over whether the high court's decision has complicated or clarified the patent situation for biotech firms.

The parties in the case, Festo and Shoketsu Kinzoku Kogyo Kabushiki, make industrial equipment, but the legal principle involved, the doctrine of equivalence, has ramifications for any company that relies on patent protection.

That doctrine states that a product or process that does not literally infringe upon the terms of a patent claim may still be found to infringe, if there is equivalence between its elements and those of a patent-protected product. In other words, a competitor cannot market a product that may be slightly different from, but essentially the same as, a patent-protected product.

The question for the courts was whether a company that narrowed its patent claim, in order to meet the requirements of the patent and trademark office, loses all right to claim infringement because of equivalence, or whether a court should have some flexibility in upholding a patent under the doctrine of equivalence. Overruling the Federal Circuit Court, the Supreme Court said this flexibility should be maintained.

Some biotech companies, among them Chiron, Guilford Pharmaceuticals, and Xoma, had filed a friend-of-the-court brief supporting the concept of flexibility.

"The doctrine of equivalents is essential for biotechnology patents claiming particular genes or proteins," they argued. "without a doctrine of equivalents, a gene patent would be valueless unless it claimed every equivalent sequence of nucleotides. Competitors could infringe simply by substituting nucleotides with others known to be interchangeable."

However, others contend that the ruling will create uncertainty. "Unsupported speculations of doom and unproven parades of horribles provide a shaky and dangerous foundation for this Court to reassess the considered judgment of the Federal Circuit," contended Applera Corp., parent of Celera Genomics and Applied Biosystems.

Others, however, opined that the answer to such concerns is to make patent applications that will ensure broad claims.

Britain's 'Silicon Fen' Is Biotech Business Hub

Britain's Cambridge, sometimes known as "Silicon Fen" in comparison to Silicon Valley, is the center of a region that houses 175 biotech companies, employing 5,000 scientists and researchers. Another 5,000 people work at 200 other companies that provide support facilities and services exclusively to biotech, according to the Eastern Region Biotech Initiative (ERBI), the area's trade association.

More than one-third of Cambridge biotechs develop biopharmaceuticals. Another 15% produce instruments for biomedical, biotech, and healthcare applications. GlaxoSmithKline, Merck Sharpe & Dohme, and AstraZeneca operate major research facilities there, and 20% of the area's biotechs are foreign owned, among them Amgen, Millennium Pharmaceuticals, Genzyme, and Incyte Genomics. The Cambridge region also is home to research institutes that receive hundreds of millions of pounds in government grants.

As is typical of areas where the economy is booming, salaries in Cambridge are high-but so are costs. A Ph.D. with three or five years' experience might earn 43,500 to 72,500 a year in U.S. dollars, but a two-to-five-bedroom, single-family home in the city could cost from $290,000 to as much as $725,000.

DNA 'Hairpin' Probes Patented

Applied Gene Technologies Inc., San Diego, has received a patent for its Nucleic Acid Hairpin Probes. The new patent provides for stem-loop DNA probes-oligonucleotide probes containing 'hairpin' structures-or arrays of such oligonucleotide probes immobilized on a solid support and suitable for hybridization analysis. Methods for nucleic acid hybridization analysis using stem-loop DNA "hairpin" probes, or an array of immobilized probes are also protected.

The company's stem-loop DNA "hairpin" probes invention reportedly out-performs existing single-stranded probes for target hybridization by delivering a more stable target-probe complex, more efficient enzymatic reactions, more sensitivity to mismatches, and less non-specific binding of targets. This is said to improve the specificity of gene analysis.

Biotech Firm Cracks Eggs to Make Medicine

TranXenoGen, Inc., a Massachusetts based biotechnology firm announced that it has successfully produced monoclonal antibodies, the basis of many new medicines, in the eggs of genetically modified chickens. That breakthrough could pave the way for the cheap manufacture of complex drugs for treating rheumatoid arthritis and other conditions in the egg white of specially bred birds.

A number of firms are already making antibodies and other experimental protein drugs in the milk of sheep and goats. But TranXenoGen claims chickens are better because they breed faster and harvesting drugs from eggs is simpler than from milk.

Nick Staples, a biotech analyst with stockbroker WestLB Panmure, told Reuters that TranXenoGen had made an important technological breakthrough but still needed to perfect its system. So far, the company has only produced chimeric chickens, which contain the gene for producing antibodies in some but not all their cells. The goal is to develop fully transgenic chickens, with the gene in all their cells, which should improve the yield substantially. The company expects to produce birds capable of producing commercial levels of antibodies within 12 months.

