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Integrating the Life Sciences from Molecule to Organism

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John A. Williams

76th President of APS

It is a great honor and a privilege to serve as the 76th President of the American Physiological Society. Both APS, and I hope myself, have grown and become more complex in the 30 years since I first joined the Society. It is, however, a daunting task to follow in the footsteps of recent Presidents and to begin my term by presenting my view and vision for the future of physiology and the APS. As a society we have recently embarked on many new programs including publications, education, and public affairs, many of which have been commented on in recent presidential articles (1-3). I have been learning the details of some of our newest efforts over the last year assisted by Past Presidents **Barbara Horwitz** and **John Hall**, members of Council, Committee Chairs, and our wonderful and dedicated staff, led by the indomitable **Martin Frank**. It is my goal as President to assist APS both in making our discipline vibrant and exciting, and in assisting our members to maximize their potential as investigators, teachers, communicators, and clinicians. If we can do this well, young life scientists will increasingly be drawn to our organization and we will have the satisfaction of contributing both as individuals and as an organization to improving the well-being of humankind.

We live in exciting but challenging times. Never before have we had the spectrum of tools and techniques now available to delve deeply into the mysteries of complex organisms. We can relate specific processes to molecular structure through recombinant DNA technology and expression of proteins in model cells used as physiological test tubes. Moreover, physiology is becoming central to understanding the function of genes and gene products in the setting of the organ or organism and how this is impacted by the environment. This general area, often termed "Functional," "Physiological," or

"Integrative" Genomics has become a major focus for modern physiology.

Unfortunately, these opportunities are set against a possible impending shortage of resources. While all biomedical science has benefited enormously from the just completed 5 year doubling of the NIH budget, the Bush Administration's requested 2% increase for next year, which is less than the Biomedical Inflation Index, has NIH officials planning for a reduction in the number of new grants and possibly reducing grant length from 5 to 4 years. While we need to advocate for a more consistent increase in the NIH budget and hope that Congress will be as responsive as they have been in the recent past, the current political climate and the state of the economy may make it difficult. Other economic challenges also threaten our growth. With widespread deficits at the state level, public universities are undergoing significant budget cuts. Private universities are seeing their endowments shrink and often delaying implementation of new plans. Similarly, the APS investment portfolio has decreased somewhat due to the fall in the stock market. Thus, both as individual scientists and collectively as part of APS we will need to choose wisely how to allocate our resources to maximize our results.

The Discipline of Physiology

"Integrating the Life Sciences from Molecule to Organism" applies to APS and to the discipline of physiology. Much of physiology in the last two decades of the 20th century was reductionistic and with the tools of molecular biology led to the identification of specific molecules such as transporters, channels, receptors, and contractile proteins that underlie specific functions. Today, the biggest challenge is to explain how all these component molecules work together. While integrative physiology used to refer to how different organ systems worked together to maintain homeostasis, the current definition also focuses on how molecules function

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Visas for Visiting Scientists and Students:

Current Situation

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Introduction

In the last several months, U.S. scientists, engineers, and health researchers have become increasingly frustrated with delays in visa processing for their international colleagues. Many of our international visitors are unaware that their visa application may now take several weeks, if not months, to process, even if previously they received visas to visit the United States within days. While we work with those who manage the visa process to try to improve this situation, it is important for the scientific community to better understand what the problems are and what they can do to help alleviate them. This article informs readers of recent changes in visa issuance policies and in the implementation of already existing policies. It also provides information on what international visitors should know when applying for a visa, as well as where to find accurate information.

Background

There are growing concerns about the issuance of visas to foreign students and scholars and to scientists wishing to attend meetings or work on collaborative projects in the United States. The number of scientists and engineers who are facing visa delays and denials seems to be growing and they and their U.S. colleagues are turning to relevant professional societies and to the National Academies for assistance. The National Academies have gone on record many times in support of scientific openness. Indeed on 13 December 2002, the Presidents of the National Academy of Sciences (NAS), the National Academy of Engineering, and the Institute of Medicine issued a strong statement regarding the potentially negative impact visa restrictions could have on the scientific enterprise. That statement can be found at:http://www4.nationalacademies.org/news.nsf/isbn/s12132002?OpenDocument.

The authors of this article work for the Board on International Scientific Organizations (BISO) at the National Academies. Our office examines issues related to the conduct of science and evaluates opportunities for and barriers to international collaboration in scientific research. It also represents the NAS as the U.S. national member of the International Council for Science (ICSU). ICSU and the National Academies subscribe to the principle of the universality of science and it is thus our responsibility to assure that this principle is being upheld to the maximum extent possible. This principle requires freedom of association, movement, and communication as well as access to data and information in connection with international scientific activities, without discrimination on the basis of such factors as citizenship, religion, creed, political stance, ethnic origin, race, color, language, age, or sex. ICSU does, however, recognize and respect the independence of the internal science policies of its National Scientific Members and also that governments may regulate and control their borders. ICSU guidelines alert scientists to the fact that that obtaining visas can involve a lengthy and time-consuming process.

So, while we all attempt to promote free circulation of scientists, those of us arranging visits or planning conferences have to be aware of and anticipate visa-related problems. As we will describe below, even more lead-time is needed now. It is the scientists' responsibility to do everything necessary to obtain travel documents in a timely and thorough manner. (For more information on ICSU's activities in this area, see http://www.icsu.org/about/structure/Committees/SCFCS.html).

The Basics

Non-immigrant visas

A visa is a stamp in a passport that authorizes one to come to the United States. There are two main categories of visas: non-immigrant and immigrant. For the most part, we are concerned with non-immigrant visas, which allow foreign nationals to enter the United States on a temporary basis, for a specific purpose. Once in the country, visitors are restricted to the activity for which their visa was issued.

Short-term visitors most often apply for **B-1 Visas** for business or **B-2 Visas** for pleasure (e.g. tourism, visit friends or relatives). Scientists attending conferences in the United States usually need to apply for a **B Visa**. There are also longer-term visas for non-immigrants. These include the **F-1 Visa** for full-time students at an accredited college or university and the **M-1 Visa** (Vocational Student) for students who want to pursue non-academic programs in an established institution. The **J-1 Visa** is for people participating in exchange programs, such as visiting scholars and exchange students. There is also the **H-1B Visa**, which is for temporary workers in specialty occupations that require the theoretical and practical application of a body of highly specialized knowledge. Applicants for this visa are not required to meet the requirements of INA Section 214(b), discussed below.

Holders of long-term visas, such as **F, M, J,** and **H-1B**, must be aware that they may need a re-entry visa, should they leave the United States. They

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should speak to their sponsoring institution's international exchange office for information about what they will need to re-enter the country before leaving the United States.

The difference between a "visa" and "status"

It is easy to get confused about the difference between "visas" and "status". The visa stamp in the passport is what allows the applicant to board a plane and knock on our doors; it does not guarantee that a person will be permitted to enter the country. The immigration officer at the port of entry confers that permission or "status". The real entry permit is the **Form I-94** (Arrival/Departure Record), which is attached to the passport at the port of entry. This card indicates the category of admission and provides the person valid legal status to remain in the U.S. for a particular length of time. Those arriving on student visas are given a "duration of status" (D/S) stamp rather than a specific expiration date. The duration is usually defined as the period of study, as indicated on other forms, plus a 60-day grace period.

Visas may be valid for one month to 10 years, depending on the category of the visa and individual person's eligibility. This means only that a person can travel to this country at any time during the time that the visa is valid. Usually, a person with a 10-year visa cannot stay in the country for 10 years; rather, upon entry, the immigration officer will normally provide a visitor a six-month "status". If the person wishes to stay longer in the U.S., he or she has to file for an extension of status with the Immigration and Naturalization Service. Anyone staying in this country beyond the period of time for which permission is granted on the I-94 card violates the law and is in the country illegally. As of October 1996, any such person must return to his or her home country to re-apply for a nonimmigrant visa. By law, (INA Section 222(g)), the visa stamp in the passport is automatically void as soon as that person becomes "illegal" or falls out of status. A student with a "duration of status" stamp can be found guilty of overstaying only if the INS or an Immigration Judge has made that determination.

Visa Waiver Program (VWP)

Not everyone coming to the United States needs a visa. The "visa waiver program" enables travelers from certain countries to visit for up to 90 days without a visa. The countries eligible for this program change from time to time but the current list is available on the Department of State website (http://travel.state.gov/vwp.html). (Currently the list includes Andorra, Austria, Australia, Belgium, Brunei, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Liechtenstein, Luxembourg, Monaco, The Netherlands, New Zealand, Norway, Portugal, San Marino, Singapore, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and Uruguay.)

What is Happening Now?

Since the terrorist attacks on 9/11/2001, the U.S. government has sought ways to make our borders more secure and to improve the process by which visas are granted. Unfortunately, the changes in processing and implementation appear, to those unfamiliar with them, to change often and with little warning. An already-beleaguered consular service was at first not prepared to deal with the new situation efficiently. Applicants are confused by what they think are new procedures, possibly because they are subject to them for the first time. Those used to allowing only a few weeks to receive a visa are finding instead that the process is taking months.

Some of the efforts by our government to monitor the flow of international visitors in the name of national security are having unintended consequences for American science, engineering, and medicine. Stories told to us reveal that ongoing research collaborations have been hampered; that outstanding young scientists, engineers, and health researchers have been prevented from or delayed in entering this country; and that important international conferences have been canceled or negatively impacted. There is some concern that future international meetings will be moved out of the United States unless we can somehow "guarantee" that the ICSU principle of the universality of science will be upheld. (Even though, as shown above, ICSU recognizes that it is "entirely legitimate that governments regulate and control who enters their countries.")

What is NOT new?

Presumption of immigration

The Immigration and Nationality Act, or INA, was created in 1952, and brought into one location many statutes that governed immigration law. Although it has been amended many times, the INA remains the basic body for immigration law and guides most of today's policies and procedures. Some of the restrictions we see on the issuance of visas today have been around for 50 years.

Immigration law delegates the responsibility for issuance or refusal of visas to Department of State consular officers overseas. Most visitor visas that are denied are done so under **Section 214(b)** of the INA, which states:

Every alien shall be presumed to be an immigrant until he establishes to the satisfaction of the consular officer, at the time of application for admission, that he is entitled to a nonimmigrant status...

A 214(b) denial means that, in the opinion of the consular officer, the applicant was unable to provide enough evidence that he or she was not intending to illegally immigrate to the United States. The burden of proof lies with the applicants, who must demonstrate that they have reasons to return to their country of residence. This proof of **"strong or binding ties"** can be a house, a job, a family, a bank account, a scholarship, or any other indicator that compels the applicant to leave the United States. Decisions to deny visas can be overturned as long as the applicant can provide new evidence of their ties or

demonstrate how their circumstances have changed since the time of the original application. (As mentioned above, applicants for H1-B visas are exempt from this requirement.)

Security Measures

The denial of visas on security grounds is also not new. One set of visa security regulations, known as **Visas mantis**, has been on the books for many years. The security objectives here are to stem the proliferation of weapons of mass destruction and missile delivery systems; restrain the development of destabilizing conventional military capabilities in certain regions of the world; prevent the transfer of arms and sensitive dual-use items to terrorist states, and maintain U.S. advantages in certain militarily critical technologies. Visas mantis security checks are conducted through the Consular Affairs Bureau in Washington, D.C. Those subject to visas mantis are applicants bearing passports of states designated as State Sponsors of Terrorism; foreign nationals affiliated with certain entities in a region subject to the Nonproliferation Export Control regulations; and those whose field of expertise or study may be "sensitive". The Technology Alert List helps consular officers recognize sensitive fields. The determination of whether someone's field of study or expertise falls within those described on the Technology Alert List is left to the consular officer reviewing the application. If he or she determines that it does, visas mantis requires that a security check take place.

Visa Lookout Accountability

After the 1993 World Trade Center bombing, the 1994 Foreign Relations Authorization Act made provisions for punishing consular officers if they grant visas to anyone who subsequently commits a terrorist act in the United States. The Secretary of State is required to convene an accountability review board, which could result in serious actions against the consular officer involved. Scientists need to understand this disincentive and be sympathetic to the need for consular officers to be security conscious.

So What IS New or Different?

New Security Checks and Procedures

Visas Condor, started in January 2002, is a program that basically looks for terrorists through a process that involves checking a visa applicant's name against various U.S. government databases. A given applicant's identification information is checked against as many as 20 U.S. security databases. The primary database is CLASS (Consular Lookout and Support System). Before 9/11/2001, the six million or so records in CLASS were entered because of previous visa denials or other immigration law infractions. After 9/11, another six million or so records were added from FBI files.

Applicants may also be required to fill out additional forms and be interviewed, fingerprinted, and subjected to additional identifying measures and background checks. Those affected by visas condor are predominantly Muslim men between the ages of 16 and 45 who hail from some 26 (mostly Islamic) countries, but it can apply to others as well.

Also new is that Visas Mantis and Visas Condor security checks require explicit approval from Washington for each applicant. The agencies that need to provide clearance are determined by the Bureau of Consular Affairs but include the CIA and the FBI, and can include any other agency with a potential interest in the applicant. There used to be a procedure, called "visas eagle mantis", by which certain applications could be cleared after a certain period of time, even without explicit approval from every agency. During the summer of 2002, this "no response" system was suspended and all applicants had to be positively cleared by all agencies involved (visas donkey mantis). This led to the backlogs and vast time delays we have been seeing in recent months. We have learned that the Bureau of Consular Affairs is working to reinstate the "no-response" agreements as other government agencies became confident of their ability to conduct the security check within a specified period of time. Not all agencies have been able to agree to this as yet. The State Department's goal is for the visas condor check to eventually take less then ten business days.

Student and Exchange Visitor Information System

There has been much in the news about the new Student and Exchange Visitor Information System (SEVIS). This program is an electronic system aimed at keeping better track of foreign students once they have received visas to study in the United States. The Immigration and Naturalization Service is responsible for SEVIS, although the program was developed in cooperation with the Departments of State and Education. The timetable for its implementation and for colleges and universities to come into compliance with its regulations was stepped up following the events of 9/11. SEVIS will collect and report data on international student or exchange visitor status changes, such as change in program of study. It will also provide system alerts, event notifications, and basic reports to the end-user schools, programs, and INS field offices. Schools wishing to accept foreign students were required to register with SEVIS by 30 January 2003.

Interagency Panel for Advanced Science and Security (IPASS)

As of the writing of this article, the executive order to create IPASS had not yet been signed. IPASS is a response to Presidential Decision Directive, "Combating Terrorism through Immigration Policies," (October 2001), which directed federal agencies to develop student immigration policies through which the country "prohibits certain students from receiving education and training in sensitive areas." The White House's Office of Science and Technology Policy (OSTP) has been working with the White House's Homeland Security Council and others to develop and implement IPASS in a way that does not create further bottlenecks.

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Department of Homeland Security

The new **Department of Homeland Security** (DHS) has been given responsibility for the policy guidance and regulation governing visa issuance. The Secretary for Homeland Security will determine who can and who cannot enter the United States. Where there are foreign policy considerations the Department of State will continue to exercise authority. Consular officers will remain under the auspices of the Department of State. As the DHS is just now being formed, it is difficult to determine what impact these changes will have on the visa process.

Quantifying the Problem

According to Secretary Colin L. Powell, in testimony before the House Select Committee on Homeland Security, on July 11, 2002, the State Department adjudicated over 10 million non-immigrant visa applications in fiscal year 2001. They issued 7.5 million visas. In fiscal year 2002, there were 7.9 million applications, of which 5.7 million were approved. In calendar year 2002, consular affairs conducted 50,000 visas condor and about 14,000 visas mantis checks. Consular affairs officers have stated that such checks represent about a three-fold increase in the number of cases referred to Washington D.C.

What are the National Academies doing about the problem?

Since its founding, the NAS has openly supported the principle of the universality of science and believes firmly in the scientist's rights of freedom of communication and movement. As the national member of ICSU, we are obligated to uphold this principle on behalf of the scientific community. Our office has developed outreach mechanisms to keep the scientific community better informed about the changing situations with visas. We have a website (national-academies.org/visas) that provides accurate information and links to current policies and procedures. The website includes a survey aimed at collecting information from scientists about their experiences with the visa process. The information collected by the survey will help us establish a database of cases and develop good statistical reports that provide better information on the nature and scope of the problem. Our office also maintains contacts with the State Department, INS, OSTP, and other agencies dealing with visa issues. This assures that we are working with the most current and accurate information and keeps the voice of the scientific community at the policy table.

This website, although still in a test stage, is available now and we encourage you and your colleagues to fill in the survey. Once we are satisfied that the survey instrument itself is clear and consistent, we will schedule a series of briefings with science societies. We will also use the information to determine effective intervention tactics.

What Can YOU do about the Problem?

The scientific community needs to stay informed and be aware of new visa policies. Make sure that your colleagues overseas are as well prepared as possible when applying for their visas. Give them accurate information and tell them about our website. Encourage them to consult the websites of the Department of State and of their local consulate. Consult your institutions international visitors' office. DO NOT believe everything you hear. This is an emotionally charged area and there are many rumors and urban myths floating around. These serve only to make the situation worse, especially by jeopardizing our working relationships with consular officers and others who are making efforts to remedy the situation.

Be prepared for delays in the processing of visas and for the possible need to provide more and more information to consular officers. If you are planning a scientific meeting in the United States, allow plenty of lead-time. This means you may have to inform participants that their abstracts or papers have been accepted far earlier than you used to. You may need to issue invitations to speakers. In information that goes out about your meeting, remind participants that they should allow **at least** three months for their visa applications to be processed.

Use our website. Give us your suggestions on how we can make the website and the survey more useful to you. Invite us to come and talk to your organization.

Finally, realize that scientists have no guaranteed right to receive visas. Immigration and security concerns are real and they won't go away just because, as a community, we disagree with the way these concerns are being manifested. Work with the system as best you can but bring the most egregious cases to our attention through the survey. Only with accurate and reliable data about the serious consequences of some of these new regulations can we expect to change the situation.

Conclusion

As frustrating as we may find these efforts to increase national security through the visa issuance process, the situation in not likely to change in the near term. Still, the scientific community must remain vigilant in its efforts to assure that new policies and procedures regarding immigration actually increase security rather than bureaucracy. It seems far more likely that improvements in the way we collect and coordinate intelligence data, increased application of new technologies to verify identities or produce more secure travel documents, or adequate funding to hire and train consular officers are all better means to increase national security. There are many people of goodwill both within and outside of the government who are trying to bring reasonable solutions to the problems. We should definitely be prepared to examine this issue again in mid-2003, especially as the DHS comes into play, to see if the situation shows any signs of improving. ❖

The authors are the Director and Assistant Director of the Board on International Scientific Organizations of the National Academies. BISO examines issues related to the conduct of science and evaluates opportunities for and barriers to international collaboration in scientific research.

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together to generate the properties of a cell or organelle and how cells function together in a tissue or organ. Often this higher-level function cannot be predicted solely by the properties of the component molecules, a phenomenon sometimes referred to as emergent properties. We physiologists strive to use both molecular and integrative approaches to illuminate function. Much of this work is now carried out in genetically modified animals, most often mice. A gene can be added, removed, or modified either in the whole animal or in a tissue specific or temporally controlled manner. This has worked well to explain the function of single genes but is less well suited for polygenic traits or where the animal adapts to maintain normal function.

