Published by The American Physiological Society
Integrating the Life Sciences from Molecule to Organism

The Physiologist

INSIDE

82nd President of APS

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It is my honor and privilege to serve as the 82nd president of the American Physiological Society. Looking at the list of past APS presidents, I am deeply humbled to follow in the footsteps of giants, and particularly honored to be the fifth APS president from the Mayo Clinic (15th APS President; Frank Mann [1936-1937], Hiram Essex [27th APS President; 1954-1955], Earl Wood [53rd APS President; 1980-1981] and Frank Knox [59th APS President; 1986-1987]). During the coming year, I look forward to working with the APS and its distinguished members in re-establishing the pre-eminent role of physiology, and extending the horizons of the APS in a new and rapidly changing scientific, medical and financial environment. I would like to take this opportunity to introduce myself and my goals for the coming year.

We are all deeply affected by our life experiences, training opportunities and career choices. In my case, my entire life has been greatly rewarded by crossing paths with truly outstanding individuals from different fields in science and medicine. My active involvement in the APS for more than 30 years, since my time as a graduate student in physiology and biophysics at the University of Nebraska Medical Center has been particularly rewarding. Foremost, I have gained a deep appreciation of the fundamental role of physiology and biomedical engineering in medicine. Indeed, it is my firm belief that physiology, biomedical engineering, and medicine are inextricably linked. One of my major goals as APS president will be to promote the teamwork that has existed between physiologists, physicians, and biomedical engineers. The Physiology InFocus program at next year's Experimental Biology meeting will provide an opportunity to highlight the importance of the teamwork between physiologists, physicians and biomedical engineers. In other ways throughout the year, I will work with APS members to find ways to re-establish the preeminence of physiology as a foundation of medicine. Most of the founders of the APS were physicians who understood the role of science in advancing clinical practice and they based their research in core principles of engineering. However over the years, physicians and biomedical engineers have gravitated toward their own specialized meetings, and the dialogue and lines of communication between physiologists, physicians, and biomedical

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The Physiologist

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Published bimonthly and distributed by The American Physiological Society

9650 Rockville Pike
Bethesda, Maryland 20814-3991
ISSN 0031-9376

Subscriptions: Distributed to members as part of their membership. Nonmembers in the USA (print only): individuals $60.00; institutions $95.00. Nonmembers in Canada: individuals $65.00; institutions $100.00. Nonmembers elsewhere: individuals $70.00; institutions $105.00. Single copies and back issues when available, $20.00 each; single copies and back issues of Abstracts issues when available, $30.00. Subscribers to *The Physiologist* also receive abstracts of the Conferences of the American Physiological Society. The online version is available free to all worldwide.

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http://www.the-aps.org
Printed in the USA

The Physiologist
Vol. 52, No. 2, 2009

Changing the USMLE
Challenges and Opportunities for Physiology and Other Medical School Basic Science Departments

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The mission of the United States Medical Licensure Examination (USMLE) is to provide state medical licensure boards with valid and reliable assessments needed to support their responsibilities in terms of granting physicians licenses to practice medicine. Importantly, the USMLE provides for a single pathway for primary licensure for graduates of LCME-accredited medical schools in the USA and Canada, as well as for international medical graduates who seek graduate clinical training and licensure in the US.

The USMLE is currently under revision, and changes in the exam structure will impact the teaching of the basic sciences in medical schools. The implications for the teaching of physiology were discussed at the fall 2008 meeting of the Association of Chairs of Physiology Departments (ACDP); the following is based on a presentation I gave to the Association's members.

Background: State medical boards make licensure decisions at two points: first, at the entry into supervised medical practice (post-graduate clinical training); and second, at the time of primary medical licensure to practice unsupervised medicine. At each of these decision points, the medical boards consider multiple pieces of information: graduation from medical school; background check; and certification of medical knowledge. The USMLE fulfills the certification of medical knowledge requirement in three exams or Steps (Figure 1).