British Researchers Seeking to Maximize Antibiotic Production

Researchers in Britain's Streptomyces Genome Initiative aim to increase antibiotic production from Streptomyces coelicolor, already the source of almost 70% of the world's antibiotics. Their goal is to create knockouts for the 8,000 genes in the genome, and to search not just for the gene products the bacterium itself creates and uses, but for new products that can be developed from it. By mixing genes from different clusters, the British researchers believe it will be possible to make thousands of novel compounds not known to nature.

Mark Buttner, a project leader at the John Innes Centre (JIC) in Norwich, told BioMedNet News, that developing new antibiotics is only part of the story. Enormous gains can be made by optimizing antibiotic production.

"It's very likely that once we have a full suite of knockouts for every gene, some of those genes will have effects on yield," said Buttner, who added that investigating this potential could lead to the construction of a superhost-a strain geared to producing as much secondary metabolite as possible.

Most of the S. coelicolor genes will be knocked out by a team led by Paul Dyson at Swansea University, who has emailed major Streptomyces research labs all across Europe, asking them to join a continent-wide knockout program. Among the first to respond was the Streptomyces group at the University of Turku in Finland, which is particularly interested in the genes encoding P-450 enzymes and PurR homologs.

German Firm Gets Patent for DNA Engineering Technology Platform

Gene Bridges GmbH of Dresden has been granted an exclusive patent for Red/ET Recombination, the company's DNA engineering platform technology. Red/ET Recombination, or lambda mediated cloning, allows cloning and precise modification of DNA molecules, regardless of size and composition. The technology is designed to reduce time and effort spent on DNA engineering. Modifications such as point mutations, sequence insertions and deletions can be carried out at any chosen position on a target DNA molecule.

Red/ET Recombination was originally developed at the European Molecular Biology Laboratory in Heidelberg, Germany by Youming Zhang, Ph.D., and Francis Stewart, Ph.D., co-founders of Gene Bridges.

"Red/ET Recombination opens a new door for manipulating, mutating and cloning DNA that circumvents many of the limitations of traditional in vitro methods using enzymes and PCR. Our DNA engineering platform provides a straightforward and simple solution for a previously impossible process," stated Dr. Stewart.

The HighWire Press Portal: "Advanced Search:" Get Just the Results You Need

In the January issue, ASBMB introduced the new "portal" site from Stanford's HighWire Press, which allows you to search all of Medline plus 330 journals' full-text at once—including the *JBC*, of course! We began a monthly series of short articles highlighting tools or features of this new site for researchers' sore eyes. The new site is at http://highwire.stanford.edu

The new portal from *JBC* and HighWire Press provides for very easy searching right on the home page at http://highwire.stanford.edu. From this page you can search by author, search for words anywhere in an article, or quickly look up an article by its citation. Most searches can be done right from the home page.

But sometimes you want more precision in your searches, usually to avoid having to look through too many results. You can 'fine tune' your searches on the Advanced Search page, shown here. You reach this page by clicking on the SEARCH button on any page in the portal, or by clicking on the Advanced link next to Quick Search.

On the Advanced Search page you can do the following things:

- Search for articles by two or more authors, not just one author
- Search on words found specifically in the title or abstract, not just found anywhere in the text
- Search only in particular journals you select from a list, not just all journals at HighWire or all journals in Medline; you can also easily select some or all of the journals by publisher, by asking the system to show journals sorted by publisher first, which helps when a society publishes several related journals
- Search for articles published in a certain range of dates
- Search only for reviews
- Find articles containing any of the keywords you give, or all the keywords together in a phrase, not just all the words possibly scattered somewhere in the article (see the any, all and phrase radio-buttons next to the keyword-entry text boxes on the Advanced Search page).

In addition, from the Advanced Search page you can control the formatting of your search result:

Whether the results are full citations —about 5 lines per article, with full information—or condensed citations limited to two lines per article and having fewer links.

How many results are shown per page, from 10 (the default) to 150. Note that it does take longer to deliver a page of 150 items for viewing than for a page of 10 items.