We are seeing the rebirth of "Systems Biology" (4) which emphasizes the simultaneous determination of all or at least a large number of components in the living system under study rather than focusing on a single gene or protein. Moreover, it investigates the behavior and relationships of these elements of a biological system as it is functioning or being perturbed and subjects the data to computational analysis. At the same time there has also been a proliferation of "Omics" which began with the genome and the transcriptome, the collection of all mRNA transcripts. This was followed by the proteome, the collection of all the proteins in an organelle, cell, or organ, which can be resolved by two-dimensional gels or multi-dimensional liquid chromatography, and identified by mass spectrometry. In its infancy is the study of the metabalome, the large-scale collection of metabolic intermediates that can reveal information about the activity of specific metabolic pathways. These components, genes, proteins, and metabolites, can be put together with mathematical models, which is another hallmark of Systems Biology. In its handling of large data sets this approach overlaps with some areas of Bioinformatics. New organizations are springing up in these areas such as HUPO, the Human Proteome Organization, and the International Society for Computational Biology. We physiologists should embrace these new approaches to the study of functional biology because of the obvious relevance to our individual work and because of the opportunity to participate in collaborations with groups of investigators. Not all of this work is hypothesis driven and much at present is either methods development or "discovery science." However, it will lead to testable hypotheses and also to potential therapeutic targets. While much of this research has begun in yeast or bacteria, it is being applied to specific cell types, namely B lymphocytes and cardiac myocytes by the "Alliance for Cellular Signaling," a large consortium initiated by Al Gilman (5). The approach will ultimately reach the whole animal level and physiologists are just beginning to use it for studying processes such as blood pressure, the circadian clock, and exercise. In the IUPS this has been recognized as "The Physiome" a project led by **Peter Hunter** of New Zealand (www.physiome.org).

Departments of Physiology

While physiologists work in many types of universities, hospitals and research institutes, the central home for physiology in most American medical schools is the Department of Physiology. Physiology departments are usually charged with organizing the teaching of physiology to professional students and offer PhD education in physiology. In the not so distant past there was concern that physiology departments were being closed or merged. My perception is that this movement has subsided. However, we still need to be proactive in maintaining strong Departments of Physiology. In many Medical Schools and Universities the current emphasis is on developing interdisciplinary programs, institutes or centers, and new research space is programmed to bring investigators with a common research interest together. It is important for Physiology Departments to initiate or participate in programmatic centers. This will allow departments to grow and embrace new research areas that will be denied us if we strive to maintain an outdated ideal of the purity of our discipline. Expanding into interdisciplinary programs brings obvious problems, the main one being decentralization. We must not succumb to centripetal forces and departments need to maintain a strong central core to which outlying faculty will return for intellectual nourishment.

Maintaining a strong department is also important to counteract the fact that teaching is often now being organized in an integrative curriculum at the expense of departmental courses. This is especially true in the first years of Medical School where the current fashion is the integrated curriculum. Departments of Physiology need to maintain a strong presence in organizing and presenting material so that they will remain valued by clinicians and administrators in their institution. Graduate teaching is now often organized with an integrated first year to allow students to shop for mentors and switch disciplines. Overall, I believe these gateway programs will allow physiologists to attract more PhD students if we design our teaching to emphasize the relevance of what we do to the state of modern biology in the post-genomic era.

Another movement affecting Departments of Physiology, which I believe will have a positive affect, is the changing of some departmental names to more closely reflect their mission. Newer names include Cellular and Molecular Physiology, Molecular and Integrative Physiology and even Physiology and Functional Genomics. Although somewhat cosmetic, I think these newer names may help dissolve any image of physiology as "stodgy." I am personally pleased to see physiology remain in the new departmental names. These names may also help us in convincing our Deans that the various disciplines and departments are different and that both intellectual diversity and the ability to have successful interdisciplinary programs depends on maintaining strong departments.

The American Physiological Society

Our Society has grown in complexity since the adoption of the strategic plan of 2000 (6). The essential core of APS continues to be its meetings and publications. In the area of meetings, Experimental Biology (EB) has flourished, especially in the years when all of our sister societies participate. It is, of course, quite different from the FASEB Meetings I first attended on the Atlantic City Boardwalk. Both Physiology InFocus as a "meeting within a meeting" and the Section's Named Lectureships are well attended. One positive recent

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feature has been the addition of the American Federation for Medical Research as a participating organization. Their participation as well as the presence of APS translational symposiums has added venues for us to learn more about how our work can impact on medicine. The Microcirculatory Society also now meets as part of EB. There has also been an expansion of activities at EB directed toward young scientists including symposia on careers, teaching and mentoring. We need, if anything, to do more to encourage students and fellows to attend and to establish this meeting as an integral part of their careers. Travel grants, inexpensive registration, student awards and having a fun time all help augment the scientific benefits of attending for young scientists. We also need to incorporate the "Omic" disciplines into EB and explore the possibility that new societies in systems or computational biology might affiliate with EB in a mutually beneficial manner. Both EB and the topical APS conferences have continued to be ably organized or overseen by the hardworking members of our Joint Program Committee.

Our publishing program remains sound and is continuing to make a smooth transition incorporating electronic publishing. We now have a very efficient web based system, APS Central, for submitting manuscripts and organizing the peer review process. For those concerned about impact factors, our numbers are up. As both a reader and an author, I appreciate the increased use of color and the member benefit of free color in my articles. The legacy project to make all our back journal issues available in electronic format is underway and will be completed in the next few years. All issues, including the legacy issues, are available online free to all members. This valuable member benefit was adopted by Council in 2002. The proposal to establish new BioMed Central journals by the Public Library of Science which would be purely electronic journals supported by user fees estimated at up to $1500 per article is a continuing threat to the well being of academic publishing. The added quality and the work put in to publish journals by academic societies such as ours should not be undervalued. Even though free access for all is appealing I am not convinced that we would be well served by a single central repository such as the Public Library of Science, which publishes and maintains electronic journals. A major concern for all of us is the high subscription prices of the for profit companies in the publishing industry which has now coalesced into a very few large companies. Further challenges we share with other academic publishers include development of a tiered price structure for electronic access based on the size of the institution and whether to bundle our subscriptions. It appears that the existence of paper copies will not go away rapidly although I realize that in my departmental library the paper journals serve more for ambiance than anything else. In the eventual future, all paper copies will be printed on demand by the user. While our sectionalized journals in the near future will stay much as they are, the new Editors of Physiological Genomics and NIPS have ideas to give them a new look.

In the educational arena much of APS effort has been on K-12 education either in preparing material for students, or through educating teachers through the Frontiers in Physiology Program to help them absorb and transmit the excitement of science to their students. It is unfortunately hard to quantitatively document the effectiveness of such efforts but we hope it will yield more students considering Physiology as a career and a more informed public. These and other APS educational programs are funded both by external grants and by APS funds drawn from our investment income. APS has also recently begun to put more emphasis on physiology education of the type many of us are carrying out in both undergraduate and graduate education and an additional staff member has been added. I would encourage you all to look at and consider contributing to the APS "Archives of Teaching Resources" which is designed to include material for undergraduate, graduate, and medical student teaching.

Over the last 5 years APS has worked synergistically with the Association of Chairs of Departments of Physiology (ACDP) in several arenas. We participated in a joint project, initiated by **Gabriel Navar** as President of ACDP, to develop a detailed list of learning objectives for Medical Physiology. This has recently been published as "Medical Physiology Core Curriculum Objectives Project" and is also available on the APS website. It should help document the need for adequate time on physiology in the Medical School curriculum based on the extent of information to be learned and promote the central role of Physiology in medical education. More recently, the APS Education Committee has begun developing a list of "Core Competencies" at different educational levels from undergraduate through graduate student and postdoctoral fellows. We have invited the participation of ACDP and will work together to generate this set of skills and experiences that our students should obtain at different educational levels.

One group of trainees that neither individual investigators, the universities, nor APS have paid enough attention to is Postdoctoral Fellows. Usually, as investigators, we consider the main challenge to be finding the funds to support the fellow or just finding a fellow and expect that they will learn to run a laboratory through osmosis in what is essentially an apprentice program. Postdocs tend to be more associated with a lab then a department and are often the forgotten group. Recently we have seen two forces working to improve the postdoctoral environment. First, NIH has steadily increased the amount of their postdoctoral stipend that serves as a de facto benchmark to approach a livable wage commensurate with their level of education. Second, there have been a number of local postdoctoral organizations formed to lobby their cause, especially for better salaries and benefits. As physiologists we need to consider what we are doing to promote the career development of our fellows. The aforementioned Core Competencies project should help us collectively define our responsibilities and help develop techniques to aid their professional development. In my opinion, every fellow should learn to write and review papers, write a grant, present a seminar, and oversee a technician or student. They should hear about recruiting and training laboratory workers, funding sources, as well as career options. This training may be best done at the School, the Department, and the laboratory level and APS should also play an important role. In the coming year, the APS will be creating a Trainee Advisory Committee to help define the role APS will play in these efforts.

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Introducing. . .John A. Williams

John A. Williams is Professor and Chair of the Department of Molecular & Integrative Physiology and Professor of Internal Medicine in the Division of Gastroenterology at the University of Michigan, positions he has held since 1987. Williams was born in 1941 in Des Moines, Iowa and grew up in Ellensburg, Washington where his father was Chair of Social Sciences at Central Washington College of Education. He received a B.S. in 1962 from Central Washington State College and an M.D. (with honors) and Ph.D. in Physiology and Biophysics from the University of Washington in 1968. Williams' Ph.D. thesis was on electrophysiology of the thyroid gland and was done in collaboration with his mentor, Walter J. Woodbury, a pioneer of microelectrode recording. Williams undertook three different postdoctoral positions: the first was in the Department of Pharmacology at the University of Utah with Dixon Woodbury. The second involved research on thyroid function with Jan Wolff at the NIH where he served as a commissioned officer in the Public Health Service. The third was as a Helen Hay Whitney Fellow in the Department of Pharmacology, Cambridge University, England, where he worked in the laboratory of Keith Matthews on brown adipose tissue and was introduced to the study of exocrine pancreas. Williams began his faculty career in the Department of Physiology at the University of California at San Francisco in 1973 and was promoted to Professor in 1979. In San Francisco Williams also served as Professor of Medicine, Vice-Chair of Physiology, and Co-Director of the Laboratory of Cell Biology at Mount Zion Hospital where he enjoyed a productive collaboration with Ira Goldfine.

Williams' research over the past 30 years has focused on the exocrine pancreas. He began this research because the pancreas was a larger source of homogenous secretory cells than the endocrine glands. The research rapidly led to studies of the neural and hormonal control of the pancreas as well as continued studies of the intracellular mechanisms controlling exocytosis in this prototypical secretory cell. Williams' accomplishments included the description of the release of intracellular sequestered Ca2+ as the central control for enzyme release, the original description of distinct peripheral and brain receptors for cholecystokinin (CCK), the definition of the role of CCK as a hormone regulating pancreatic secretion, gall bladder contraction and gastric emptying in humans and animal models, and the role of insulin from pancreatic islets as a regulator of pancreatic exocrine function. By this time he was considered more a GI than an endocrine physiologist. More recently his work has defined the complex nature of intracellular signaling pathways in acinar cells, continued to refine understanding of the molecular nature of exocytosis in acinar cells, and defined translational control mechanisms whereby synthesis of pancreatic digestive enzymes are enhanced with each meal. At the techniques level, Williams developed the isolated acinar preparation which became the primary way to study acinar function in vitro and the first assay to reliably measure plasma CCK as distinct from its close relative, gastrin. His research has been supported by the NIH since 1973, and led to over 250 original research papers published in different journals including the *American Journal of Physiology*. As part of this research, Williams has supervised over 60 postdoctoral fellows, graduate students and undergraduates from around the world. The academic progress of his students are a source of satisfaction to Williams and many are now active researchers as well as Professors and Departmental Chairs in both basic science and clinical departments.

Williams APS membership began in 1973. He has served as a member and chair of the Steering Committee for the Gastrointestinal Section, as a member of APS Council, and on the Nominating, Publications, and Long-Range Planning Committees. In the publications arena he has served for many years on the Editorial Board and six years as Chief Editor of the *American Journal of Physiology: Gastrointestinal and Liver Physiology*. He also serves as an Associate Editor of *News in Physiological Sciences*. Outside APS he is currently a Section Editor for *Annual Review of Physiology*, served as an Associate Editor for the *Journal of Clinical Investigation*, and has served on the Editorial Boards of *Gastroenterology, Digestion, Regulatory Peptides, Pancreas,* and *The FASEB Journal*. He has been a Grant Reviewer for NIH, NSF and the Wellcome Trust among others and was a permanent member of the GMA2 and NIDDK-C Study Sections, which review grants and training in digestive diseases and nutrition. He is an active member of several other academic societies and served on Council and as President of the American Pancreatic Association.

Williams has been the recipient of several awards including membership in Alpha Omega Alpha, the APS GI Section Research Award, the Horace Davenport Lectureship of the APS, and the Ismar Boas Medal of the German Gastroenterological Association. He was elected as a Fellow of the American Association for the Advancement of Science in 1998.

Outside of academic life Williams is a member of the Ann Arbor Friends Meeting and a former Trustee of Friends School in Detroit. His interests, which he shares with his wife, Christa, include maintaining a historic house, gardening, travel, and outdoor activities such as hiking and river rafting. ❖

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A final area in which APS has recently expanded its efforts is Public Affairs. This involves our Public Affairs Staff, the Executive Office, and our Public Affairs and Animal Care Experiment-ation Committees. Most of our effort is in lobbying for adequate federal research funding for our science to realize its potential and maintaining a climate in which animals, under appropriate care and supervision, are available for research. In lobbying for research funding we usually work with our sister organizations or disciplines as the life science community is well served by speaking with a loud and combined voice. FASEB has taken this on as one of its main reasons for being and APS participates in generating their annual consensus report. It is also important for each of us as individuals to both contact our legislators and build support for research in the community. To assist members in this area the APS Office of Public Affairs has developed a new staffed Legislative Action Center and a website accessible under Public Affairs on the APS home page.

In the area of appropriate use of animals in research, APS is a lead organization. Whether they come officially from APS or from our individual experts, our opinions are respected "on the Hill." We need to also continue to work with local organizations at the state level and support the patient advocacy groups that stress that "Animal Research Saves Lives." For those of us who attended the IUPS congress in New Zealand, one of the highlights was **Marty Frank** confronting and dialoging with the demonstrators on the street in front of the convention center. In another venue, this February APS developed a letter sent by President **Barbara Horwitz** to the San Diego newspaper supporting the right of educators to appropriately use animals in the teaching of medical students and resist the pressure from a minority group of faculty who are advocating stopping animal use as immoral. As individuals we need to both support appropriate advocacy groups and also be prepared to jump into action.

Finally, in closing, I will return to the important subject of strategic planning. Much of APS's current effort is being guided by the 2000 Strategic Plan. We need to realize, however, that strategic plans are not immutable but evolving documents. Some programs we start will serve a useful period and then may need attention or ending. Just as with Biomedical Research, APS clearly has more opportunities than resources and it is often harder to end than to start programs. Secondly, we need to continue strategic planning on an ongoing basis and involve as many individuals as possible. In the current year this will primarily involve Council and the Sections through the Section Advisory Committee (SAC). It is my intent to begin planning for an APS retreat in 2005 to generate a new Strategic Plan. I would also encourage any of you with ideas to improve APS to contact me. I am looking forward to serving you in the coming year.

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Election Results

The American Physiological Society announces the results of the election of officers for 2003.

D. Neil Granger, Louisiana State University Health Sciences Center-Shreveport, is the new President-Elect.

The two newly elected Councillors taking office on April 15, 2003 are **Helen E. Raybould,** School of Veterinary Medicine, University of California, Davis, CA, and **Jeff M. Sands,** Emory University, Atlanta, GA. The Councillors will serve for three years. ❖

President-Elect

D. Neil Granger

Councillors

Helen E. Raybould

Jeff M. Sands

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UCSD Dog Labs Do Have Value

Barbara A. Horwitz, Univ. California-Davis

The article below, penned by APS President Barbara Horwitz, was published as a guest opinion column in the San Diego Union-Tribune on February 21, 2003. Dr. Horwitz wrote in response to an effort to force UCSD to end its use of dog labs in basic science courses.

Critics have urged the UCSD School of Medicine to eliminate dog labs demonstrating basic principles of physiology and pharmacology to medical students. Drs. Lawrence Hansen and Nancy Harrison have argued on this page that such labs cause animals to suffer without serving a useful educational purpose. They say that UCSD should follow the lead of other medical schools in eliminating dog labs from the basic science curriculum.

As president of a learned society whose members are researchers and educators in the field of physiology, I respectfully disagree. The American Physiological Society believes that animal labs make an important contribution to the education of students. Furthermore, the reasons most schools discontinued them have little to do with their educational value.

Medical schools have a limited number of instructional hours in which to teach students everything from the basic medical sciences to clinical skills. A well-run animal lab is expensive, time-consuming, and resource-intensive. It requires special equipment and supplies; personnel specially trained in the care and monitoring of animals; and dedicated space that cannot readily be used for other activities. Skilled instructors are needed, and they have to work with small groups of students to ensure a meaningful experience. Consequently, even though animal labs are educationally valuable, they have been crowded out of the curriculum at many medical schools due to a lack of time, space, money and instructors.

Computer simulations have been suggested as alternatives to animal labs. Simulations can be a practical and economical way to reinforce textbook and lecture material on the basic principles of physiology and pharmacology and can be used to advantage in a variety of ways in medical school programs. Nevertheless, even the best simulations have their limitations.

Animal labs are more challenging in every sense of the word but can produce genuine insights into the sciences that underlie modern medicine. Labs give students an opportunity to touch and manipulate live tissue and to experience the complexity of the body along with the surprising individuality of living creatures. In the labs, students perform experimental manipulations of physiological systems such as respiration and blood pressure and learn how potent drugs affect these systems. The practice of modern medicine depends upon correcting diseases and pathologies, and many doctors will encounter situations in which a thorough understanding of physiology and pharmacology is literally a matter of life and death for their patients.

Animal labs should only be offered for valid educational reasons and should always be conducted humanely. Animals' lives have value, and instructors should convey a sense of respect for the animals. The dogs in the UCSD labs will be fully anesthetized beforehand and will be euthanized at the end of the procedure so they will not suffer. Yes, they live in cages, and yes, their lives will be taken, but the education of physicians is important because these men and women will be entrusted with their patients' lives.

Several recent letters to this newspaper came from doctors who found the lab experience a valuable part of their medical training.

Decisions about the form and content of medical education ought to be made by a curriculum committee that gives careful consideration to what students need to learn to practice their profession. Even so, because this activity involves animals, it also has to be approved by a federally mandated oversight panel, which at UCSD is called the Animal Subjects Committee. This committee, whose membership includes researchers, veterinarians and a representative of the community, had to review the proposed labs to determine if animals were necessary to accomplish the educational objective and to make sure they would be treated humanely.

In recent years we have seen a retreat from whole animal physiology and pharmacology. This was partly due to the scientific community's interest in genetics and cellular and molecular biology, but it was also a result of pressure from those who oppose any use of animals for research or education. The question at UCSD is whether its teaching labs are appropriate since those who have raised this issue agree that the humane use of animals can be ethically justified.