Step 1 assesses whether medical students understand, and are able to apply, important concepts of the sciences basic to the practice of medicine. The emphasis is on the principles and mechanisms underlying health, disease, and therapy. Step 2 assesses whether medical students or graduates can apply medical knowledge, skills and understanding of clinical science essential for the provision of medical care under supervision. The emphasis is on the principles of clinical sciences and basic patient-centered skills, including health promotion and disease prevention. This Step is given in two parts, which tests the examinees clinical knowledge (Step 2 CK) and clinical skills (Step 2 CS), the latter using standardized patients. Step 3 tests whether medical graduates can apply medical knowledge and understanding of biomedical science and clinical science essential for the unsupervised practice of medicine.

In addition to its primary mission, the certification of an individual's knowledge and skills necessary for the practice of medicine, the USMLE also serves several secondary purposes. Many medical schools, for example, use student performance at the different Steps of the USMLE in promotion and graduation decisions and curriculum evaluations. Student performance on the USMLE also is used as a factor in the selection process by post-MD clinical training programs.

The current USMLE was designed about 20 years ago. Given the changes that have taken place in medical education and medical practice, is the current structure suitable for the 21st century? Basic science knowledge is tested largely in Step 1. Though some test items have clinical vignettes, these vignettes are often "window dressing" to assess the student's knowledge of particular aspects of basic sciences that underlie the practice of medicine. Clinical knowledge and skills are tested in Step 2, with an ensuing separation between the basic sciences and the principles of medical practice. It also has been argued that Step 3 lacks relevance because few physicians currently enter practice after one or two years of post-graduate training, which some have suggested has led Step 3 to become "a license to moonlight." Indeed, an underlying assumption of Step 3, that there is a body of knowledge (which the examination is designed to assess) that is essential for the unsupervised medical practice as a generalist, no longer seems to fit the professional activities of a substantial number of medical graduates.

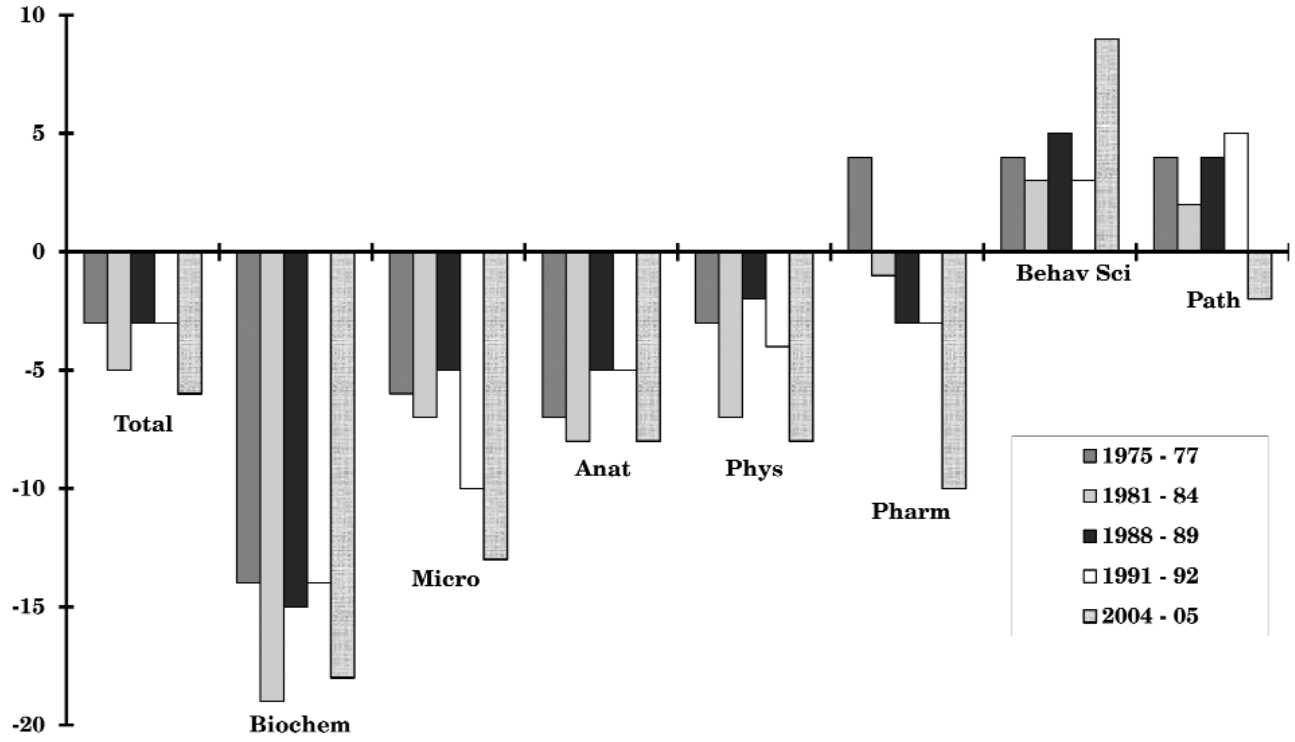
A particular concern relating to the present USMLE structure was the observation that student performance in the basic sciences deteriorated between Steps 1 and 2 (Figure 2).