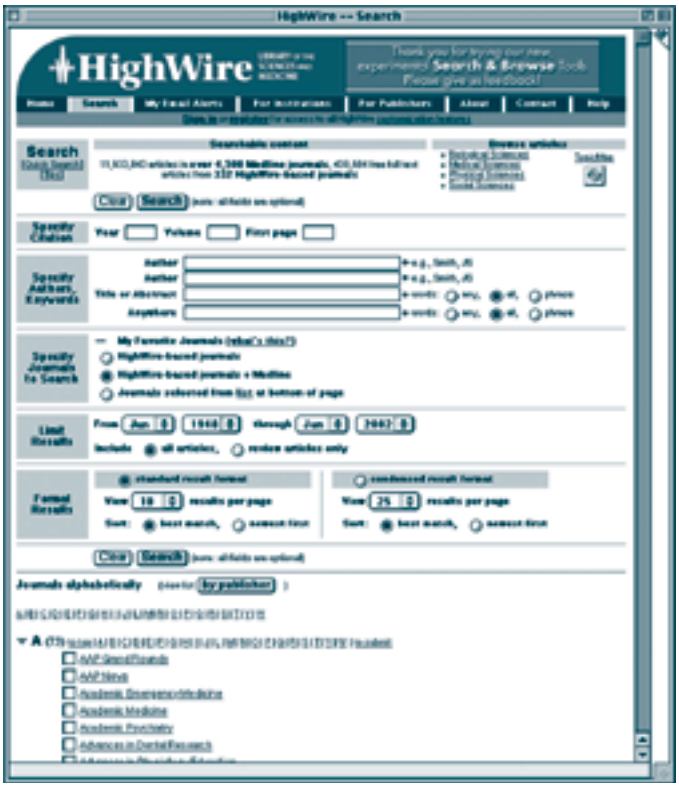
Whether results are sorted to show the most recent articles first—which might show you articles with only one occurrence of your keyword ahead of articles that mention you keywords a dozen times—or the "best matches" first, which counts how many times your keywords are mentioned, to "rank" the article in your result. "Best matches" is the default.

All these options are easy to activate and control from the Advanced Search page.

Coming in the future we'll allow you to search by topic, in order to pick out (for example) articles in endocrinology without getting articles in immunology even when a keyword might be used in both fields.

Next month we'll look at Alerting capabilities in the new portal, through which you can have the system tell you when newly-published content matches a keyword or citation important to your research.

The HighWire Advanced Search page (http://highwire.stanford.edu/cgi/search/)



Career Opportunities

RESEARCH ASSOCIATE
Wayne State University

A Research Associate position is available immediately to work on regulation of proteolytic enzymes in cancer cells. Expertise in structure-function relationship studies including site-directed mutagenesis, cloning and recombinant vaccinia virus production and purification is a must. Applicant should have at least 3 years proven experience expressing proteins in mammalian cells and in bacteria and purification of recombinant proteins. Five years of experience in protein biochemistry /molecular biology and generation of stable cell lines is also required. Salary range is 35-40K/year plus benefits. Please send CV and 3 references to Dr. Rafael Fridman, Dept. of Pathology, Wayne State University, 540 E Canfield, Detroit, MI 48201

FACULTY POSITIONS, CELL AND MOLECULAR PHYSIOLOGY
The University of North Carolina at Chapel Hill

The Department of Cell and Molecular Physiology in the School of Medicine invites applications for tenure or tenure-track faculty positions at the level of Assistant or Associate Professor. We seek candidates using genetic approaches to integrative or disease-related physiology. However, applications from outstanding candidates in any area of physiology will be considered. Attractive start-up packages and new laboratory space are offered. Faculty members are expected to develop a strong externally funded research program and contribute to teaching graduate and medical students. Applicants must hold a doctoral degree.

Review of applications will begin August 1, 2002. Please submit four letters of reference and email curriculum vitae and statement of your proposed research program and career goals to: James M. Anderson, Ph.D., MD, Chair, Dept. of Cell and Molecular Physiology 266 Medical Sciences Research Bldg. CB # 7545, School of Medicine, Univ. of North Carolina at Chapel Hill Chapel Hill, NC 27599-7545. **Email** address: facsearch@medexch.med.unc.edu
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ASSISTANT PROFESSOR
The University of Michigan Medical School