Efforts to redirect any other part of the medical school curriculum would be met with strong resistance, and rightfully so. The use of animals in medical education should be no different. UCSD is fortunate to have faculty who are willing to share their expertise in the dynamics of living systems with aspiring physicians. To surrender to political pressure in this area would set a dangerous precedent for medical education. If the curriculum committee finds these labs to have educational value, they should be continued. ❖

AAMC Comparison

Each year the Association of American Medical Colleges (AAMC) publishes Faculty Salary Survey Reports based on information it has gathered from medical colleges across the US and Canada.

The data are divided into Basic Sciences Departments, which includes Departments of Physiology, and Clinical Science Departments.

In order to offer a comparison with the data collected by the Association of Chairs of Departments of Physiology in the upcoming June article, below is a table showing median salaries as reported by AAMC in their 2002 survey.

The complete 2002 AAMC Faculty Salary Survey Reports can be purchased from the AAMC publications office (202-828-0416 or http://www.aamc.org/publications/start.htm). The cost for constituents is $75, plus shipping.

Table 1. Salary Data for Faculty in Departments of Physiology

	PhD Degrees		MD Degrees	
	Median salary	n	Median salary	n
Chair	$169,000	75	$215,000	16
Professor	113,000	615	137,000	72
Associate Professor	80,000	355	96,000	25
Assistant Professor	65,000	373	61,000	34
Instructor	44,000	64	52,000	8

Introducing...Susan M. Barman

Susan M. Barman was elected by the members of the Section Advisory Committee (SAC) to serve a three-year term as Chair of the Committee, effective January 1, 2003. Barman succeeds **Celia M. Sladek** in this position. SAC is comprised of the Chairs of the 12 APS Section Steering Committees. Barman has recently completed a three-year term as Chair of the Steering Committee of the Central Nervous System (CNS) Section of the APS (1999-2002).

Barman is a Professor in the Department of Pharmacology & Toxico-logy at Michigan State University (MSU) in East Lansing, MI. She received her doctoral degree in Physiology from Loyola University School of Medicine in Maywood, IL, in February 1976. Her graduate work on spinal cord control of sympathetic nerve activity and regional blood flow was completed under the direction of Dr. Robert D. Wurster. Barman became a member of the APS during her graduate training. Her postdoctoral work was completed in the laboratory of Dr. Gerard L. Gebber in the Department of Pharmacology at MSU. She was appointed as an Assistant Professor in the same department in 1979, and then as an Associate Professor (1984) and Professor (1994).

Barman's collaborative work with Gebber on brainstem control of sympathetic outflow to cardiovascular targets has continued for over 27 years and has resulted in over 90 peer-reviewed publications, many of them in APS journals. Her primary research focus has been an effort to understand the basis for the activity in autonomic nerves that control cardiovascular function. Specifically, she and her colleagues have been pioneers in the use of spike-triggered averaging and coherence analysis to identify brainstem neurons whose naturally occurring discharges are correlated to the cardiac-related and 10-Hz rhythms in sympathetic nerve discharge of cats. Work from her laboratory supports the view that basal sympathetic nerve activity is an emergent property of a network of neurons distributed over a wide region of the brainstem, including the medulla and pons. Recent work has combined neurophysiological and neuropharmacological tools to reveal that excitatory amino acid neurotransmission within the medullary lateral tegmental field is a key factor in mediating baroreceptor reflex control of sympathetic nerve activity and in setting the basal level of sympathetic activity. Her research has been funded with a National Institutes of Health Method to Extend Research in Time (MERIT) Award (1995-2005).

Barman's major objective as Chair of SAC will be to lead the 12 Section Chairs in an effort to encourage more APS members, especially young physiologists, to participate in the various Society activities and to take advantage of many of the opportunities offered by the APS. Success in such endeavors would be a step toward fulfillment of some of the goals set forth in the APS 2000 Strategic Plan.

Because the Chair of SAC serves as an *ex officio* member of the APS Council, SAC is the major link between the general membership and governance of the Society. Barman will work with the Section Chairs to identify ways in which their Steering Committees can better communicate with the APS membership to have them feel more ownership in The Society and to encourage their participation in Society activities. This plan is directed toward the goal of the APS 2000 Strategic Plan to increase membership involvement in the functions of the Society. All APS members are encouraged to become affiliated with one or more of the APS sections organized on the basis of research or academic interests. APS members can assist in the development of programming at Experimental Biology (EB) meetings or serve on an APS committee by working with their section representatives to the Joint Program Committee or Committee-on-Committees, respectively. Moreover, APS members can contact members of the Steering Committees with ideas and questions concerning the APS. The Chairs of the Steering Committees are able to voice these ideas/questions to the APS Council through SAC.

APS Council has generously provided funds to each of the APS Sections that allow young physiologists to attend EB meetings. Together with other funds available to the Sections, many students, fellows, and new investigators have been recipients of these travel awards. A common concern raised at recent SAC meetings is that not enough qualified candidates are applying for these awards. Another one of Barman's goals during her tenure as SAC Chair will be to work with members of SAC to identify ways in which information about these awards reaches eligible candidates and to assure that highly qualified individuals become recipients of the awards. It is hoped that all Sections can benefit from open discussions of techniques that have worked well for some Sections.

One of the most important functions of SAC is to serve as the nominating committee for determining the slate of candidates for APS President-elect and Councillors. Barman will advise SAC members 1) to encourage members of their section to submit names of well-qualified persons in nomination for these positions and 2) to fulfill their responsibility of their December meeting to select from this pool the names of two individuals for President-elect and five for Council. In addition, Barman will encourage SAC members to contact their section membership to encourage them to participate in the final election process.

Another objective of the APS 2000 Strategic Plan is to increase the participation of young physiologists in the functions of the Society. Barman hopes that SAC can help attain this goal by ensuring that a trainee (student or fellow) is appointed to each of the Section

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Steering Committees. These 12 trainees will be the nucleus of a Trainee Advisory Committee that will be established as a forum for young APS members to be active in the Society and to have their needs be brought to the attention of the APS governance. It is hoped that this committee would work with SAC to achieve their goals.

In addition to her service as Chair of SAC, Barman serves on the Editorial Board of *AJP: Heart and Circulatory Physiology* and *AJP: Regulatory Integrative Physiology*, and she reviews for other APS Journals. She is also a member of the APS Career Mentoring Program sponsored by the Women in Physiology. She has been an active participant in section activities and APS committees through service on the CNS Section Steering Committee (1987-91; 1995-2002; Chair, 1999-2002), the Women in Physiology Committee (1996-2001; Chair, 2000-01, and the Joint Program Committee (1996-98). She has also served as a Physiologist-in-Residence at the APS Retreat for High School/Middle School Science Teachers (2001).

To become affiliated with a section, please contact Linda Allen, Membership Services Manager, lallen@the-aps.org. APS members can select one primary affiliation and as many secondary affiliations as fit their interests. For those who are already affiliated with a section and are interested in becoming more involved in sectional activities, you are encouraged to contact Barman or other members of SAC. A list of SAC members and their contact information can be found on the web at: http://www.theaps.org/committees/members/sac.htm. For further information on the twelve Sections, you can link onto their specific web sites from http://www.theaps.org/sect_groups.htm. ❖

Introducing...Luis Gabriel Navar

On January 1, 2003, **Luis Gabriel Navar** succeeded **Allen Cowley, Jr.** as chair of the Long-Range Planning Committee. Navar is Professor and Chairman of the Department of Physiology at Tulane University School of Medicine in New Orleans, LA. A native of El Paso, Texas, he received his B.S. from Texas A&M University in 1962. He received his PhD in 1966 at the University of Mississippi under the direction of **Arthur Guyton** in the Department of Physiology. He served as a faculty member at the University of Mississippi School of Medicine until 1974 and was a visiting scientist at Duke University in 1972-73. Navar joined the faculty at the University of Alabama at Birmingham in 1974 rising to Professor of Physiology and Biophysics and Senior Scientist in the Nephrology Research and Training Center. Navar was appointed as Professor and Chairman of the Department of Physiology at the Tulane University School of Medicine in 1988. He is also Co-Director of the Tulane Renal and Hypertension Center of Excellence and Director of the NIH funded Center of Excellence in Biomedical Research in Hypertension and Renal Biology.

Research programs in Navar's laboratory investigate hormonal and paracrine mechanisms regulating renal hemodynamics, glomerular filtration rate (GFR), and sodium excretion with specific focus on the tubuloglomerular feedback mechanism and its role in renal autoregulation. Another area of interest regards the intrarenal mechanisms mediating changes in sodium excretion that occur in response to changes in arterial pressure, a phenomenon termed "pressure natriuresis." Recent studies support a role for intrarenal nitric oxide in mediating arterial pressure-related changes in sodium excretion. Intense recent activity has been focused on the pathophysiology of hypertension and altered kidney function in angiotensin II dependent hypertension. Using an angiotensin II infused model of hypertension, the role of altered internalization and formation of angiotensin II in mediating changes in renal function is being evaluated.

Navar has been an active member of the American Physiological Society (APS) since 1966, serving as Councillor (1991-94) and President (1998-99) for the Society and Associate Editor for the *American Journal of Physiology: Renal Physiology*. Navar is also a member of the IUPS National Organizing Committee for the 2005 IUPS Congress to be held in San Diego. Navar has been active in the American Society of Hypertension, the Federation of American Societies for Experimental Biology, the American Society of Nephrology, the American Heart Association (AHA) and the Council of Academic Societies of the AAMC. In 1996 he served as President of the Association of Chairs of Departments of Physiology. He has served as Associate Editor for Hypertension, and on peer review groups and study sections for the National Institutes of Health, the VA, and the AHA. He has also been appointed to the Editorial Boards of *American Journal of Physiology (Renal Fluid and Electrolyte), Kidney International, Journal of the American Society of Nephrology, American Journal of Kidney Diseases, American Journal of Hypertension, Hypertension* and *Journal of Hypertension*.

Navar received the C.W. Gottschalk Distinguished Lectureship Award in 1997 from the American Physiological Society, the Lewis K. Dahl Award (1997) and the Scientific Councils Distinguished Achievement Award from the American Heart Association in 1999. He recently received the Richard Bright Award from the American Society of Hypertension and the Arthur Corcoran Lectureship Award from the High Blood Pressure Council of the AHA in 2001. ❖

Introducing...Peter Wagner

Effective January 1, 2003, **Peter Wagner** succeeded **Mordecai Blaustein** as chair of the Finance Committee. After high school and university training in Sydney, Australia, Wagner graduated from the University of Sydney in 1968 with a medical degree. After two years of further clinical training, he emigrated to San Diego early in 1970 to become **John West's** first UCSD postdoctoral fellow. He has remained at UCSD ever since, joining the faculty ranks in 1973 and moving to full professor in 1984. Since 1999, he has been Chief of the Division of Physiology in the Department of Medicine at UCSD. In addition, since the beginning of 2002, he has been interim chief of the Division of Pulmonary and Critical Care Medicine. He was recently elected to the leadership of the American Thoracic Society and will be its president during its centenary year of 2005.

Wagner has had several roles within the American Physiological Society. Between 1989-91, he was a member of APS Council. He was the longest serving member of any editorial board of the Society's journals, on the *Journal of Applied Physiology* board continuously from 1976 until 1996 when he became an associate editor of that Journal. He has continued in that role since. In 2002, he gave the Edward F. Adolph Distinguished Lecture, for the Environmental and Exercise Physiology Section of APS. He has published much of his research in APS journals, in particular, the *Journal of Applied Physiology*. Of his current total of 266 research papers, 126 or almost 50% are in APS journals.

His research interests focus around the transport of oxygen between the environment and mitochondria. For many years, this focus was directed towards the lung, and he is probably best known for dreaming up the multiple inert gas elimination technique. This is a tool for quantifying the functional distribution of ventilation/perfusion ratios in the lungs, and has had extensive application in many laboratories around the world for 30 years. It continues to be actively used in many centers here and abroad. More recently, he has been involved in research at the level of the skeletal muscle, again in the context of oxygen transport. Here the primary questions relate to understanding the limitations to oxygen efflux from the red cell out of the capillary and its subsequent transport to the muscle mitochondria. This has required incorporating the tools of molecular biology to apply side by side with classical physiological approaches, and in so doing he has begun to focus on the growth factor VEGF (vascular endothelial growth factor) which appears critical for maintaining muscle capillarity and is probably also essential for adaptive responses (to muscle contraction) in the muscle microcirculation. His work has been continuously supported by a program project from the NIH that is now in its 28th year. He has been PI of this grant for the last 13 years, taking over from Dr. West in 1990.

As incoming chair of the Finance Committee, he will bring an interesting perspective to the American Physiological Society since he serves in a very similar capacity on the Program and Budget Committee of the American Thoracic Society. These two organizations are grossly similar in mission, structure and function, although there is clearly a stronger clinical emphasis in the Thoracic Society. It is interesting that the financial contributions of the major annual meetings of the two societies constitute very different places in their respective financial pictures, as do the journals. Undoubtedly, working with both societies in this manner will allow Wagner to bring fresh ideas to each.

Wagner sees the primary role of the Finance Committee as an oversight function. In this manner, the Committee closely monitors both the income and expenses of the Society on a regular basis. The monitoring of actual dollar flow is compared to that projected during the budget process of the preceding year by the Finance Committee. This allows the Finance Committee to determine variances that require investigation and/or changes in course. In these difficult fiscal times, this oversight activity is more important than ever. However, the Finance Committee has other important responsibilities as well. Thus, it oversees the investment portfolio of the Society's reserves. The Society has long had professional fund managers, but the Finance Committee has to oversee overall function and monitor financial performance of these investments. Just recently, the Finance Committee selected a new manager for one of its funds to assure the continued best possible performance in these difficult times.

In the course of routine operations, the Finance Committee also develops the ensuing year's annual budget each fall for approval by APS Council. This is done in close collaboration with the Society's chief financial officer, Robert Price, and Executive Director, **Martin Frank**.

Perhaps just as importantly as these oversight duties, the Finance Committee also is involved in more creative efforts such as the never-ending search for ways to both improve the income stream and reduce expenses without cutting programs. In this capacity, the Finance Committee advises Council. Wagner has the opportunity to provide such feedback from the Finance Committee by virtue of his ex officio position on Council.

Wagner sees the financial state of the Society, when viewed from high altitude, as quite comfortable. This is because of the substantial reserves that the Society has built up over its long lifetime. Nevertheless, there has been a trend in recent years for expenses to grow slightly faster than income, and this is requiring the uti-

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lization of small, but significant, amounts of financial reserves on an ongoing basis. Wagner subscribes to the notion expressed by Council, that the APS should not eliminate programs in order to amass huge financial reserves, but rather should use its reserves wisely to enhance its programs and support its membership. However, it is also felt that the Society must do everything in its power to reverse the trend of diminishing income and increasing expenses in the coming years. While this is to some extent a product of the current financial environment, Wagner feels it would be inappropriate to hide behind this broader problem thereby taking a passive view. Accordingly, he will work to the best of his ability with APS staff and Council to get the Finance Committee to think of creative ways of enhancing income and reducing expenses. In this way the APS can be of most use to you, its members. ❖

Education

APS Archive of Teaching Resources

The APS Archive of Teaching Resources (http://www.apsarchive.org) continues to grow with the recruitment of a variety of new learning objects from educators all over the country. To date, about 210 items have been received for the Archive from various sources.

However, more material is still needed. Please consider submitting material that you have developed to use to make your teaching more effective. These can be

- **lecture or course outlines or PowerPoint slides** from a lecture that is particularly effective with your students
- **problems or cases** you've written for your classes
- **diagram(s)** that you've created to illustrate a specific pathway or process that seems to clarify it for your students
- **simulations or videos** you have developed
- **web sites** you have discovered that have valuable information for your teaching
- **teaching tools/materials** that you are developing that would benefit from feedback from your colleagues
- **anything educational** related to physiology, pathophysiology, or clinical physiology

By submitting learning objects that you have developed, you can help your colleagues in their efforts to find the best tools for introducing their students to the exciting discipline of physiology.

Here are some new items in the Archive. Take a moment and check out those that are most relevant to your teaching. Don't forget that you can comment on any of these items through the comment section attached to each item.

- *Peer feedback for students working in small groups*
  Ann McNeal

- *Case History: Hypertension*
- *Case History: Polyuria & Polydypsia*
- *Case History: Acidosis - Respiratory*
  John Dietz

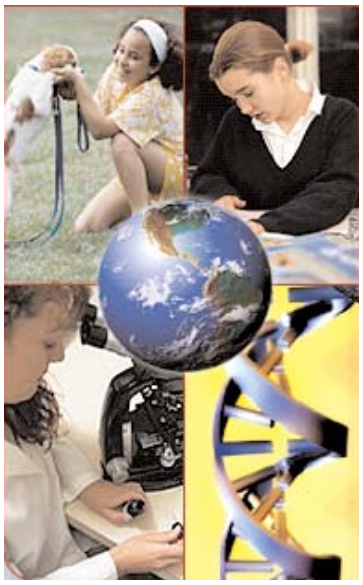
- Breakthroughs in Bioscience series, including
  Bone Builders
  New Weapons to Combat an Ancient Disease: Treating Diabetes
  Targeting Leukemia: From Bench to Bedside
  Transplantation: The Challenging Road Ahead
  FASEB's Office of Public Affairs

New Careers in Physiology Web Site Launched

The Career Opportunities in Physiology Committee is pleased to announce the launch of the totally redesigned careers web site (http://www.the-aps.org/careers.htm). The site is designed to provide easy access to a wide variety of online career resources and materials developed by the APS and many other organizations.

Resources are provided not only for students beginning their careers in physiology, but also for physiologists at different stages in their career development. It is also designed to stimulate interest among K-12 students and undergraduate students in physiology careers. The web site is a dynamic resource and new materials will be added on a regular basis. Updates on major new additions will be highlighted through the APS listserv.

Users of the new Careers web site will find a customized directory for their particular interests. From the main page, users can indicate which of eight major sections best represents their interests: Elementary, Middle/High School, Undergraduate, Graduate/Professional, Postdoctoral, New Investigator, Established Investigator, and General Public. After they make their initial selection, the user will find resources of specific interest to that group.



For example, users entering the New Investigators section will find career resources on getting tenure and promotions, hiring postdoctoral fellows, setting up a lab, and developing new courses. They will also find biosketches of physiologists; awards available to new investigators; resources for minority new investigators; positions available; and other relevant materials.

The Careers in Physiology Web Site is a project of the Careers in Physiology Committee, chaired by **Francis Belloni**, New York Medical College. The web development was funded by the APS and ongoing maintenance will be done by the APS Education Office.

As you explore the section of most interest to you, please do not hesitate to contact the Education Office (education@the-aps.org) with your suggestions for topics to be added to the site, information on good resources that are not already listed, and other comments you might have. Check back often, as new material will be added on a regular basis. ❖

APS Sponsors Awards at ABRCMS Minority Conference

The APS was pleased to participate in and sponsor awards at the 2002 Annual Biomedical Research Conference for Minority Students (ABRCMS) in New Orleans, Louisiana, on November 13-16.