This deterioration could be ascertained because the National Board of Medical examiners (NBME) over the years have inserted Step 1 questions into the Step 2 exam. These questions are not used for grading purposes but instead, for evaluating how well the students retain their basic science knowledge. Apart from Biochemistry, where the retention historically has been low and the Behavioral Sciences and Pathology, where the retention generally has increased, the trend is a decrease in the retention of basic science knowledge. Though this could reflect "binge and purge" study habits, as has been argued by some, the seemingly systematic decrease in the performance in Microbiology, Pharmacology and Physiology should be cause for concern. Basic science departments need to examine how the teaching material has been selected and presented—and whether the curricular reforms, with the move toward more integrated curricula, have had unintended negative consequences, in particular with respect to the learning and retention of basic science information. For example, do students purchase and use the textbooks that historically defined the syllabus in the traditional curricula? If not, what has replaced the textbooks? Does the pres-

Figure 1: Current USMLE structure and timing of the different exams (Steps). See also http://www.usmle.org/examinations/index.html.

Step 1	Step 2		Step 3
Basic Science	Clinical Knowledge	Clinical Skills	Primary Medical Practice
↑	↑	↑	↑
End of Year 2	End of Year 3	Beginning of Year 4	Late PGY 1 or PGY2

Figure 2: Retention of basic science knowledge between Steps I and II. Based on Y. Ling, D.B. Swanson, K. Holtzman, and S.D. Bucak. 2008. Retention of basic science information by senior medical students. Acad. Med. 83:S82-5, and articles cited therein.



entation of material in the classroom and in syllabi provide preclinical medical students basic science coverage of sufficient depth and integration so as to foster optimal retention? Is the material presented in a manner that is accessible for students later on? (Black & white copies of color PowerPoints should not be considered "accessible information.") Another reason for the decreased retention may be that the material is not reinforced in the students' clinical training because the clinical faculty is under increasing pressure to generate income and may not have sufficient time (interest or, perhaps, knowledge) to teach and reinforce basic science information, such as pathophysiological mechanisms, molecular basis of clinical features and therapeutic rationale.

Another set of concerns related to the content of the USMLE, is that it currently may not reflect the evolving ideas on evidence-based practice, the gathering and interpretation of information, the application of biostatistics and epidemiology, public health and cost-effective practice. Though not necessarily of concern to the basic science faculty in our roles as educators, this is of concern to all of us in our roles as consumers of health care.