The Department of Pathology invites applications for a tenure-track faculty position at the Assistant professor level. This Department of Pathology has internationally renowned clinical and basic research programs. Major responsibilities will include the establishment and direction of an independent research program and participation in teaching of medical students and graduate student courses. An individual with a track record in translational research using animal models is sought to assess the cellular and molecular mechanisms of lung pathology related to fungi, leading to chronic airway inflammation, hyperactivity and remodeling. Preference will be given to individuals with demonstrated experience in the isolation, culture, manipulation, and transplantation of mouse and human fibroblasts; and/or the development of novel therapeutic strategies in animal models of fungal lung pathology disease. The successful candidate will be expected to interact with other investigators throughout the Medical School on projects studying infectious lung injury, sepsis, and pulmonary granulomatous diseases. Candidates must possess a doctoral degree (M.D. or Ph.D. or equivalent), have postdoctoral research experience in immunopathology, and should have a strong record of significant research accomplishment, supported by publications in peer-reviewed journals, as well as a demonstrated ability to attract extramural funding. Applicants should supply a curriculum vitae, a letter describing research and teaching goals, and names of five references to: Steven L. Kunkel, Ph.D., Professor and Co-Director, Division of General Pathology,Department of Pathology, University of Michigan Medical School, 1301 Catherine Road, Ann Arbor, MI 48109-0602
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CHAIR, DEPARTMENT OF PHYSIOLOGY
The University of Maryland School of Medicine

The University of Maryland School of Medicine in Baltimore announces a search for the Chair of the Department of Physiology. The candidate should be a recognized leader with a national reputation in their field, and the expertise and vision to apply the newest molecular research tools, including cell and molecular biology, genetics, genomics, proteomics, and bioinformatics, to enrich a strong existing base of research activities. In addition, outstanding academic leadership and administrative and teaching skills are required. It is highly desirable that the candidate has the ability to foster research and teaching in collaboration with clinical disciplines as well as with basic science departments. The successful candidate should possess a Ph.D. and/or M.D.

The University of Maryland is an Affirmative Action Employer. We encourage applications from women and minorities. Applications should consist of a short letter of intent and a complete updated curriculum vitae. Nominations and applications should be emailed to ashuldin@medicine.umaryland.edu, or sent to: Alan R. Shuldiner, M.D., Chairman, Department of Physiology Search Committee, University of Maryland School of Medicine, 660 West Redwood Street, Room 494, Baltimore, MD 21201

Calendar of Scientific Meetings

JULY 2002

European Cells and Materials: ECM III Cartilage & Joint Repair Tutorials, Basic Research, and Clinical Methods

July 1-3, 2002 • Congress Centre, Davos, Switzerland
http://www.aofoundation.org/events/ao/ecm/organiser.shtml

AUGUST 2002

Symposium on Tissue Remodeling

August 1-4 • Iowa State University, Ames, Iowa
Contact: Growth Factor and Signal Transduction Conferences
Ph. 515-294-7978; Fx. 515-294-2244; Email: gfst@iastate.edu
Website: http://molebio.iastate.edu/~gfst/homepg.html

American Society for Cell Biology: Nontraditional Functions of Ubiquitin and Ubiquitin-like Proteins

August 11-14 • Colorado Springs, Colorado
Contact: Delia Zielinski, ASCB; Ph: 301-347-9300
Fx: 301-347-9310; Email: dzielinski@ascb.org

SEPTEMBER 2002

5th Siena Meeting "From Genome to Proteome: Functional Proteomics"

September 2–5 • Siena, Italy
Contact: Denis Hochstrasser; Email: pallini@mailsrv.unisi.it
http://www.unisi.it/eventi/proteome

Computational Biophysics: Integrating Theoretical Physics and Biology

September 7-12 • San Feliu de Guixols, Spain
Contact: Dr. J. Hendekovic, European Science Foundation
Ph. +33 388 76 71 35; Fx. +33 388 36 69 87,
Email: euresco@esf.org

14th Meeting Methods of Protein Structure Analysis

September 8–12 • Valencia, Spain
Contact: Juan J. Calvete; http://www.mpsa2002.ibv.csic.es/
Email: mpsa2002@ibv.csic.es

Molecular Targets for Dietary Intervention in Disease

September 19-22 • Iowa State University, Ames, Iowa
Contact: Growth Factor and Signal Transduction Conferences
Ph: 515-294-7978; Fx: 515-294-2244; Email: gfst@iastate.edu;
Website: http://molebio.iastate.edu

7th International Symposium on Dendritic Cells

September 19-24 • Bamberg, Germany
Contact: Prof. Dr. Alexander Steinkasserer
Ph: ++49-9131-853-6725; Fx: ++49-9131-853-5799;
Email: steinkasserer@derma.imed.uni-erlangen.de
Website: http://www.dc2002.de/