APS sponsored three awards for the top sophomore, junior, and senior poster presentations and an award for the best oral presentation in the physiological sciences. A team of APS members judged the posters over the 4-day meeting. Those members involved were **Barbara A. Horwitz** from the University of California, Davis, and **Marian R. Walters**, **Mouhamed S. Awayda**, and **Keith Jackson** from Tulane University. The meeting culminated in an awards banquet, at which APS President Barbara A. Horwitz presented the awards to the four students.

The student awardees for best physiology posters were Rodney Theodore (Sophomore) from the University of Maryland, Baltimore County; Calleen Jones (Junior) from Wayne State University; and Saul Villeda (Senior) from the University of California, Los Angeles. The student awardee for best oral presentation was Rebecca Baerga (Senior) from Pontifica University Catholica of Puerto Rico.

The ABRCMS meeting allows for the presentation of research of underrepresented minority student scientists who are at the forefront of biomedical research. It also provides a unique opportunity for students to professionally display their research and receive constructive criticism and encouragement from peers and professional scientists. Over 2,600 biomedical researchers and students attended the 2002 ABRCMS meeting.

Among the conference speakers were notables such as Nobel Laureates Thomas Cech, Ph.D., and Alfred Gilman, Ph.D.; John Ruffin, director of the National Center for Minority Health Disparities; National Science Foundation Waterman Award Winner Erich Jarvis, Ph.D.; Francis Collins of the National Human Genome Research Institute; Lydia Villa-Kamoroff, Ph.D., vice chancellor of research at Northwestern University; former astronaut Bernard Harris, M.D.; former Congressman Louis Stokes; and Ruth Kirschstein, Ph.D., director of the NIGMS and former Interim Director of NIH.

The 2003 ABRCMS meeting is scheduled for Oct.15 - Oct. 18, 2003 in San Diego, California. ❖

New Regular Members

*Transferred from Student Membership

Michael J. Acarregui
Univ. Iowa Coll. Med.
Amy K.L. Banes*
Med. College Georgia
Jamie L. Barger*
Univ. Wisconsin Madison
Michael S. Beauchamp
NIH/NIMH, MD
Min-Hwang Chang
Case Western Reserve Univ.
E. Lisa Chilton
Univ. Calgary, Canada
Suzy A.A. Comhair
Cleveland Clinic Fndn., OH
Hadassa Degani
Weizmann Inst. Science, Israel
Nino Devidze
Rockefeller Univ., NY
Gary Michael Diffee
Univ. Wisconsin
Christopher L. Douglas*
Univ. Michigan
Charles J. Duffy
Univ. Rochester Med. Ctr., NY
Jaak Duysens
SMK-Res. BV, The Netherlands
Ruth Anne Eatock
Baylor Coll. Med., TX
Oleg V. Evgenov
Massachusetts GH/HMS
James Andrew Frank
Univ. California, San Francisco
Eitan Friedman
CUNY Med. Sch., NY
David Dwight Fuller*
Univ. of Wisconsin
Stephen Joel Goldberg
Virginia Commonwealth Univ-MCV
Kaleeckal G. Harikumar
Mayo Clinic, AZ
Naoyuki Hayashi
Osaka University, Japan
Richard C. Ho
Joslin Diabetes Ctr., MA
Kaia Lynn Kloster
Avera Research Inst., IA
Hiroyuki Kobori
Tulane Univ. HSC, LA
Gergely Kovacs
Univ. Alabama, Birmingham
Kichang Lee*
John B Pierce Lab -Yale Univ., CT
Li Li
Wayne State Univ., MI
Weijie Li
Univ. of Pennsylvania
Henry C. Lin
Cedars-Sinai Medical Center, CA
Roberto F. Machado
Cleveland Clinic Fndn., OH
Keith Leonard March
Indiana Univ. Sch. Med.
Marcella M. Mascarenhas
Massachusetts GH- Harvard, MA
Jean-Jacques Meister
Swiss Fed Inst Technol, Switzerland
J. Anthony Movshon
New York Univ.
Randolph Joseph Nudo
Univ. Kansas Medical Ctr.
Yoshinobu Ohira
Osaka Univ., Japan
Gail Jean Pyne
Univ. of Cincinnati, OH
Kamal Rahmouni
Univ. of Iowa
Lalini Ramanathan
VAGLAHS-UCLA
Anikumar K. Reddy
Baylor Coll. Med., TX
Rick Alan Relyea
Univ. Pittsburgh
Jeffrey D. Schall
Vanderbilt Univ., TN
Jack D. Shepard*
IRP/NIDA/NIH, MD
Shang-Jin Shi
Wyle Laboratories, TX
Jan Simak
CBER FDA, MD
Lei Song
Cedars Sinai Medical Center, CA
Ben W. Strowbridge
Case Western Reserve Univ., OH
Li Sun
Mount Sinai Sch. Med., NY
Jens M. Titze
Univ. Erlangen, Germany
Patricia G. Valles
Univ. Cuyo Sch. Med, Argentina
Lorraine B. Ware
Vanderbilt Univ. Sch. Med., TN
Lanthalatess Williams-McIntosh
Univ. of Alabama, Birmingham
Scott Jonathan Wood
Naval Aerospace Med. Res. Lab., FL
Kenneth Patrick Wright
Univ. of Colorado
Zijian Xie
Medical College of Ohio
Yimu Yang
Univ. Tennessee HSC
Linda Chia-Hui Yu
Univ. Calgary, Canada

New Student Members

Adrienne Bratcher
Univ. Louisville Sch. Med., KY
Anthony N Carlsen
Univ. of British Columbia,Canada
Erin Gayle Cline
Stanford Univ., CA
Miriam Yvette Cortez-Cooper
Univ. of Texas at Austin
Rebecca L. Cunningham
Univ of Missouri-Columbia
Aadish S. Dani
Natl Ctr for Biological Sciences, India
Allison Elizabeth Devan
Univ. of Texas At Austin
Kati Elizabeth Draper
Virginia Tech
James Jason Galvez
Wake Forest Univ., NC
Joaquin U. Gonzales
Texas Tech Univ. HSC
Romer A. Gonzales-Villalobos
Tulane Univ., LA
Jason L. Hagen
Univ of Calgary, Canada
Janelle M. Hardisty
Univ. of North Texas HSC
Troy Alan Hornberger
Univ. of Illinois Chicago
Nafissa Ismail
Concordia Univ., Canada
Jennifer M. Jensen
Purdue Univ.
Andrew D. Johnson
Ohio St Univ.
Christopher L. Kaufman
Univ Nebraska at Omaha

David M. Keller
Univ North Texas HSC
Dimitris T. Kogayiannis
Harokopio Univ., Greece
Goran Kostoski
Univ "St Ciryl & Methodius"
Rep. of Macedonia
Daniel James Krause
Univ. of Calgary, Canada
Candace Lee
Univ. of Manitoba, Canada
Dongpyo Lee
Univ Illinois at Chicago
Zhongyuan Li
Ohio St Univ.
Rabiu A. Magaji
Ahmadu Bello Univ., Nigeria
Christopher A. Moore
Univ. of Memphis, TN
Robert Tyler Morris
Univ. of Missouri-Columbia
Farinaz Nasirinezhad
Univ. of Miami Med. Sch., FL
Michele Lee Nealen
Johns Hopkins Sch. of Med., MD
Kim A. Nobel
Temple Univ. Sch. Med., PA
Naomi Oshiro
Univ. Texas Med Branch
Christopher G.R. Perry
Univ.of Guelph, Canada
Paul James Pfleiderer
Albany Med. College, NY
Niwanth W. Rajapakse
Monash Univ., Australia
Parvinder Rathee
Univ. of Erlangen-Nuermberg, Germany
Julie Christine Reid
Univ. of Guelph, Canada
Matthew R. Roesch
Univ. of Pittsburgh, PA
Tyler H. Rork
Rutgers Univ.
Giulio A. Sancini
National Neurophysiology Inst., Italy
Jonathan B. Santo
McGill Univ., Canada
Bakara R Senthilkumar
Univ. Madras Taramanies, Australia
Cassandra Talerico-Kaplin
The Cleveland Clin. Fndn., OH
Joanna L. Vance
Univ. of Colorado Boulder
Joseph Carl Wenke
Texas A&M Univ.
Tamea S. Wimmer
Florida Atlantic Univ.
Noah Paul Zimmerman
Univ. of Wisconsin-Madison

New Affiliate Member

Paul G. Sleph
Bristol-Myers Squibb

Membership Statistics

Total Membership11,271
Distribution by Employment
(7,883 respondents)

	No.	*%*
Physiology Departments	2,382	30.2%
College or University	1,775	22.2%
Clinical	1,528	19.4%
Other Preclinical Departments	575	7.3%
Government (Inc. V.A.)	334	4.2%
Hospitals and Clinics	323	4.1%
Institutes and Foundations	211	2.7%
Commercial Companies	196	2.5%
Veterinary Schools	160	2.0%
Public Health and Graduate Schools	124	1.6%
Medical Schools	122	1.5%
Other, emeritus, inactive or unidentified:	68	0.9%
Administration	36	0.5%
Dental Schools	35	0.4%
Private Practice	34	0.4%

Distribution by Racial Background and Heritage (optional personal data)

	Total respondents
White	5,671
Asian or Pacific Islander	910
Hispanic	185
Black	91
Other	19
American Indian	16
Multiracial	12

Distribution by Earned Degree
(8,367 respondents - includes 1,217 individuals with multiple doctorate degrees)

Ph.D.	5,173
M.D.	2,689
D.V.M.	191
ScD.	117
Other	74
Cand. Med.	54
Dr. Ed. or Dr. Ed	26
D.D.S.	30
Dr. Med.	9
Dr.Phil.	4

Distribution by Gender
(optional personal data)

Male	6,514
Female	1,619

Distribution by Age
(optional personal data)

70+	1,389
60-69	1,507
50-59	2,366
40-49	2,408
30-39	2,058
20-29	1,162

Membership Statistics

Principal Type of Work
(7,901 respondents)

Research	79%
Teaching	11%
Clinical	6.3%
Administration	4.0%

Distribution by Primary Section Affiliation
(7,778 respondents)

	%
Cardiovascular Section	24.6
Cell & Molecular Physiology Section	12.1
Central Nervous System Section	8.3
Comparative Physiology Section	4.5
Endocrinology & Metabolism Section	9.2
Environmental & Exercise Physiology Section	8.1
Gastrointestinal Section	5.5
Neural Control & Autonomic Regulation Section	4.2
Renal Section	7.6
Respiration Section	10.5
Teaching of Physiology Section	3.0
Water & Electrolyte Homeostasis Section	2.4

Distribution by Group Affiliation
(3,651 respondents)

	%
Epithelial Transport Group	34.1
History of Physiology Group	20.3
Hypoxia Group	24.8
Muscle Biology (MyoBio) Group	37.0
Members in Industry Group	11.5
Physiological Genomics Group	6.4
Translational Research Group	2.8

Distribution by Primary Interest Area
(5,062 respondents)

	%
Anatomy and Embryology	0.6
Biochemistry	2.1
Biophysics	0.3
Cardiovascular	34.8
Cellular and Tissue	5.6
Comparative Physiology -- Amphibians	3.5
Electrolytes and Water Balance	3.5
Endocrines -- Adrenal cortex	8.4
Environment	2.5
Exercise	0.9
Gastrointestinal	2.9
Immunology	0.7
Lipids and Steroids	1.1
Liver and Bile	0.8
Minerals, Bone and Teeth	0.9
Muscle	12.5
Neural Control and Autonomic Regulation	0.5
Neurosciences	5.5
Renal	1.3
Reproduction	1.8
Respiration	8.4
Teaching	0.2
Transport	0.2
Other	0.8

APS Membership in The Americas

United States of America	8,957
Canada	549
Brazil	89
Mexico	30
Argentina	22
Chile	21
West Indies	6
Jamaica	4
Venezuela	6
Colombia	2
British West Indies	1
Costa Rica	1
Cuba	1
Dominican Republic	1
Honduras	1
Uruguay	1

US States with More than 100 Members

California	969
New York	651
Texas	566
Pennsylvania	465
Florida	442
Massachusetts	438
Maryland	401
Illinois	385
Ohio	383
Michigan	257
North Carolina	243
Georgia	223
Wisconsin	215
Missouri	214
New Jersey	191
Connecticut	184
Louisiana	182
Virginia	180
Tennessee	172
Indiana	165
Colorado	163
Minnesota	159
Alabama	157
Iowa	142
Washington	133
Arizona	116
Kentucky	101

APS Membership Outside The Americas
(countries with five or more members)

Japan	239
England	184
Germany	118
France	112
Australia	104
Italy	65
South Korea	64
Denmark	62
Netherlands	54
Taiwan	47
Switzerland	45
Sweden	42
Belgium	36
Spain	33
New Zealand	33
Israel	32
Norway	26
Greece	23
India	22
Peoples Republic of China	20
Ireland	19
Hong Kong	15
South Africa	13
Turkey	13
Austria	11
Thailand	10
Poland	9
Portugal	9
Hungary	9
Finland	8
Czech Republic	7
Iran	7
Singapore	6
Lebanon	5
Russia	5
Saudi Arabia	5

Other Countries Represented: Bahrain, Bangladesh, Belarus, Bosnia, Bulgaria, Croatia, Cyprus, Egypt, Herzegovina, Iceland, Indonesia, Luxembourg, Malaysia, Mozambique, Nigeria, Pakistan, Philippines, Qatar, Rep of Macedonia, Romania, Serbia, Slovakia, Slovenia, Sudan, Tanzania, Ukraine, United Arab Emirates, Yugoslavia

Canadian Provinces with Five or More Members

Ontario	243
Quebec	107
Alberta	93
British Columbia	50
Manitoba	22
Nova Scotia	12
Saskatchewan	9
Newfoundland	7
New Brunswick	6

President Bush Proposes FY 2004 Spending Plan

President Bush submitted his FY 2004 budget proposals to Congress on February 3, 2003, as required by law. However, meeting that deadline was the only thing ordinary about this budget year.

Last year the 107th Congress adjourned without putting into place the spending plan for the current FY 2003 fiscal year that began on October 1, 2002. Consequently, the FY 2004 budget was developed without the benefit of knowing what the current funding levels would be. The spending plan was already overshadowed by the war on terrorism, the prospects of military action against Iraq, and a stalled economy. A note of tragedy was added to these concerns when the space shuttle Columbia disintegrated upon reentry into the earth's atmosphere on February 1.

The article below provides highlights of the FY 2004 budget proposal for selected biomedical research funding agencies. The accompanying article describes final FY 2003 spending levels that were approved by the 108th Congress on February 13.

National Institutes of Health: The President proposed $27.89 billion for the NIH budget in FY 2004. This increase is some $730 million or 2.7% over the FY 2003 appropriation of $27.16 billion. (The actual NIH program level for FY 2003 will be slightly lower, about $26.45 billion because of various additions and subtractions mandated by Congress. See information on FY 2003 funding.)

The FY 2004 recommendation comes in sharp contrast to the generous increases NIH received during a five-year campaign to double its budget. The doubling effort, which was supported by both Congress and the administration, was accomplished through increases averaging about 15% per year. The goal of the doubling was intended to strengthen NIH's capacity to address health problems through research.

In its first post-doubling budget submission, the administration noted that despite the small overall increase, research at the NIH would rise by 7.5% in FY 2004. A total of $1.9 billion will be added to the research budget from both new money and through transfers from other parts of the NIH budget. A number of items in NIH's FY 2003 appropriation represent one-time costs that will not be repeated in FY 2004, such as $250 million to purchase anthrax vaccine, $375 million for extramural bioterrorism facility construction, and $77 million for extramural construction grants. Funds for construction on the NIH campus will decrease from $769 in FY 2003 to $80 million in FY 2004, with the balance transferred to research. In addition, $499 million in new funds will be added. The research funds are to provide a 4.3% increase for the large pool of NIH research unrelated to bio-defense as well as a 117% increase for the small pool of bio-defense research, which is mainly funded by NIAID.

In FY 2004 the NIH will provide the 26,958 non-competing continuing grants with a one percent increase over the previous year's level. This is less than what was anticipated and will not keep pace with the 3.3% rate of biomedical inflation. The savings generated from slower growth in grants will make it possible to increase the number of new grants. The president's budget proposes that 10,509 new and competing grants be funded in FY 2004, up 344 or 3% from an estimated 10,165 in FY 2003. The vast majority of these new grants would fund bio-terrorism defense research. Bio-defense grants are projected to rise from 338 to 661. New and competing grants not related to bio-defense would increase only by only 21 grants, from 9,827 in FY 2003 to 9,848 in 2004.

Although bio-defense is the main arena where increases will occur, the administration has proposed $35 million in new research funds for research related to NIH Director Elias Zerhouni's "NIH Roadmap." This is a strategy that resulted from consultations held in August 2002 with members of the intramural and extramural communities. In these meetings the new director sought to determine how best to move the NIH forward in the post-doubling era. Zerhouni will channel funds provided under the Roadmap initiative to various NIH institutes to support projects that will further the priorities, including new pathways to discovery; multidisciplinary research teams of the future; and re-engineering the clinical research enterprise.

The administration's proposed increase is considerably below what was recommended by FASEB and other advocacy groups such as the Ad Hoc Group for Medical Research Funding. These advocates expressed appreciation to Congress and the Administration for completing the doubling and the strong commitment to medical research that it represents. At the same time, they recommend a 10% increase in NIH funding for FY 2004 to make optimum use of the research opportunities and capabilities that have been built up through this effort.

Concerns have been expressed that a minimal increase, such as the one proposed by the administration, runs the risk of negating the positive impacts of the doubling effort. "Recent increases in the NIH budget have given rise to an accelerated rate of discovery," said FASEB President Steven L. Teitelbaum. "If these increases are followed by a period of flat funding, our historic opportunity to quicken the pace of medical progress will have been squandered."

Another area of concern is the fact that the 7.5% increase for research was partially funded by diverting resources from other NIH programs, such as training. The administration has proposed a training budget of $716 million in FY 2004. This would amount to an increase of approximately $27 million or 4% over the FY 2003 level. The number of trainees would increase by 183 for a total of 17,197 trainees. Trainee stipends, however, would increase only 4%. In March 2001, NIH announced a plan to raise stipends by approximately 10% per year over the next several years. The

goal of this plan was to raise the entry-level post-doctoral stipend to $45,000 to offset the cost of living during the training period.

National Science Foundation: The President proposed $5.48 billion for the NSF in FY 2004, a 3.2% increase over the final FY 2003 funding level of $5.34 billion. This falls well short of the $6.39 billion that would be needed to bring about a five-year doubling of the NSF budget, an ambitious goal that both the administration and the Congress endorsed in an NSF reauthorization bill that the president signed in December 2002. FASEB recommended the $6.39 billion recommendation for NSF in FY 2004 as part of its consensus conference on biomedical research funding. The Coalition for National Science Funding also recommended $6.39 billion in FY 2004 as part of a five-year doubling.

Under the FY 2004 proposal, NSF would fund an estimated 7,020 grants, and the average NSF grant would rise to $128,000. NSF would also increase trainee stipends to $30,000 as part of its ongoing effort to improve trainee compensation.