So, though it is possible that the current USMLE remains the most effective and efficient method to meet the needs of all the stakeholders—ranging from the Federation of State Medical Boards (FSMB), representing the public (the consumers of health care), to medical educators and basic and clinical scientists—it seemed prudent to conduct a comprehensive review of the USMLE. This was not a simple undertaking, as may be deduced from Figure 3,which shows the organizational structure of the USMLE and the flowchart for the review process by the Committee to Evaluate the USMLE Program (CEUP), with representation from medical scientists and educators, educational deans, residents, students, state medical boards and the public. The appropriate metaphor for changing the USMLE is not "turning the battleship" but "maneuvering a battle fleet at high speed" (Figure 4)—where each interested party has its own set of priorities.

The guiding principles in CEUP's review and proposed changes were:

USMLE must meet the need of the state medical boards, now and in the foreseeable future;

USMLE should provide valid and reliable measures of the competencies required for medical practice;

USMLE must continue to evolve, reflecting the evolving national consensus on these competencies;

USMLE should be able to support legitimate secondary uses.

To guide the review, CEUP sought input from many different groups including: FSMB, the state medical boards and the public; the Association of American Medical Colleges (AAMC), in particular the Groups on Student Affairs (GSA) and Education Affairs (GEA) and the Organization of Student Representatives (OSR); the American Medical Association (AMA); residency program directors; and the American Medical Student Association (AMSA). Members of the basic and clinical science community, and the societies representing their interests, were consulted relatively late in the review.

Not surprisingly, these different groups had quite different perspectives on how the USMLE should be changed.

The **state medical boards** and the **public** felt strongly that the USMLE structure should recognize the need for licensure decision at two points (or gateways):

1. entry into supervised post-graduate training (supervised practice);
2. primary licensure (unsupervised practice).

These gateways are licensure decision points, not examination events, meaning that the licensure decision in each gateway could be based on multiple examinations. The examination components in these licensure decisions should: measure all competencies related to patient-centered care that can be tested in a valid, reliable manner; be able to assure at least minimum competency in these areas; and provide scores to the state medical boards that will assist them in making licensure decisions when the performance is marginal.

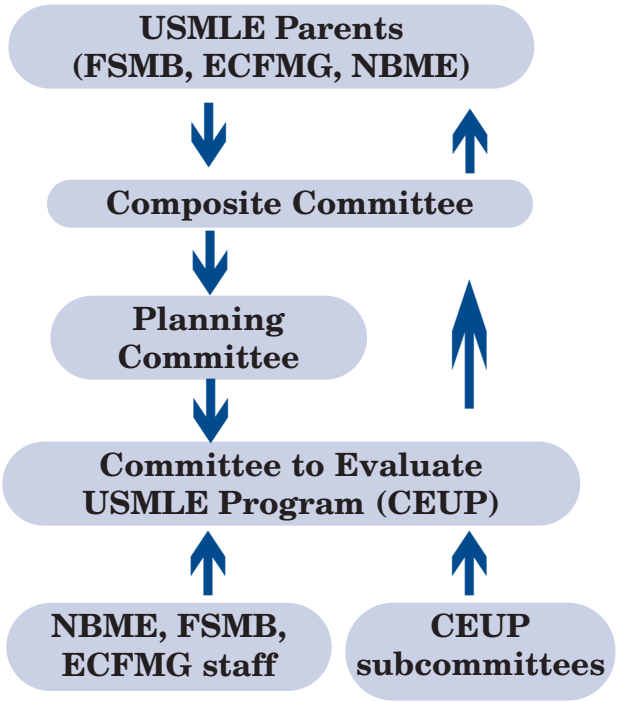
Medical school **curriculum** and **student affairs deans** expressed concern that the separation of basic science and clinical science in Steps 1 and 2 CK was artificial and that it interferes with the curricular design and delivery—to the point that some education deans stated that the current USMLE structure made meaningful curricular reform impossible. There also was concern that the Step 1 score may disproportionately affect career choices and decisions.