American Society for Bone and Mineral Research 24th Annual Meeting

September 20-24 • San Antonio, Texas
Contact: ASBMR Business Office
Ph: 202-367-1161; Fx: 202-367-2161;
Email: ASBMB@dc.sba.com; Website: http://asbmr.org

OCTOBER 2002

European Conference on Computational Biology 2002 in conjunction with the German Conference on Bioinformatics 2002

October 6–9 • Saarbruecken, Germany
Contact: http://www.eccb2002.de
Email: eccb.organizers@bioinf.uni-sb.de

Metabolic Engineering IV: Applied System Biology

October 6-11 • Il Ciocco, Castelvecchio Pascoli Tuscany , Italy
Contact: United Engineering Foundation; Ph: 212-591-7836
Fx: 212-591-7441; Email: engfnd@aol.com
Website: http://www.engfnd.org
Registration: http://www.engfnd.org/2ay.html

9th Midwest Platelet and Vascular Biology Conference

October 11-13 • Washington University School of Medicine, St. Louis, MO
Abstract and registration due August 15, 2002
Website: http://www.biochem.wustl.edu/mwpc9/index.html

Federation of Analytical Chemistry and Spectroscopy Societies

October 13–17 • Providence, Rhode Island
Contact: FACSS National Office; http://www.facss.org

The 18th International Conference on Arginine and Pyrimidines

October 13-17 • Giza, Cairo, Egypt
Biennial conference on all aspects of biochemistry and genetics of uptake and metabolism of arginine and pyrimidines.
Contact: Ahmed T. Abdelal, Georgia State University
Email: aabdelal@gsu.edu; Website: http://www.cas.gsu.edu/icap

The Applications of Proteomics

October 16–18 • Lille-Villenueve d'Ascq, France
Contact: French Society for Electrophoresis and Proteomic Analysis; Tel.: 33-3-20-43-40-97; http://www.sfe-ices.org/
Email: hubert.hondermarck@univ-lille1.fr

18th Asilomar Conference on Mass Spectrometry

October 18–22 • Asilomar, Pacific Grove, CA
Contact: American Society for Mass Spectrometry
http://www.asms.org; Email: office@asms.org; Tel.: 505-989-4517

Fourth HUGO Pacific Meeting and Fifth Asia-Pacific Conference on Human Genetics

October 27–30 • Pattaya, Chonburl, Thailand
Contact: Tel.: 66-2-8892557-8; http://www.mu-st.net/hugothai/

NOVEMBER 2002

AAPS Annual Meeting and Exposition

November 10-14 • Toronto, Ontario, Canada
Contact: AAPS Meetings; Fx: 703-243-9532 Email: Meetings@aaps.org

First Human Proteome Organizational (HUPO) Congress

November 21–24 • Versailles, France
Contact: http://www.hupo.org

DECEMBER 2002

13th International Conference on Genome Informatics

December 16–18 • Tokyo, Japan
Contact: http://giw.ims.u-tokyo.ac.jp/giw2002/
Email: giw@ims.u-tokyo.ac.jp

JANUARY 2003

18th Enzyme Mechanisms Conference

January 4-8 • Galveston Island, Texas
Contact: Andrea Scott
Ph: 979-845-9165; Fx: 979-845-9452
Email: ascott@mail.chem.tamu.edu
Website: http://www.chem.tamu.edu/enzyme

MARCH 2003

Keystone Symposium, Proteomics: Technologies and Applications

March 25–30 • Keystone Resort, Keystone, Colorado
Contact: Paul Lugauer; http://www.keystonesymposia.org
Email: info@keystone.symposia.org; Tel.: 970-262-1230 ext. 111

APRIL 2003

American Society for Biochemistry and Molecular Biology Annual Meeting in Conjunction with EB2003

April 11-15 • San Diego, California
Contact: EB2003 Office; Ph: 301-634-7010
Fx: 301-634-7014; Email: eb@faseb.org
Website: http://www.faseb.org/meetings/eb2003

AUGUST 2003

16th International Mass Spectrometry Society Conference

August 31–September 5 • Edinburgh, Scotland,United Kingdom
Contact: John Monaghan; Email: johnmonaghan@ed.ac.uk
http://www.imsc-edinburgh2003.com

Department Heads Take Note:

ASBMB Offers Free Membership to New Ph.D.s

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& Molecular Biology
9650 Rockville Pike
Bethesda, MD 20814
Email: asbmb@asbmb.faseb.org

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