The Research and Related Activities budget at the NSF would rise just $30 million in FY 2004, which amounts to about half a percent above the FY 2003 appropriation. The president recommended $562 million for the biological sciences directorate, which is actually a 1.6% decline over the FY 2003 level of $274 million.

VA Medical and Prosthetic Research: The President's FY 2004 budget proposal includes $822 million for medical and prosthetic research. However, more than half that total - $414 million – consists of funds transferred from the medical care budget.

Some $408 million of the $822 requested is intended for "medical research," and is designated for areas that have previously been funded through the medical and prosthetic research program. The remaining $414 million is described as "medical research support" and would provide funding for the time clinicians spend on research activities as well as facility utility costs associated with laboratory space; human resources, and fiscal services. This change will make it easier for VA clinician scientists to devote time to research.

The FASEB Consensus Conference and the Friends of VA Medical Care and Health Research (FOVA) recommended an FY 2004 funding level of $913 million. This total would include $460 million for direct medical research costs plus $453 million for medical research support costs.

NASA Biological Research: The budget proposal for NASA was ready to be released when the space shuttle Columbia was destroyed upon reentry February 1, killing the seven astronauts aboard. The FY 2004 budget proposal for the Office of Biological and Physical Research (OBPR) was $973 million, but it is impossible to predict what priorities will emerge at the agency and what changes will ultimately be made to its budget proposal. ❖

FY 2003 Funding Approved (At last)

President Bush signed a law to provide funding for government agencies on February 20, 2003, nearly four and a half months into the fiscal year that began on October 1, 2002. Congress approved the conference agreement on February 13, some ten days after the President's FY 2004 budget proposals were sent to Congress. The omnibus spending bill provided $398 billion to fund agencies covered by 11 of the 13 regular appropriations bills. Highlights of this legislation are listed below.

National Institutes of Health: The legislation appropriated $27.159 billion for the NIH in FY 2003. This is a 16% increase over FY 2002 and is only $10.1 million below the Presidents original FY 2003 budget request, which would have completed the effort to double the NIH budget over five years.

"This is an historic moment in biomedical research history," according to APS Executive Director **Martin Frank**. "With this achievement, Congress has helped to open the door to progress which will pay enormous health dividends for this and many generations to come."

However, the fine print of the funding bill reveals a slightly different story. Because the bill as a whole was too costly, Congress mandated a reduction of .65% from most programs. The legislation also requires various transfers to and from NIH for programs ranging from combating AIDS internationally to environmental health research. The bottom line is that the NIH program level in FY 2003 will be $26.45 billion.

National Science Foundation: NSF will receive an 11.6% increase in FY 2003. Its total budget will be $5.3 billion, which is $555 million more than its FY 2002 funding level. Included in this are:

- $4.06 billion for research and related activities;
- $903 million for education and human resources; and
- $148.5 million for major research equipment and facilities.

In October 2002, the APS sent a letter to members of the Senate VA-HUD appropriations subcommittee urging them to support funding levels for the NSF biological sciences directorate (BIO) at a level comparable to other directorates within the agency. The BIO directorate will receive a 13.1% increase in FY 2003, which is in line with the funding provided for other NSF directorates.

VA Medical and Prosthetic Research: VA medical and prosthetics research will be funded at $400 million in FY 2003. This represents a $29 million or 7.8% increase over FY 2002.

NASA Biological Research: The omnibus legislation provided NASA with $15.39 billion, in FY 2003, an increase of $498 million or 2.7% over its FY 2002 funding levels. Within NASA, the Office of Biological and Space Research (OBPR) received $863 – an increase of $149 million or 20.9% over FY 2002. ❖

FBR Tells Stories of Pet "Survivors"

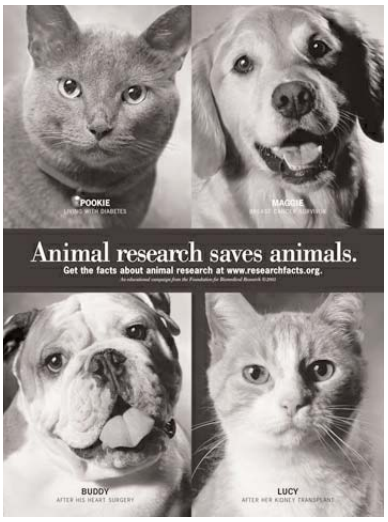
Seeking to increase public awareness about the benefits that animal research provides to animals, the Foundation for Biomedical Research (FBR) has launched an innovative advertising campaign called "Survivors." The campaign features animals that have survived serious illnesses due to advanced medical treatments. FBR has also created a short television ad dramatizing the same message.

In February, FBR sought to place posters with portraits of dogs and cats who are "Survivors" on display at 31 shopping malls around the country. However, while 27 malls accepted the posters, four malls in Maryland, New York, Pennsylvania, and California refused the paid ads, citing concerns that the pro-research message would draw protests.

"We are deeply disappointed," FBR President Frankie Trull said in a statement on the FBR website. "It is our hope that 'Survivors' will inspire public understanding and support for America's biomedical research community by giving animals a voice in this debate."

"All across America, threats of harassment by animal extremists are increasing," Ms. Trull said "Sadly, these threats are working."

Information about the contributions of animal research to animal health is available on the FBR website at http://www.fbresearch.org/survivors/index.htm. An essay there explains, "For years, there was basically one way to treat sick pets: Put them to sleep. But today they can live happy, long lives." The essay goes on to say:



The Foundation for Biomedical Research has created this appealing poster to illustrate the fact that millions of pets have benefited from biomedical research involving animals.

"Many people believe that research with animals is conducted for the exclusive benefit of humans. In fact, practically all biomedical research with lab animals also advances veterinary medicine and helps companion animals live longer, happier and healthier lives. Dozens of diseases, affecting both humans and animals, are prevented through the administration of vaccines. Many other conditions are successfully treated, in both humans and animals, with antibiotics. From asthma and epilepsy, from high blood pressure to cancer, people and their pets share myriad diseases and therapies. And thanks to animal research, effective new drugs have been designed, sophisticated medical devices have been developed and remarkable surgical procedures have been perfected - for human and veterinary medical care."

A television ad developed to convey the "Survivors" message shows an older man walking his dog in the park. The dog playfully pulls his owner along while the voiceover says:

"Not long ago, Albert couldn't take long walks. He was diagnosed with a bad heart. After considering all the treatment options, his heart specialist recommended a pacemaker."

At this point, the owner is sitting on a park bench, and the camera zooms in on the dog's face. The announcer then says:

"Instead of putting him to sleep." ❖

House Passes Legislation To Ban All Forms of Cloning

On February 27, 2003 the U.S. House of Representatives approved H.R. 534, the Human Cloning Prohibition Act of 2003. This legislation, sponsored by Reps. David Weldon (R-FL) and Bart Stupak (D-MI), would criminalize all forms of cloning. The measure would apply both to reproductive cloning and to somatic cell nuclear transfer (SCNT) technology, also known as therapeutic cloning. The measure passed by a vote of 241 to 155.

Biomedical research supporters had urge Congress to enact a different bill sponsored by Rep. James Greenwood (R-PA). The Greenwood bill would have outlawed only reproductive cloning while allowing therapeutic cloning for medical research purposes to continue. It was defeated by a vote of 231-174.

The dispute over cloning now moves to the Senate, where Sens. Sam Brownback (R-KS) and Mary Landrieu (D-LA) have re-introduced their bill, now known as the Human Cloning Prohibition Act of 2003. This measure, S.245, would make criminalize both reproductive and therapeutic cloning.

Research advocates support a different bill sponsored by Senator Orin Hatch (R-UT). The Human Cloning Ban and Stem Cell Research Protection Act of 2003 (S. 305) is similar to the Greenwood bill and aims to prohibit reproductive cloning while protecting important areas of medical research, including stem cell research. ❖

Physiology in Medicine Series Gets a New Editor and a New Home

On April 15, 2003, the first article of the American Physiological Society's series, "Physiology in Medicine," (PIM) to be published in the *Annals of Internal Medicine* will appear under the leadership of its new Editor, **Dennis Ausiello**, of Harvard Medical School. The title of this article is "Malignant glioma physiology: cellular response to hypoxia and its role in tumor progression." Ausiello will be assisted with the series by **Dale J. Benos**, Deputy Editor (University of Alabama, Birmingham—UAB), and two Associate Editors, **Frank Abboud** (University of Iowa) and **William Koopman** (UAB).

The series is in keeping with the strategic plans of the Society, particularly with regards to translational research. Many basic science trainees are focusing their careers on disease-oriented research even though they themselves have not completed medical training. Thus, clinical review articles that relate basic physiological principles to disease are invaluable for this group of scientists. In addition, the editors of *Annals*, in particular **Harold M. Sox**, Editor-in-Chief, and **Paul Epstein**, Deputy Editor, perceived the need and necessity for articles that translated fundamental observations in modern molecular physiology into terms understandable and useful for today's practicing clinician. Epstein will serve as the PIM Series Editor at *Annals*.

The PIM series was first published under the banner "Physiology for Physicians" in the *New England Journal of Medicine* beginning in 1963. Many important articles linking physiological principles to modern medicine appeared in that series. "Physiology in Medicine" then moved to *Hospital Practice* under the editorship of **Thomas E. Andreoli**. During his 15-year stewardship, the series moved from *Hospital Practice* to the *American Journal of Medicine*.

With the announcement of Andreoli's retirement from the series, a PIM Task Force was convened in the summer of 2001 to consider the "Physiology in Medicine" series. Members of this task force included **Francois Abboud** (University of Iowa), **Robert J. Alpern** (UT Southwestern), **Thomas Andreoli** (University of Arkansas), **Peter Aronson** (Yale University), **Dale J. Benos** (APS Publications Committee Chair), **Gerald DiBona** (Past President, APS, University of Iowa), **Jeffrey M. Drazen** (Editor, *NEJM*, Harvard Medical School), **Frank Epstein** (Harvard Medical School), **Paul Epstein** (Deputy Editor, *Annals of Internal Medicine*), **Martin Frank** (Executive Director, APS), **John Hall** (President, APS), **Timothy Mapstone** (Emory University), Margaret Reich (Director of Publications, APS), **Daniel C. Tosteson** (Harvard University), and **Michael J. Welsh** (University of Iowa). This Task Force defined the series, recommended the new Editor to the Publications Committee and APS Council, and chose the new venue for the series.

Thus, the aim of this series is to provide to inquisitive practicing MD's and/or researchers, an up-to-date physiological understanding of disease with the proper application of new molecular models and tools. The task force members and the Editors feel that the terms "clinically practical" and "scientifically rigorous" are not mutually exclusive. The aim of articles published in this series is to provide a thoughtful and lucid linkage of science to the patient.

The articles will be relatively short and will be simultaneously peer reviewed by the PIM Editors, Associate Editors, and outside referees, as well as by the Editorial Board of *Annals of Internal Medicine*. Several articles have already been accepted and several more have been submitted and are in the review process. These include articles on pathogenesis of hypertension, thyroid hormone and metabolism, Cushing's syndrome, scleroderma, asthma, pain, and Alzheimer's disease. The Editors are open to suggestions from Society members regarding topics that may be of interest. *Annals* is making the series available online free of charge and there will be a link provided to it on the APS Web site. ❖

Gift Planning Opportunities

APS is pleased to invite the membership to consider including the APS in their gift giving plans. Over the last several years, the Society has received donations of land and securities, all of which have been used to launch the Society's various young investigator award programs.

Many options exist if you are interested in including the APS and its Endowment Fund in your financial or estate planning. Some options include:

Immediate Gifts: Cash, gifts of appreciated securities, gifts of closely held stock, gifts of tangible personal property, retirement assets, charitable lead trusts and gifts of real estate.

Life Income Gifts: Gift annuities, deferred payment gift annuities, charitable remainder trusts, charitable remainder unitrusts, and charitable annuity trusts.

Gifts of Insurance: Ownership of life insurance policies can be donated, or the APS can become the beneficiary of policies owned by others.

Designated Gifts: Gifts given to honor or memorialize an individual or an organization and can include scholarships, programs, etc., which are specified for support and named for individuals.

Gifts by Will: Bequests of a percentage of estate, stated dollar amount or specific property or assets.

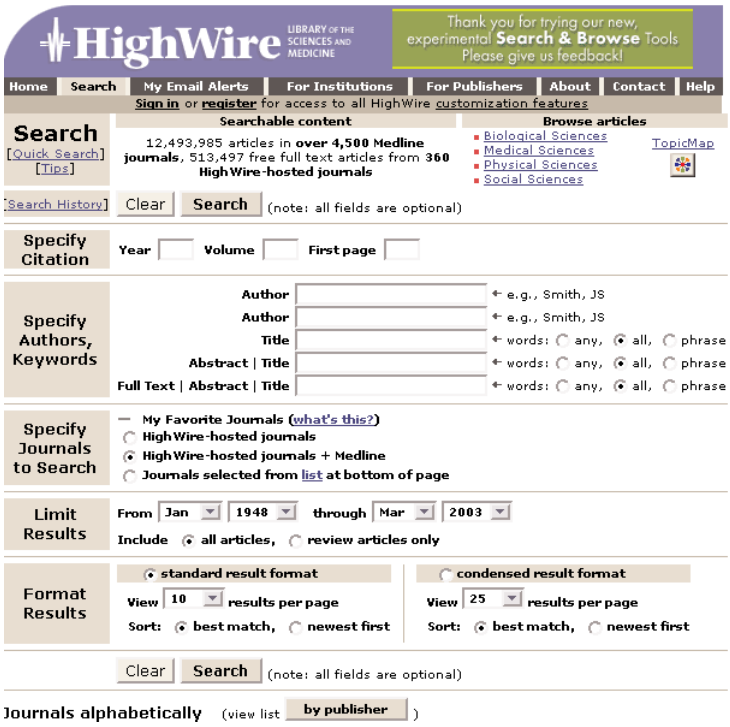
For more information on gift giving to the APS, please contact Martin Frank, Executive Director (Tel.: 301-530-7118, Email: mfrank@the-aps.org), or Robert Price, Director of Finance (Tel.: 301-530-7173, Email: rprice@the-aps.org).

"Advanced Search": Get Just the Results You Need

This article is sixth in the series highlighting the features and tools available at the new "portal" site from Stanford's HighWire Library of the Sciences and Medicine (HWLSM), which allows you to search all of Medline as well as full-text articles from 330 journals, including all the APS journals. The site is at http://highwire.stanford.edu. With the added - and growing - legacy content from the APS journals, this feature is particularly useful for any physiologist.

In this issue, we present some effective ways to conduct a search that will quickly find the information you need. The new HWLSM portal provides for very easy search 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.

Sometimes, however, you may 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 (Figure 1). You can 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:

- 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 in all HighWire journals or in 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, as in the case of the APS family of journals
- Search for articles published within 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:

- The results may be shown as full citations - about five lines per article, with full information - or as condensed citations, limited to two lines per article and having fewer links.
- You decide 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 a page of 10 items.
- Results may be 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 your 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.

In the future the portal will allow you to search by topic, in order to pick out (for example) articles in circulation without getting articles in vascular biology, even when a keyword might be used in both fields. ❖

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2002 APS Intersociety Meeting
The Power of Comparative Physiology: Evolution, Integration, and Application
August 24-28, San Diego, CA

The APS returned to the Town & Country Resort and Conference Center in San Diego for its third APS Intersociety meeting focusing on comparative physiology entitled *"The Power of Comparative Physiology: Evolution, Integration, and Application"*. The meeting, held August 24-28, included six guest societies: the Society for Integrative and Comparative Biology (SICB), Society for Experimental Biology (SEB), Canadian Society of Zoologists (CSZ), German Society of Zoologists (GSZ), the European Society of Comparative Physiology and Biochemistry (ESCPB), and the Australian & New Zealand Society of Comparative Biochemistry and Physiology (ANZSCBP).

As Chair of the Organizing Committee, **James Hicks** (University of California, Irvine) created a 4-day meeting that incorporated five plenary lectures, 19 symposia and 21 poster sessions. Presenters covered topics as wide-ranging as: regulation, renal function, genetics, hypoxia, integration, motor function, metabolism, neurophysiology, microarrays, homeostasis, muscle physiology, environmental physiology, diving, physiological evolution, host-parasite interactions, artificial muscles and robots, hypoxia, developmental physiology and plasticity. The organisms studied were also quite diverse, ranging from invertebrates (like the fruit fly and cabbage looper) on up the evolutionary scale to frogs, fish, reptiles, birds and mammals.

The meeting attracted 554 registrants—31% (177) were female and 35% (196) represented young scientists; including 54 postdoctoral and 142 student registrants. 22% (123) were members of APS or one of the 6 guest societies; 10% (58) were nonmembers; 28% (156) were invited speakers or organizers. Of the total registrants, 19% (105) worked outside The Americas, 3% (18) in US government labs and 1% (8) in industry.

The meeting agenda was arranged to feature a morning plenary lecture, followed by 4-5 concurrent symposia, which were then followed by unopposed poster sessions. The poster sessions were designed to maximize interaction among participants and featured beer, wine and light snacks. These *Poster Socials*, were sponsored each day by one of the top four journals publishing comparative research: Sunday was sponsored by *Comparative Biochemistry and Physiology*, Monday by *Physiological and Biochemical Zoology*, Tuesday by the *Journal of Experimental Biology*, and Wednesday was sponsored by the *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology.*

In addition to the scientific sessions, several social activities were offered to attendees. The Opening Reception on Saturday evening was an informal reception held poolside at the famed Town & Country's Tiki Hut; Monday featured a special-purchase dinner at the Scripps Institute of Oceanography's Birch Aquarium, and; the last night, Wednesday, featured the Scholander Award Banquet and Lecture. The Scholander Award lecture was presented by **Barbara Block** (Hopkins Marine Station, Stanford University) entitled *"The Fire Inside: Saving Atlantic Bluefin Tuna"*.

Three awards for best abstract presentation by a graduate student were presented during the Scholander Banquet. Recipients and their respective awards were: **The Society of**

Barbara A. Block, Hopkins Marine Station, Stanford University, presenting the Scholander Award Lecture.

Stan Lindstedt, Chair, APS Comparative Physiology Section presenting the APS Comparative Physiology Section's Scholander Award to Todd E. Gillis, Simon Fraser University. Jim Hicks, Chair, Conference Organizing Committee looks on.

Nora Terwilliger, Chair, DCPB, Society for Integrative and Comparative Biology presenting the SICB Young Investigator Award to John Zehmer, Arizona State University. Jim Hicks, Chair, Conference Organizing Committee looks on.

Rod Wilson, Animal Section Secretary, Society for Experimental Biology presenting the SEB Young Investigator Award to Scott D. Kirkton, Arizona State University. Jim Hicks, Chair, Conference Organizing Committee looks on.

Integrative and Comparative Biology Young Investigator Award presented to **John Zehmer**, Arizona State University for his presentation entitled *"Plasma membrane rafts of rainbow trout are subject to thermal acclimation"*; the **Society for Experimental Biology Young Investigator Award** presented to **Scott D. Kirkton**, Arizona State University for his presentation entitled *"Oxygen delivery problems may reduce jumping performance in larger locusts"*, and; the **Scholander Award**, sponsored by the **APS Comparative Physiology Section,** presented to **Todd E. Gillis**, Simon Fraser University for his presentation entitled *"Sequence mutations in teleost cardiac troponin C that are permissive of cardiac function at low temperatures"*. Each awardee received a cash prize and a one year complimentary subscription to the journal published by the sponsoring society.

From the outset, the inclusion young investigator participation was very important to the organizing committee who therefore designed a travel award program for graduate students and postdoctoral fellows. 55 travel grants were provided totaling over $30,000. Travel awardees that met application guidelines received partial travel reimbursement, complimentary registration and a ticket to the Birch Aquarium dinner event.

There were eleven recipients of the APS Porter Physiology Development Committee's Minority Travel Fellowship Award, supported by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) and the National Institute of General Medical Sciences (NIGMS).

The fellowship provides reimbursement of travel expenses and each recipient is matched with an APS member attending the meeting who offers guidance and makes introductions to other scientists. Recipients were: **Lee A. Aggison, Jr.**, Stillman College; **Thomas F. Gallegos**, New Mexico State University; **Vallie M. Holloway**, Loyola University Medical Center; **Rafael Alejandro Leos**, New Mexico State University; **Marcy K. Lowenstein**, Florida International University; **Rudy M. Ortiz**, University of California, Santa Cruz; **Elizabeth S. Quintana**, New Mexico State University; **Luciana Oliveira Santos**, University of Utah; **LaTonia Marie Stiner**, Wright State University; **Vanessa I. Toney**, Brown University; and **Ruth A. Washington**, Stillman College.

Conference attendees viewing poster presentations.

In all, 291 abstracts were programmed into poster sessions. Of these 36% (107) were represented by female presenters and 23% (68) were from countries outside The Americas. Researchers working in industry comprised 1% (4); those from US government labs also represented 1% (4) of the total submissions.

The Society wishes to thank the members of the Intersociety Meeting Organizing Committee: **James Hicks**, Chair (University of California, Irvine), **Albert Bennett** (University of California, Irvine), **Barbara Block** (Hopkins Marine Station, Stanford University), **Steven C. Hand** (Louisiana State University, Baton Rouge), **Donald C. Jackson** (Brown University) and, **Stephen C. Wood** (VA Medical Center, Nashville).

The Society gratefully acknowledges the financial support provided through unrestricted educational grants received from: National Science Foundation, US Army Medical Research Acquisition Activity, US Department of the Navy, Office of Naval Research, and the Thomas Maren Foundation.

Registration Type	Total	Percent
Member (APS or Guest Society)	123	31%
Retired Member	5	>1%
Nonmember	58	10%
Postdoctoral	54	9%
Student	142	25%
Invited Speaker or Organizer	156	28%
Nonscientist		
Guest of Registrant	15	2%
Undergraduate	1	>1%
	554	

Meeting attendees gather in front of the Scripps Institute of Oceanography's Birch Aquarium for dinner and relaxation.

Postdoctoral Positions

Postdoctoral Position: Opportunities for Research Professionals. Be part of one of the leading research efforts in the country. A career as a Postdoctoral research professional is filled with challenges, responsibility and exciting rewards. Nowhere will you find this more true than at The Children's Hospital of Philadelphia. As the first hospital in the nation dedicated exclusively to the care of sick children and their unique needs, The Children's Hospital of Philadelphia has been the setting of countless historic breakthroughs-such as vaccines against measles, mumps and rubella, the development of a balloon catheter for use in cardiology, and the generation of methods for changing sickle-shaped red blood cells that form the very foundation of pediatric medicine. This has ranked us among the best pediatric hospitals and research facilities in the world. It also helps us attract some of the very best research professionals from around the globe. We welcome you to join them and to find out what it means to love what you do. Excellence is a way of life. Whether you are about to embark on your journey in research or have been in the field for some time, you have come to realize the difference your work can make in the lives of others. At The Children's Hospital of Philadelphia, our research professionals always strive to remain at the forefront of scientific investigation, so the difference you make will be a difference that truly matters. Our immeasurable contributions in bringing innovations from "bench to bedside" are outweighed only by the level of commitment and depth of resources we dedicate to helping children and their families. It's not hard to love a career that can lead to making such a profound difference. We seek candidates who embrace challenges in both basic and clinical investigation. Professionals who thrive on discovering unique ways to advance science, develop safer drugs and devices, and contribute to the treatment and healing of children. But most of all, we need research professionals who relish working among others who love what they do. What's more, Children's Hospital provides you with benefits that go beyond the workplace. You'll discover an incredible array of enrichment and educational opportunities. Areas of Hire: Hematology, Neurology, Cardiology, Immunology, Oncology, Endocrinology, Genetics, Nutrition, Biostatistics. Love being among the best. Please email your reply directly to dudleyn@email.chop.edu.

Postdoctoral Position: A position is available immediately for a highly motivated and self-directed individual to work in the field of skeletal muscle tissue engineering as a tool for studying skeletal muscle wasting in response to microgravity. NASA-supported ground-based studies and Space Shuttle flight opportunities are scheduled over the next two years. An individual with a background in tissue engineering, mammalian cell biology, biochemistry, and/or bioengineering is desired. Please send resume to Dr. Herman H. Vandenburgh, Department of Pathology, Brown University School of Medicine/Miriam Hospital, 164 Summit Ave., Providence, RI 02906; email: Herman_Vandenburgh@brown.edu.

Postdoctoral Positions: University of South Florida College of Medicine, Department of Anatomy. Two postdoctoral research positions are available at the University of South Florida, College of Medicine, Department of Anatomy. Laboratory investigations are underway in a rat model to study the role of brain peptides in the neuroendocrine and behavioral manifestations of stress. The long-term objective of this research is to advance our understanding of the neuronal circuitry as well as neurotransmitters/ regulators acting during stressful stimulation. Ultimately, the results of this work will facilitate the discovery of novel treatment methods for stress-related illnesses. The research project is funded by grants from the National Institutes of Health and the National Science Foundation. These positions are offered in functional neuroanatomy/psychopharmacology and behavioral research. The ideal candidate should have a PhD or MD, as well as relevant experience in a neuroscience-related field. Applications including a CV and the names of three references should be sent to: Gabor Legradi, MD, Assistant Professor, University of South Florida, College of Medicine, Health Sciences Center, Department of Anatomy, MDC Box 6, 12901 Bruce B. Downs Blvd. Tampa, FL 33612-4799; email: glegradi@hsc.usf.edu.

Postdoctoral Fellow: A Howard Hughes Medical Institute funded laboratory at the Stokes Research Institute of The Children's Hospital of Philadelphia is seeking three postdoctoral fellows. The focus of the laboratory is the molecular basis of blood coagulation and the use of gene transfer strategies to treat bleeding disorders. Active projects include development of novel gene transfer strategies based on AAV (adeno-associated virus), immunology of AAV-mediated gene transfer to muscle and liver, and characterization of novel (transgenic/knock-out) mouse models for gene transfer in hemophilia. Candidates with MD or PhD should apply. Requirements include a strong background in molecular biology or cellular immunology. Tissue culture and/or small-animal experience is also helpful. Applicants please send curriculum vitae (including email and references) and two letters of reference to Dr. Katherine High, 310 Abramson Research Center, 3615 Civic Center Blvd., Philadelphia, PA 19104; fax: 215-590-3660; email: high@email.chop.edu. We offer competitive compensation packages; medical, vision, prescription, dental, and life insurance; tuition assistance; training and staff development; and work/life benefits

Research Positions

Research Associate/Postdoctoral Fellow: Washington University School of Medicine. Research Position for recent PhD interested in central neural mechanisms of cardiovascular control. Cardiovascular physiology background is highly desirable. Salt-induced hypertension will be studied by anatomical (viral transneuronal tracing and immunohistochemistry) and functional methods. Salary is consistent with NIH guidelines. Contact: Arthur D. Loewy, PhD, Department of Anatomy & Neurobiology, Box 8108, Washington University School of Medicine, St. Louis, MO 63110; phone: 314-362-3930; fax: 314-362-3446; email: loewya@pcg.wustl.edu.

Assistant Research Scientist: University of Iowa Carver College of Medicine; Department of Internal Medicine; Pulmonary, Critical Care and Occupational Medicine Division. The Department of Internal Medicine,

Pulmonary, Critical Care and Occupational Medicine Division is seeking an Assistant Research Scientist to perform basic research directed at understanding inhibition of allergen-mediated airway inflammatory responses using molecular biology, basic immunology, and animal model approaches. The candidate will be responsible for recording and presenting results, as well as for the completeness and accuracy of the research work. Requires a person in this classification has the academic knowledge of a discipline that is generally associated with a Doctoral degree, or an equivalent professional degree, i.e., MD, DDS or DVM. In addition, the person will have demonstrated the ability to plan and execute a research study through some progressively responsible independent research work. Requires considerable experience with tissue culture; animal handling and transgenic mice; immunological methods; and molecular biology. Desires experience with confocal and standard fluorescent microscopy. Please send resume and cover letter indicating #44707 to: Carol Wehby, Human Resources, Internal Medicine, E400 GH, 200 Hawkins Drive, Iowa City, Iowa, 52242-1081. [EEO/AA]

Research Assistant III: University of Iowa Carver College of Medicine; Department of Internal Medicine; Nephrology Division; The Department of Internal Medicine, Nephrology Division is seeking a Research Assistant III to participate in the design, execution and control of laboratory research work, focusing on understanding the relationship between protein mutations and congenital diseases, particularly in the areas of deafness and skeletal abnormalities. To address fundamental questions at the molecular level on why defects in ion transport proteins cause disease. To process and analyze data, coordinate the conduct of experimental tests and procedures; and develop new and/or revised research methodologies. Requires the academic knowledge of a discipline, including advanced study of demonstrated capacity for natural or health science research that is generally associated with a Master's degree or an equivalent combination of education and progressively responsible work experience. Desires reasonable experience with the following techniques: enzyme assays, cell culture, cDNA cloning, gel electrophoresis, PCR, Western and Northern blot analysis, isolation of RNA, immunofluorescent microscopy, and analysis of data using computer software. Please send resume and cover letter indicating #44712 to: Carol Wehby, Human Resources, Internal Medicine, E400 GH, 200 Hawkins Drive, Iowa City, Iowa, 52242-1081. [EEO/AA]

Biological Science Assistants: The U.S. Army Research Institute of Environmental Medicine (USARIEM) in Natick, MA has multiple positions available for qualified Biological Science Assistants. USARIEM conducts basic and applied research concerning optimization of performance under stressful conditions and avoidance of associated medical problems. The positions require enlistment in the U.S. Army for 5 years with assignment to USARIEM, located in the Boston suburbs. Education requirement is a Bachelors or Masters Degree in biology, physiology, microbiology, molecular biology or biochemistry. Applicants should have a history of high academic achievement and be highly motivated. Previous experience as a research technician employing procedures related to either animal, tissue and/or molecular research is desired. Benefits include student loan repayment up to $65K, enlistment bonus up to $20K, housing, medical, graduate educational opportunities, as well as excellent research experiences in a variety of scientific disciplines including environmental and exercise physiology, pathophysiology, genomics, and molecular biology. Further information about our institute can be found at our website, www.usariem.army.mil. Candidates can obtain further information by sending a letter of interest and resume or CV to: Dr. Michael N. Sawka, Chief, Thermal and Mountain Medicine Division, U.S. Army Research Institute of Environmental Medicine, Natick, MA 01760-5007; phone: 508-233-5665; email: michael.sawka@na.amedd.army.mil.

Bioanalyst: The Metabolic Diagnostic Laboratory at The Children's Hospital of Philadelphia is seeking a Bioanalyst with a PhD degree in Biochemistry or Chemistry, preferably with 2 years of Postdoctoral experience. Knowledge of biochemical techniques such as gas chromatography/mass spectrometry, tandem mass spectrometry, enzyme-substrate analysis and metabolite/analyte determinations and familiarity with mitochondrial procedures is emphasized. The Metabolic Diagnostic Laboratory serves as the reference laboratory in the Mid-Atlantic region for the diagnosis of inborn errors of metabolic/genetic diseases. These include inherited organic acid, amino acid and carbohydrate disorders as well as lysosomal storage diseases (lipidosis and mucopolysaccharidoses), peroxisomal diseases and mitochondrial abnormalities. The Children's Hospital of Philadelphia houses the Department of Pediatrics of the University of Pennsylvania Medical School and is located next to the Medical School and University Hospital on the Penn Campus. Our organization has been selected as the best pediatric hospital in the nation by Child Magazine for the second consecutive time. As such, we offer total compensation packages befitting a world-class institution. Apply online at http://careers.chop.edu or fax your credentials to 215-590-5225. Use reference ID 53 in your correspondence. You may also email your reply directly to schaaf@email.chop.edu.[EOE]

Technical Director: The Children's Hospital of Philadelphia seeks candidates for a Technical Director of a newly created Bioinformatics Facility. Under the general supervision of the Faculty Director of Bioinformatics, the Technical Director will be responsible for overseeing a facility for providing bioinformatics and computational biology support to the Children's Hospital of Philadelphia. The Technical Director will work closely with investigators, data generation facilities, Information Systems, and a number of associated groups to assist approximately 200 investigative groups with computational solutions to their basic and clinical research efforts. Responsibilities include: Multifaceted position with responsibilities in project requirement analysis, applications development and support, user support, and systems management. Provide computer systems, applications development, and maintenance to support basic research by researchers at the Stokes Research Institute. Evaluate and choose computer system, hardware, and software for the Core Facility. Independently design, program, test, modify, enhance, maintain, and support applications. Interact with end-users to facilitate data exchange and data analysis of end-user projects. Qualifications: Education and Experience required: PhD,

MD, or, in exceptional cases, MS degree in Computer or Information Science, Computational Biology, Medical Informatics, or a closely related degree; three years experience in Bioinformatics or a closely related field; three years experience in both system management and programming; proficiency in one or more Unix-based operating systems; fluency in compiled languages C/C++, java, and/or perl required; familiarity with standard bioinformatics analysis tools and both PC/MAC database and communication software. Must be able to select, set and meet appropriate goals from among competing demands and work substantially independently within a team environment. Previous experience in management of personnel strongly desired. Must possess excellent interpersonal, verbal and written communication skills and must have an ability to establish priorities and meet deadlines. Direct inquiries, nominations, and applications with cover letter in confidence to Peter S. White at careers@genome.chop.edu. You may also apply online at http://careers.chop.edu or fax your resume to 215-590-4644. Use reference ID 41 in your correspondence. [AA/EEO]

Academic Positions

Faculty Position In Exercise Physiology: The Department of Biological Sciences at Benedictine University is looking to fill a tenure-track position at the Assistant Professor level beginning fall 2003. Qualifications: PhD in Exercise Physiology or related field with teaching experience is required. Duties and Responsibilities: Teaching courses in the Masters of Clinical Exercise Physiology program and related courses at the undergraduate level, course development, a faculty/student research program in the laboratory and/or collaboration with professionals in the biomedical community. Limited extramural funding is available to support faculty/student research. Application Process: Please submit a cover letter, curriculum vitae, statement of teaching and research interests, and three letters of recommendation to Nicole Diehl, Employee Services, Benedictine University, 5700 College Road, Lisle, IL 60532; phone: 630-829-6015; fax: 630-960-9946. Date Posted: December January 16. Applications will be accepted until the position is filled. Benedictine University is a liberal arts institution located in the east-west research corridor of metropolitan Chicago with nationally recognized undergraduate programs in the sciences and an established Exercise Physiology Masters program. [EEO/AA]

Faculty Position: Reopening search for a tenure-track faculty position in physiology, beginning with the 2003-04 academic year. Primary teaching responsibilities include human physiology and comparative animal or vertebrate physiology, with the possibility of either nutrition or general biology for non-majors. PhD and ABD considered. A commitment to undergraduate teaching in a liberal arts setting is required. Augustana is a comprehensive 4-year liberal arts college of 2,250 students. There are 400 students majoring in biology and the pre-health professions. Send a cover letter, curriculum vitae, graduate transcripts, statements of teaching and research philosophy and three reference letters (including work telephone number and/or email address) to Dr. Richard Jurasek, Dean of Faculty and Curriculum, Augustana College, Rock Island, Illinois, 61201. The screening process begins as applicant files are received and continues until the job is filled. [EOE/AA]

Assistant/Associate Professor: The Department of Physiology of the Brody School of Medicine at East Carolina University, a constituent institution of the University of North Carolina System, is seeking applicants for several tenure-track faculty positions. The Department currently has 11 full-time faculty, and a strong doctoral training program. Please visit our web site at www.ecu.edu/physio for further information about the department and specific faculty research interests. Applicants must have a PhD, MD, or equivalent degree and appropriate post-doctoral training. While individuals with expertise in any area of physiology will be considered, we particularly are seeking candidates whose research applies to modern cell, molecular and/or genomic techniques or one of the following interdisciplinary themes currently represented in the school and department: cardiovascular/pulmonary; neuroscience; and regulation of cell growth and differentiation. The successful candidate will have a strong publication record and will be expected to develop an extramurally funded research program. In addition, the successful applicant will have an adequate background in organ systems physiology, and will contribute to team-taught courses for medical, allied health, and graduate students. A competitive start-up package will be available. Interested applicants should submit a curriculum vitae, a short description of their research goals, teaching experience and the names of three references to: Robert M. Lust, PhD, Professor and Chair, Department of Physiology, Brody School of Medicine at East Carolina University, 600 Moye Blvd., Brody 6N98, Greenville, NC 27858-4354. A start date of July 2003 is anticipated, and review of applicants will continue until the positions are filled. Proper documentation of identity and employability required at time of employment. Applications are particularly welcomed from women and members of under-represented minority groups. [EEO/AA]

Chair-Medical Pharmacology and Physiology: School of Medicine, University of Missouri-Columbia. The University of Missouri-Columbia School of Medicine seeks candidates to be chair for a newly formed department of Medical Pharmacology and Physiology that includes the disciplines of Pharmacology and Physiology. The department will become the academic home for current faculty with research strengths in cardiovascular function, diabetes, cellular signaling, and receptor or channel activity, as well as for a large number of new faculty that will be recruited to strengthen translational research in the Centers for Cancer, Diabetes and Cardiovascular Health and the Neurosciences. Outstanding resources, including endowed positions are available for the development of strong research and educational programs. The successful candidate will be expected to have a PhD or MD with a distinguished research background and program, to have the ability to build interdisciplinary research, and to lead the development of a department that will foster outstanding basic and translational research, as well as graduate and medical education. Please send a resume, a narrative of research and educational interests and the names of three references to: Chair Search Committee, Mark McIntosh, PhD, Dean's Office-School of Medicine, University of Missouri-Columbia, MA202, One Hospital Drive,

Columbia, Missouri 65212; phone: 573-884-8733; email: mcintoshm@health.missouri.edu. Active Review of applications will begin immediately and the search will continue until the position is filled. The University of Missouri-Columbia is an equal opportunity employer, affirmative action employer and complies with the guidelines set forth in the Americans with Disabilities Act of 1990. Visit the University of Missouri-Columbia's website at http://www.missouri.edu/. Please direct ADA accommodation requests to our coordinator at 884-7278 (V/TTY)

Positions Wanted

Physiologist seeking full-time teaching position: 25 years' experience in medical and undergraduate schools teaching all aspects of physiology to medical, paramedical and science students, followed by 11 years fulltime as a Research Physiologist/ Immunologist. I wish to return to teaching at university level. Voted best instructor by students. I have also taught Cell Physiology, Biology, Genetics, and Biology of Sex, and have prepared the courses "Medical Aspects of Weapons of Mass Destruction" (suitable for CME credit) and "Exercise Physiology". Wrote the most recent chapter on heat illnesses in the Textbook of Military Medicine, the most current therapy for heatstroke in Annals of Internal Medicine and a review of the effects of stress on the immune system. My current research is in the areas of Heat and Exercise Physiology and Physiological Genomics. Previously, many other areas of physiology and immunotherapy. A good deal of experience in clinical research with expertise in federal regulations for carrying out clinical research according to GCP standards as well as IRB procedures. Please respond by phone: 508-370-4536 or email: Batgalim@rcn.com.

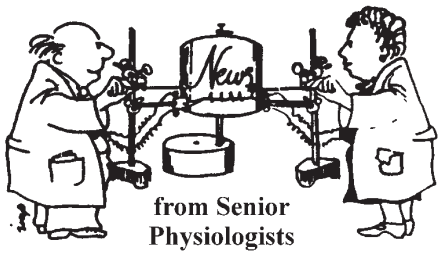
Letter to David Bohr

Alan F. Hofmann writes: "I am responding to your letter received shortly after my 70th birthday. I apologize for the delay, but I have been too busy to give you a proper response.

"I continue to work on selected problems relating to bile acids. For some four decades, I have devoted my research activities to elucidating the biology and chemistry of these water-soluble, amphipathic end products of cholesterol metabolism. I have tried to define their metabolism and physiological functions in animals and in man and how these functions are perturbed in disease. The research has been translational-from bench to bed and back to the bench. As someone trained in clinical medicine, I have kept my research oriented toward human disease and when possible done experiments in man to validate concepts developed in animals. The work has been fun and involved a variety of disciplines.

"After finishing a residency in internal medicine, I had research training at the National Institutes of Health as a clinical associate where I attempted to educate myself in biochemistry and cell biology. Then I was fortunate to be able to spend three years working under the direction of Bengt Borgstrom at the University of Lund, Sweden where we tried to describe fat digestion using principles of physical chemistry. Returning to the US, I worked on bile acids as related to cholesterol metabolism at the Rockefeller University, and then from 1966 to 1977 served as a co-director of clinical and basic gastrointestinal research at the Gastroenterology Research Unit of the Mayo Clinic and Mayo Foundation. Since 1977, I have been in the Department of Medicine of the University of California, San Diego. At both the Mayo and UCSD, I established a laboratory capable of synthetic organic chemistry, animal and clinical investigation.

"At the Mayo, we discovered that one of the natural bile acids (chenodeoxy-cholic acid) when administered orally would decrease hepatic induce the slow dissolution of cholesterol gall-



stones. Today, medical dissolution of gallstones has been largely replaced by laparoscopic cholecystectomy, but our work (and that of many others) made this common malady of interest to the scientific community. At UCSD, my colleague, Lee Hagey, initiated a program in cooperation with the Zoological Society of San Diego aimed at defining biliary bile acid composition in vertebrates. Using chromatographic techniques, he has examined the biliary bile acids of hundreds of vertebrates, and discovered several completely new bile acids. With the late Karol Mysels, a renowned physical chemist, we defined the structure activity relationships of bile acids as it relates to micelle formation, as well as the rules of precipitation of insoluble calcium salts of bile acids. During the last ten years, we synthesized a novel conjugated bile acid that was resistant to bacterial attack and have shown that this compound enhances the nutrition of undernourished patients with the short bowel syndrome. At present, with Lee Hagey, I am using the powerful technique of electrospray mass spectrometry to define the prevalence of defective bile acid synthesis in children with constipation.

"Through the years, I have been most fortunate in attracting truly remarkable postdoctoral fellows many of whom have gone on to distinguished careers in clinical medicine. I stopped taking postdoctoral fellows about four years ago because I felt that I was not training them in the powerful techniques of molecular biology whose use appears to be essential for extramural funding. But we have maintained the analytical laboratory that has permitted us to keep thinking about the chemistry of bile acids, and permitted several valuable collaborations.

"From an educational standpoint, I helped to co-found the Undergraduate Teaching Project of the American Gastroenterological Association. This project has resulted in the creation of outstanding slides for the teaching of gastrointestinal physiology and pathophysiology. Four years ago, with the support of the Falk Foundation, I co-authored a biography of the late Siegfried Thannhauser, once Professor of Medicine at the University of Freiburg, Germany, a distinguished clinical investigator and clinician, and author of the first textbook of metabolic biochemistry in Germany. Thannhauser, who was of Jewish ancestry, was dismissed from his position by the National Socialists, and emigrated to America to begin a new career in practice and clinical lipodology at Tufts University Medical School.

"As I look back on my long career of singe-minded laboratory and clinical investigation, I am pleased that I have had the thrill of discovery, the satisfaction of occasionally helping patients, and the friendship of many talented postdoctoral fellows. My only regret is that I did not have the ability to do this and be simultaneously a wise and caring physician. I have always been based in a clinical department, which has kept me humble in the presence of so much ignorance about human disease, and at the same time, has led to valuable collaborations. My involvement with the American Gastroenterological Association and the American Association of the Study of Liver Diseases, has precluded me from any extensive service with the American Physiological Society, surely one of our great national societies. I have enjoyed the friendship of two of its stalwart statesmen-Horace Davenport and the late Charles Code.

"If I ad to give any advice to young scientists, it would be to 'know thyself.' It is important to find out early in life whether the thrill of discovery is sufficient to compensate for the sacrifice of time with family and friends that experimental science entails. If it is, then a career in investigation will be

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rewarding. If it is not, then one should pursue a career that leaves time for the pursuit of the many other pleasures that life offers.

"In the next ten years, health permitting, I will continue to write up unpublished work and pursue collaborations that use our facilities for chemical analysis of bile acids. There will be more time for travel and family (my lovely wife Heli, two daughters, and five grandchildren). I toy with the idea of authoring a monograph that would provide an introduction to the fascinating field of 'cholanology' (the science of bile acids), but I do not know if there is sufficient interest in this small field to justify the immense effort that would be required.

"It has been great fun and it is still continuing."

Letter to Felix Bronner

Desmond R. H. Gourley writes: "Thank you for remembering my 80th birthday which occurred in the fall of 2002. I will attempt to briefly answer the questions you posed. After earning a doctorate in cell physiology at the University of Toronto, I took postdoctoral training under the direction of Dr. C. L. Gemmill at the University of Virginia. This led to an appointment as Assistant Professor in the Department of Pharmacology in the UVA Medical School in 1951 with subsequent promotions up to Professor of Pharmacology and periods as Acting Chairman and Chairman in 1965-69. An opportunity to help to establish a new medical school took me to Eastern Virginia Medical School in 1973 and I retired from this institution as Professor and Chairman of Pharmacology in 1986.

"I owe much to my mentors, Dr. K. C. Fisher at Toronto and Dr. C. L. Gemmill at Virginia, both of whom encouraged me in my interest in the movement of ions across cell membranes and the effects of drugs on these processes. Like most APS members in academic medicine, I combined laboratory investigations with teaching. I have been particularly interested in new teaching methods and since the late 1940s have participated in the evolution of the animal laboratory part of basic medical science courses into programs of small-group problem-solving exercises. I have always been a strong proponent of pointing medical students in the direction of what they needed to know in order to solve clinical problems and co-edited what I believe was the first comprehensive compilation of learning objectives in medical pharmacology.

"I am not now involved in physiology/pharmacology research. Upon retirement, my wife and I seized the opportunity to indulge our long-postponed interests in other areas. High on our list is expeditionary travel with other scientists to out-of-the-way places in the world that occupies us about two months of the year. This, in turn, has provided us with occasions to study and photograph wild life in natural settings. The adventures and images usually lead to illustrated travelogs presented each year in several venues in Virginia and further afield. This dovetails nicely with our interest in the Wintergreen Nature Foundation that we helped to found and on whose Board I have served in the past.

"In addition to the above activities, my wife and I have devoted much time to family history, another long-standing interest. I write for several genealogical publications and review books for one of them. I also contribute occasional essays to a National Public Radio outlet in central Virginia. There is also hiking in summer and skiing in winter in the Blue Ridge Mountains where we have our home.

"The inevitable aging process is beginning to take its toll on both my wife and me but we are in reasonably good health. Our five sons and their families live in widely scattered locations but e-mail is a wonderful way to keep in touch with them and with old friends."

Letter to Edgar Folk

Jean M. Marshall writes: "Thank you so much for your congratulatory letter on my 80th birthday, 12/31/02. My reply was delayed by preoccupation with shoveling snow and empting kitty litter, tasks that take considerably longer at my advanced age. You requested some philosophical observations about life and Physiology. Waxing philosophical and sequestering cats are the definitive indications of senility. After this letter I fully qualify on both counts.

"My professional life as a physiologist was one of unqualified pleasure primarily because it was initiated and nurtured by a series of remarkable individuals. To these individuals I owe my undying gratitude. To Abby Turner and Charlotte Haywood, my undergraduate teachers, who introduced me to the wonders and excitement of Physiology. To Wallace Fenn who supervised my graduate work. He was a tolerant, understanding, gentle professor who gave me complete independence and responsibility to make my own mistakes but was always available for support when things went wrong. The perfect mentor. To Harold Burn and Edith Bulbring who tolerated this brash Yank during her postdoctoral years. Their Department was like a family where the latest research findings were frequently shouted from the second floor balcony for everyone to hear. Arguments followed during lunch. Everyone worked hard and played hard! To Philip Bard, Vernon Mountcastle, Jerzy Rose and Otto Krayer who provided encouragement and advice during my early real professional life. Finally to the postdoctoral, medical and undergraduate students who brought youthful enthusiasm, energy, new insights and frequently just plain fun into the lab. As an added bonus to the support and help these individuals also gave me a lifetime of warm friendship. To all of these wonderful people I say 'thanks for the great ride', and 'I'm unanimous in that.'

"To my parents who gave me good genes so that now I still can creak

around, swim, walk, garden, volunteer and one day/week take the 'T' (no sane person drives into Boston) to the Boston Medical Center where I assist (?) a young colleague in the Vascular Research Institute and attend seminars. Although I don't understand much of what the speaker says the luncheons are great.

"A final philosophical aphorism: the greatest teachers are usually also the greatest researchers. Again my thanks to you and the Society for remembering me at 80. During my next 80 years I intend to become a veterinarian."

Letter to Alan Hofmann

Arthur B. Otis writes: "Thank you for your letter. I no longer do any scientific work, but I do keep in touch with the Physiology Department. My only recent publication (*Am J Crit Care Med* 161: 345-346, 2000) was by invitation and was based on reminisences. You ask which of my contributions do I think most important. I will leave that for others to judge. Most of them were important to me because they revealed or clarified relationships that I had not previously appreciated. You ask if I have any words of wisdom to pass on to younger colleagues. The following anecdotes may serve.

"While at Iowa as a post doctoral fellow, I had a job offer elsewhere, and I went to my boss, Dr. Bodine for advice. One thing he said I will always remember: 'Get yourself a sail not an anchor.'

"At the Johns Hopkins my initial responsibility was to ensure that blood sampling and analyses were properly done. After a few weeks Dr. Blalock told me that he wanted me to do some of the catheterizations myself. I pointed out that I didn't have an M.D. degree. His reply was, 'Arthur, you should know that degrees don't amount to a damn.' So I learned the technique and was soon teaching it to interns and residents.

"Also at the Hopkins part of my appointment was in the Physiology Department where Dr. Philip Bard was chairman. When I had an offer to come to Florida to be the first Physiology Department head in the new medical school, I discussed the matter with Dr. Bard. A word of advice from him was, 'Just make sure that you don' t have to go to some damned Dean every time you want a nickel'.

"I have been very fortunate during my 89+ years to have had so many friends, associates, and superiors who have been most helpful in making my life pleasant and productive. I am grateful to them." ❖

Books Received

Cellular Physiology of Nerve and Muscle. 4th Edition.
Gary G. Matthews.
Malden, MA: Blackwell Publishing, 2003, 235 pp., illus., index, $54.95.
ISBN: 1-4051-0330-2.

Disorders of Development and Learning. 3rd Edition.
Mark L. Wolraich.
Hamilton, Ontario, Canada: BC Decker Inc., 2003, 373 pp., illus., index, $79.95.
ISBN: 1-55009-224-3.

Exercise Physiology: People and Ideas.
Charles M. Tipton (Editor).
New York: Oxford University Press, 2003, 510 pp., illus., index, $85.00.
ISBN: 0-19-512527-4.

Functional Morphology of the Vertebrate Respiratory Systems.
J.N. Maina.
Enfield, NH: Science Publishers, Inc., 2002, 171 pp., illus., index, $95.00.
ISBN: 1-57808-253-6.

Treatise on Pineal Gland in Melatonin.
Chandana Haldar, Muniyandi Singaravel, and Saumen Kuman Maitra (Editors).
Enfield, NH: Science Publishers, Inc., 2002, 565 pp., illus., index, $147.00.
ISBN: 1-5708-225-0.

"Carbon Monoxide and Cardiovascular Functions"

Rui Wang (Editor).
Boca Raton, Fl: CRC, 2002, 320 pp., illus., index, $129.95
ISBN: 0-8493-1041-5

This book contains fifteen chapters by investigators who have contributed data that support the concept that there are effects of endogenously produced carbon monoxide on cardiovascular function. It is a by-product of an international symposium and the emphasis in most of the chapters is on research performed by the authors. In general, topics are restricted to possible carbon monoxide signaling in the cardiovascular system, emphasizing heme oxygenase (HO)-catalyzed formation of carbon monoxide and how this may activate soluble guanylyl cyclase or modulate cytochrome P-450 or Kv, KCa2+ and KATP channels. There are chapters that review possible roles of HO-1- and/or carbon monoxide-mediated signal transduction in patients with hypertension, diabetes, cardiac dysfunction states, cardiovascular inflammation, and ischemic heart damage. There is an interesting description of a single human patient that had HO-1 deficiency, but it is not clear if pathophysiology was due to lack of carbon monoxide signaling or an effect of HO-1 deficiency independent of its role in producing endogenous carbon monoxide.

A major value of this volume is that the reader obtains a sense of an active area of research and the tools that are currently being used in this research. The book is most worthwhile for people interested in details of multiple investigations reviewed here. However, individual chapters add little that wasn't addressed in previously communications written by the authors who contributed to this book. There is considerable redundancy in different chapters, the quality of the presentations is variable and an overview of the field is not well developed. Because the authors consider only cardiovascular investigations, contributions of workers who made seminal early observations that drove the field of carbon monoxide signaling are largely ignored. It would have been useful to include a chapter devoted to whether or not carbon monoxide formed via HO-catalyzed heme degradation is involved in signal transduction, reviewing data obtained in different tissues and preparations, the limitations of the database, and how this cascade might operate. Because of HO's important role as a key component of the carbon monoxide signaling system, it would be pertinent to include an in depth discussion of what is known about HO isoforms, including putative activation and inactivation mechanisms and control of substrate availability. One looks but does not find a critical discussion of the assumption that cellular effects of experimentally altering HO-1 content are due to effects on CO-mediated signal transduction. Because of the parallelism between nitric oxide-, carbon monoxide-, hypoxia- and hyperoxia-induced signaling, this reviewer would have liked to see an in-depth comparison of these signaling systems (there is a chapter devoted to nitric oxide and carbon monoxide signaling but it could be considerably expanded on). There is no considerations of temporal or spatial aspects of carbon monoxide signaling or how this putative mediator is degraded or excreted. In conclusion: this book brings together multiple studies of different areas of carbon monoxide signaling in cardiovascular tissue which could be valuable to investigators, but lacks broad and critical discussion. ❖

Ronald F. Coburn
University of Pennsylvania
School of Medicine

APS Awards

The APS sponsored awards are plentiful, but in order to be considered, don't forget to submit the application information before the deadline!

Award	*Next Deadline*
William T. Porter Fellowship Award	June 15
Research Career Enhancement Awards	October 15
Teaching Career Enhancement Awards	October 15
Shih-Chun Wang Young Investigator Award	November 1
Arthur C. Guyton Awards in Integrative Physiology	November 1
Giles F. Filley Memorial Awards for Excellence in Respiratory Physiology and Medicine	November 1

For more information visit the APS website at www.the-aps.org/awards.htm

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Kaley Receives ACDP Distinguished Service Award

Irving G. Joshua, President of the Association of Chairs of Departments of Physiology (ACDP), presented the ACDP's highest award, the Distinguished Service Award, to **Gabor Kaley** during the organization's recent fall meeting in Santa Fe, New Mexico. The following is a synopsis of **Irving Zucker's** (President-elect of ACDP and former student of Dr. Kaley) remarks during the presentation.

Gabor Kaley of the New York Medical College was selected to receive the ACDP Distinguished Service Award for his long and illustrious service to ACDP, to science, and to physiology.

Kaley was born in Budapest, Hungary. He graduated from Berzenyi Gymnasium (high school) in 1944 and then continued on to Pazmany University Medical School in 1945-1946. He then left Hungary and attended Goethe University Medical School in Frankfurt, Germany from 1946 - 1947. He immigrated to the US and enrolled at Columbia University, receiving a BS degree in 1950. He continued his education at New York University, being awarded a PhD in 1960.

After postdoctoral training and an instructorship in the Department of Pathology at New York University Medical Center, the department hired him as an Assistant Professor in 1962. In 1964, he moved to the Department of Physiology as an Associate Professor, where he remained until 1970. He then moved to New York Medical College as a full Professor and Acting Chair in the Department of Physiology in 1970. He was named permanent Chair of the Department in 1972 and remains in that position today.

Gabor Kaley receiving the ACDP Distinguished Service Award from Irving Joshua, ACDP President and Irving Zucker, ACDP President-elect.

Kaley's research career started with initial studies on the comparative physiology of renin. His first paper was "The histologic distribution of renin in the kidneys of the rat and rabbit" published in the *American Journal of Pathology* in 1960. Kaley has been interested in the pathogenesis of hypertension and vascular biology for his entire career. He has published extensively in the area of the regulation of microvascular tone in a variety of disease states. His most notable accomplishments are related to the elucidation of the roles of nitric oxide and prostaglandins in mediating flow dependent vasodilation. The effects of exercise and estrogen on this regulation have been a current focus of his laboratory.

The Distinguished Service Award has always placed an emphasis on the awardees' mentoring abilities. Kaley's list of students and trainees is extensive, with many of them going on to illustrious careers and department chairmanships of their own.

Dr. Kaley has received many honors and awards, including the Distinguished Teacher Award from New York Medical College in 1971, the Semmelweis Medal from Semmelweis Scientific Society in 1982, election to the Hungarian Academy of Sciences in 1988, the Eugene M. Landis Award from Microcirculatory Society in 1994, the George E. Brown Memorial Lecture from the American Heart Association in 1998 and the Carl J. Wiggers Award from The American Physiological Society in 2000.

He also holds memberships in many scientific societies in addition to ACDP. These include the American Physiological Society; American Heart Association, where he is a member of the Council on Basic Cardiovascular Sciences and a Fellow of the Council on Circulation; American Society of Nephrology; European Society for Microcirculation; Microcirculatory Society; and the New York Academy of Sciences, among others.

Because of his scientific endeavors, his mentoring abilities, and his service to ACDP and physiology, the ACDP was proud to present its 2002 Distinguished Service Award to Gabor Kaley.

American College of Critical Care Medicine Honors Richard J. Traystman, PhD, FCCM

For his scientific and educational contributions to the field of critical care, **Richard J. Traystman**, is being honored by the American College of Critical Care Medicine with the 2003 Distinguished Investigator Award. The award recognizes an established and active clinical investigator for meritorious and pioneering clinical research in critical care medicine who has significantly contributed to the understanding of disease or treatment of patients.

As a result of his research, critical care professionals have a better understanding of the breadth and application of the adult, neonate and fetal brain. For the past 30 years, Traystman has investigated the brain and the regulation of blood flow in clinical disease states, cardiac arrest, and stroke.

An admired educator, Traystman has inspired both students and colleagues. He is a Distinguished University Research Professor and

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Senior Vice Chairman of the Department of Anesthesiology/Critical Care Medicine at the Johns Hopkins Medical Institution, and serves as Professor of Medicine and Professor of Environmental Health Sciences.

"Without question, Dr. Traystman aspires to the Society's high ideals and fulfills all of the professional and personal qualifications for this esteemed award," says ACCM Fellow, David T. Porembka, DO, FCCM. "His leadership has spawned many young investigators to which some are well known to our Society and continues to seek out answers so we can better understand disease and intervene appropriately in these critically ill patients." He is the role model for us all and will continue to search for the critical answers in life's complexities."

Having published in more than 400 peer-reviewed journal articles, Traystman has received numerous distinguished awards from both clinical and basic science organizations for his work, including honors from the Society of Critical Care Medicine, American Society of Anesthesiologists, and the American Physiological Society. He received his BS and MS degrees from Long Island University in 1963 and 1966 respectively. In 1971, he earned his PhD in cardiopulmonary physiology from Johns Hopkins University Medical Center.

Skorton Selected to Serve as University of Iowa President

APS Member, **David J. Skorton** has been selected by The Board of Regents, State of Iowa to be the next president of The University of Iowa. Skorton assumed the University presidency on March 1, 2003.

Skorton, the current vice president for research and external relations, has been a faculty member at The University of Iowa since 1980. He was appointed vice president for research in 1992 and named interim vice president for external relations in July of 2000. He became vice president for research and external relations in March 2002. In addition, he holds a joint appointment as professor of internal medicine and professor of electrical and computer engineering and of biomedical engineering.

Skorton heads a research and development program that ranks among the nation's top 20 public research universities in obtaining external funding. Under his administration, yearly totals for external funding have increased from about $150 million to $341 million. He is also a strong proponent of interdisciplinary programs in teaching and research. Skorton has developed a number of model internal funding programs for research at the UI, including the nationally recognized Iowa Arts and Humanities Initiative. He also sees patients regularly at University of Iowa Hospitals and Clinics, where he is co-founder and co-director of the UI Adolescent and Adult Congenital Heart Disease Clinic.

He earned his bachelor's degree in psychology in 1970 and an M.D. in 1974, both from Northwestern University. Following a medical residency and cardiology fellowship at the University of California, Los Angeles, he came to The University of Iowa in 1980 as an instructor. He was named assistant professor in internal medicine in 1981 and assistant professor in electrical and computer engineering in 1982. He was promoted to associate professor in 1984 and to professor in 1988. His research has focused on congenital heart disease in adolescents and adults, and on cardiac imaging and computer image processing. He has published numerous articles and two major texts in the areas of cardiac imaging and image processing. His research has been funded by the National Institutes of Health, the Veterans Administration, the American Heart Association, and private agencies, including the Whitaker Foundation and Hewlett-Packard. He was director of the NIH-sponsored Specialized Center for Research in Coronary and Vascular Diseases at the UI.

He has been a national leader in research ethics. He serves as the charter president of the Association for the Accreditation of Human Research Protection Programs, Inc., the first entity organized specifically to accredit human research protection programs.

Reinagel Receives Alfred P. Sloan Foundation Research Fellowship

APS Member **Pamela Reinagel**, Harvard Medical School, was one of 117 scientists and scholars selected as recipients of the Alfred P. Sloan Foundation's Research Fellowships for 2003. The fellowships are awarded annually to recognize and support young scientists and scholars in seven fields: chemistry, computational and evolutionary molecular biology, computer science, economics, mathematics, neuroscience, and physics. Winners receive grants of $40,000.

Harder and Jacob - "People You Should Know" in Milwaukee

Two APS members were named to Milwaukee Magazine's "50 People You Should Know." **David Harder** and **Howard Jacob** - both of the Medical College of Wisconsin - were profiled in this article that highlighted 50 of the city's movers and shakers. Harder, director of MCW's Cardiovascular Research Center and editor of *AJP - Heart and Circulatory Physiology;* and Jacob, director of MCW's Human Molecular and Genetics Center, were the only scientists included in the article.

Ditte Andreasen recently moved to the Institute of Toxicology and Pharmacology, University of Lausanne, Switzerland. Andreasen was formerly with the Department of Physiology and Pharmacology, University of Southern Denmark, Odense, Denmark.

Edmundo Ashkar has acquired the position of Consulting Professor and Director, Pontificia Universidad Catolica Argentina, Department of Investigation & Science, Buenos Aires, Argentina. Prior to his new affiliation, Ashkar was retired, residing in Buenos Aires, Argentina.

Anna K. Brzezinska accepted a position with the Department of Physiology, Louisiana State University, New Orleans, LA. Brzezinska had been Visiting Assistant Professor with the Medical College of Wisconsin, Milwaukee, WI.

Shaun David Cain has joined the Friday Harbor Labs, University of Washington, Friday Harbor, WA. Cain had been associated with the Department of Biology, University of North Carolina, Chapel Hill, NC.

Eric Danel Crown recently affiliated with the Department of Physiology Science, University of California, Los Angeles, CA. Crown was previously associated with the Department of Psychology, Texas A&M University, College Station, TX.

Diane M. Farrell is currently with the Department of Biology, Howard Payne University, Brownwood, TX. Farrell moved from the Department of Biology, Trinity University, San Antonio, TX.

John R. Halliwill has moved to the Department of Exercise and Movement Science, University of Oregon, Eugene, OR. Halliwell was previously affiliated with the Department of Anesthesiology and General Clinical Research Center, Mayo Clinic and Foundation, Rochester, MN.

Ian Neil Hines joined the Center for Alcohol Studies, University North Carolina, Chapel Hill, NC. Hines was formerly with the Department of Molecular and Cell Physiology, LSU Health Science Center, Shreveport, LA.

Lisa Ann Hoopes has affiliated with the University of Central Florida, Orlando, FL., as a Graduate Student. Previously, Hoopes was associated with Wildlife and Fisheries Sciences, University of Central Florida, Orlando, FL.

Thomas Incledon is presently associated with Athletes' Performance as Director, Performance Research and Nutrition, Tempe, AZ. Incledon previously had been associated with Human Performance Specialists Inc., Sunrise, FL.

Edward H. Livingston accepted the position of Professor and Chairman, Department of Gastrointestinal & Endocrine Surgery, University of Texas Southwestern Medical Center, Dallas, TX. Livingston was formerly Professor, Department of Surgery, UCLA School of Medicine, Los Angeles, CA.

Wenjun Z. Martini is presently associated with the US Army Institute of Surgical Research, San Antonio, TX. Martini was previously affiliated with the Department of Nutrition, Case Western Reserve University, Cleveland, OH.

Ronald J. Maughan has recently joined the School of Sport & Exercise Sciences, Loughborough University, Loughborough, England. Prior to his new assignment, Maughan was associated with the Department of Biomedical Science, University Medical School, Aberdeen, Scotland.

Timothy D. Mickleborough accepted a position with the Department of Kinesiology, Indiana University, Blooomington, IN. Prior to his new assignment, Mickleborough was affiliated with the School of Sport Science, University of Wales Institute, Cardiff, Wales.

Janna Leigh Morrison recently moved to the Department of Discipline of Physiology, Adelaide University School of Molecular and Biomedical Sciences, Adelaide, Australia. Morrison previously possessed a student affiliation with the University of Toronto, Ontario, Canada.

Natalie Mrachacz-Kersting joined the Department of Sport & Exercise Science, The University of Auckland, Tamaki Campus, Auckland, New Zealand. Previously, Mrachacz-Kersting was affiliated with the Center for Sensory-Motor-Interaction, Aalborg University, Aalborg, Denmark.

Vinod Narra has affiliated with the Department of Surgery, Georgetown University Hospital, Washington, DC. Narra was previously associated with the Department of Surgery, Brigham and Women's Hospital, Harvard Medical School, Boston, MA.

Jeffrey E. Pessin is currently associated with the Department of Pharmacological Sciences, State University of New York at Stony Brook, NY. Pessin was previously with the Department of Physiology and Biophysics, University of Iowa College of Medicine, Iowa City, IA.

R. Kirk Riemer is presently affiliated with the Department of Cardiothoracic Surgery, Stanford University School of Medicine, Stanford, CA. Riemer was formerly with the Department of Surgery, Division of Cardiovascular Surgery, University of California, San Francisco, CA.

David Anthony Tulis has joined the Biomedical Biotechnology Research Institute, North Carolina Central University, Durham, NC. Prior to his new position, Tulis was associated with the Department of Medicine, Baylor College of Medicine, VA Medical Center, Houston, TX.

Paul R. Wade accepted a position with the Enterology Group, Johnson & Johnson Pharmaceutical R&D, Spring House, PA. Prior to his new assignment, Wade was with the Department of Zoology & Physiology & WWAMI Medical Education Program, Laramie, WY.

Sheng-Nan Wu accepted a position with the Institute of Basic Medical Sciences, National Cheng-Kung University, Tainan, Taiwan. Prior to his new position, Wu was with the Department of Medical Education and Research, Kaohsiung Veteran General Hospital, Kaohsiung City, Taiwan.

Fadi Xu has relocated and is presently with the Lovelace Respiratory Research Institute, Albuquerque, NM. Xu had been affiliated with the Department of Physiology, University of Kentucky, Lexington, KY.

Mary Elizabeth Zimmer has joined the Department of Anatomy and Cell Biology, Wayne State University School of Medicine, Detroit, MI. Zimmer was previously associated with the Department of Zoology, University of British Columbia, Vancouver, BC, Canada.

Baltic Summer School 2003

The 2003 topic is: "Neurodegenerative diseases: mechanisms and principles of rational treatment".

The Theoretical Course, 17-29 August 2003 - The course will be open to 65 young scientists at the late phase of their PhD study or at the post-doc level.

The Laboratory course - 20 of the young scientists participating in the theoretical course will also have the opportunity to train in well-established research laboratories. Each young scientist will have an appointed mentor and join on-going research projects using state-of-the-art techniques.

Fee: 200 EURO.

Venues: Universities of Kiel, Copenhagen and Lund.

For more information you can contact the Baltic Summer School secretariat, attn. Ms. Lone Holm Hansen; Tel: +45 3545 7595; Fax: +45 3545 7634; email: bss@cmrc.dk.

Fulbright Offers Lecturing/Research Grants in 140 Countries

The Fulbright Scholar Program is offering lecturing/research awards in some 140 countries for the 200-2005 academic year.

Opportunities are available not only for college and university faculty and administrators, but also for professionals from business and government, as well as artists, journalists, scientists, lawyers, independent scholars and many others.

Traditional Fulbright awards are available from two months to an academic year or longer. A new short-term grants program-the Fulbright Senior Specialists Program-offers two- to six-week grants in a variety of disciplines.

Application deadlines for 2004-2005 awards are:

May 1 for Fulbright Distinguished Chair awards in Europe, Canada and Russia

August 1 for Fulbright traditional lecturing and research grants worldwide

Fulbright Senior Specialists Program: rolling deadline

For information, contact the Council for International Exchange of Scholars (CIES) at 3007 Tilden Street, NW, Suite 5L, Washington DC 20008-3009. Tel.: 202-686-7877; Email: apprequest@cies.iie.org. Information and an online application are also available online at http://www.cies.org.

Eighth Annual Johns Hopkins Computed Body Tomography for the Technologist 2003

This meeting presents a comprehensive review and update of the current role of Computed Body Tomography for the CT Technologist with an emphasis on Sprial (Helical) CT and the multidetector CT technology. The lectures are designed to present the material from both an anatomic and pathologic approach with emphasis on CT technique and optimization of scanning protocols. Recent advances in CT application, including multidetector CT, CT angiography, and three-dimensional imaging will be addressed. The role of CT compared to other imaging modalities, both from a cost-effective standpoint and from better clinical management, will be discussed and addressed during the various lectures.

Date: May 29 - June 1, 2003

Fee: $495 before 4/30/03, $550 after 4/30/03

Contact: Office of Continuing Medical Education, Johns Hopkins University School of Medicine, Turner 20, 720 Rutland Ave., Baltimore, MD 21205-2195; Tel: 410-955-2959; Fax: 410-955-0807; Email: cmenet@jhmi.edu; Internet: www.hopkinsmedicine.org/cme.

Moving?

If you have moved or changed your phone, fax, or email address, please notify the APS Membership Office at 301-634-7171 or fax to 301-634-7241. Your membership information can also be changed by visiting the Members Only portion of the APS website at http://www.the-aps.org.

May 6-10
Workshop on Phenotyping New Mouse Models for Heart, Lung, Blood and Sleep Disorders, Bar Harbor, ME. Information: Internet: http://www.jax.org/courses/phenotypespring_03.html.

May 13-17
The 30th Annual Meeting of the International Society for the Study of the Lumbar Spine, Vancouver, Canada. *Information:* Secretary, Dr. Scott Bodes, Sunnybrook and Women's Health Science Center, Room MG 323, 2075 Bayview Ave., Toronto, Canada M4N 3M5. Tel: 416-480-4833; Fax: 416-480-6055.

May 28-31
Canadian Society for Pharmaceutical Sciences Symposium, Delta Centre-Ville, Montreal, Quebec, Canada. Information: Canadian Society for Pharmaceutical Sciences, 3119 Dentistry/Pharmacy Centre, University of Alberta Campus, Edmonton, Alberta, Canada, T6G 2N8. Phone: 780-492-0950; Fax: 780-492-0951; Internet: http://www.ualberta.ca/~csps/.

June 2-5
Eighteenth Annual Offering of Critical Issues in Tumor Microcirculation, Angiogenesis and Metastasis: Biological Significance and Clinical Relevance, Boston, MA. *Information:* Internet: http://steele.mgh.harvard.edu.

June 8-12
The Joint Meeting of the 13th Annual Meetings of the American Summer Neuropeptide Conference & The European Neuropeptide Club (ENC), Montauk, NY. *Information:* Orit Khafi, Neuropeptides Conference Secretariat, P.O. Box 3190, Tel Aviv 61031, Israel.. Phone: 972 3 520 99 99; Fax: 972 3 523 92 99; Email: meetings@unitours.co.il.

June 15-19
Beyond Genome 2003 Solutions for the Post-Genomic Era, San Diego, CA. *Information:* 1037 Chestnut Street, Newton Upper Falls, MA 02464. Phone: 617-630-1300; Fax: 617-630-1325; Internet: www.beyondgenome.com.

June 20-21
The Congenital Hyperinsulinism Conference, Philadelphia, PA. *Information:* Linda Sreinkrauss. Phone: 215-590-3174, Email: steinkrauss@email.chop.edu.

June 28-July 3
3rd Congress of the Federation of European Physiological Societies, Nice, France. *Information:* Sophia Antipolis, Faculte des Sciences, 06108 Nice Cedex2, France. Tel: +33 4 92076851; Fax: + 33 4 92076850; Email: FEPS2003@unice.fr; Internet: http://www.unice.fr/FEPS2003/.

June 29-July 4
International Society for Developmental and Comparative Immunology (ISDCI) - 9th International Congress, St. Andrews, Scotland. *Information:* Dr. Val Smith or Mrs. Jane Williamson, Gatty Marine Laboratory, School of Biology, University of St. Andrews, Fife KY 16 8LB. Email: v.j.smith@st-and.ac.uk or jmcw@st-and.ac.uk; Internet: http://www.st-and.ac.uk/~seeb/ISDCI/home.htm.

June 30-July 1
Digestive Hormones, Appetite and Energy Balance, London, UK. *Information:* Email: rboning@imperial.ac.uk, Internet: http://www.obesity.med.imperial.ac.uk.

July 9-13
Enteric Nervous System Conference 2003, Banff, Alberta, Canada. *Information:* Dr. Keith Sharkey, Department of Physiology and Biophysics, University of Calgary, 2220 Hospital Drive NW, Calgary, AB, Canada. Phone: 403-220-4601; Fax: 403-283-3028; Email: ksharkey@ucalgary.ca; Internet: http://www.med.ucalgary.ca/webs/ENS/index2.html.

July 12-17
2003 FASEB Summer Research Conferences "Transport ATPases: Genomics, Mechanisms and Relevance to Diseases," Vermont Academy, Saxton River, Vermont. *Information:* Adele Hewitt , Conference Coordinator, FASEB Summer Research Conferences, 9650 Rockville Pike, Bethesda, Maryland 20814. Tel.: 301-530-7094; Fax: 301-571-0550; Email: ahewitt@faseb.org; Internet: http://www.faseb.org/meetings/src.

July 13-16
12th International Biochemistry of Exercise Conference, Maastricht, The Netherlands. *Information:* Marleen van Baak. Email: m.vanbaak@hb.unimaas.nl, Internet: http://www.biochemex.org/IBEC2003/.

July 20-24
XIX International Congress of Biochemistry & Molecular Biology, Toronto, Canada. *Information:* Congress Secretariat, National Research Council Canada, Ottawa, ON, Canada K1A 0R6. Tel: 613-993-9431, Fax: 613-993-7250; Email: iubmb2003@nrc.ca; Internet: http://www.nrc.ca/confserv/iubmb2003.

August 15-20
First Gordon Research Conference on Cellular Osmoregulation: Sensors, Transducers and Regulators, Bristol, RI. *Information:* Conference Co-Chairs Janet M. Wood (jwood@uoguelph.ca) and Karlheinz Altendorf (altendorf@biologie.Uni-Osnabrueck.de) or Gordon Research Conferences, P.O. Box 984, West Kingston, RI 02892-0984; Internet: http://www.grc.org/scripts/dbml.exe?Template=/Application/apply1.dbm.

August 20-23
International Society of Adaptive Medicine 7th International Congress, San Diego, CA. *Information:* University of California, San Diego, Office of Continuing Medical Education, La Jolla, CA 92093-0617. Toll free: 888-229-6263 or Tel: 858-534-3940; Fax: 858-534-7672; E-mail: ocme@ucsd.edu; Internet: http://cme.ucsd.edu/ isam/ index.html.

August 23-26
33rd International Hospital Congress - From Vision to Action - Hospitals for a Healthy Future combined with 2003 Health Forum and American Hospital Association's Leadership Summit, San Francisco, CA. *Information:* Internet: http://www.hospitalconnect.com/ healthforum/ hfeducation/hfsummit.html.