Residency program directors stated that scores on USMLE examinations are essential as they are important for the screening of candidates for interview and the final ranking in the residency match. The structure and content of the USMLE was deemed to be less important than the timing.

Students preferred to "get basic science over with" and were generally not in favor of integrated exams (that test both basic and clinical science). Students in years 3 and 4, who were concerned about their post-graduate careers and the residency match, preferred scored exams over pass/fail grading. Students in years 1 and 2 were ambivalent about the types of grading that would be optimal.

Basic science educators stated that although basic science is the foundation of medicine, some important basic science concepts have no clinical "wrapping." They also felt strongly that Step 1 reinforces the value of basic science in the medical school curriculum. Some in the basic science community also felt that Step 1 is necessary for promotion decisions—and that it is important to have meaningful, normed grades and a means to evaluate the success of courses and teaching efforts by comparing their students performance on Step 1 to that of students from all US medical schools.

Figure 3: Organizational structure for the evaluation of the USMLE Program.



CEUP Recommendations: The CEUP report and recommendations were released in May 2008: http://www.usmle.org/general_information/CEUP-Summary-Report-June2008.PDF. The recommendations have been endorsed by the Composite Committee that governs the USMLE program, and are scheduled for final governance review at the spring 2009 annual meetings of the NBME and the Federation of State Medical Boards.

At present, three recommendations have been approved, http://www.usmle.org/general_information/review.html. They are, in abbreviated form:

1. USMLE design a series of assessments that can support decisions about a physician's readiness to provide patient care at two points:
   a) at the interface between undergraduate and graduate medical education
   (supervised practice); and
   b) at the beginning of independent (unsupervised) practice;
2. USMLE adopt a general competencies schema for the design, development, and scoring of USMLE consistent with national standards such the general competencies that have been identified by the Accreditation Council for Graduate Medical Education (ACGME). They are summarized in Table 1;
3. USMLE emphasize the importance of the scientific foundations of medicine in all components of the assessment process. The assessment of these foundations should, to the greatest extent possible, occur within a clinical context.

Concerns About the Proposed Changes: As noted above, members of the basic science community generally became involved in the discussions relatively late. It seems that, despite major efforts by the USMLE to inform the medical schools (primarily the education deans) about the likely changes, there was little discussion of the proposed changes within most US medical schools. The first group to express concern was the National Association of MD-PhD Programs, and that only happened because I, by chance, met Dr. Peter V. Scoles, Senior Vice President for Assessment Programs of the NBME, at the 2007 meeting of the Western Group of Student Affairs. At that time (May 2007), the structure of the two licensure decision points (gateway A and gateway B) had not been finalized; one proposal was that the current Steps 1 and 2 (CK and CS) exams be combined into one integrated exam, which would be taken in late year 3 or early year 4. Though such a structure indeed would serve to integrate the testing of the basic sciences in a clinical context, it also would have major (most likely negative) implications for the teaching of the basic sciences in medical schools—and for the structure of MD-PhD training programs.

The Association of MD-PhD Programs expressed its concerns about the possible changes in the fall of 2007, which led to a number of organizations representing the interests of the basic biomedical sciences—including the ACDP and the American Physiological Society—becoming involved. To discuss the concerns that had been expressed, the NBME convened a meeting in early January 2008 with a number of MD-PhD program directors, members of CEUP, and representatives from the Council of Academic Societies, the

American Society for Clinical Investigation, ACDP, FSMB and other stakeholders.

In addition to stressing that the role of science in 21st century medicine is likely to increase (not decrease) and that future medical students (and physicians) would need to learn and master material that is barely being taught today, the group discussed a number of other issues:

the medical curriculum should have increased emphasis on informatics and reasoning skills, going beyond algorithmic thinking;

medical students (and practicing physicians) should understand how data are obtained and analyzed and be able to evaluate the merits of competing claims (for example, the information they receive from pharmaceutical company representatives);

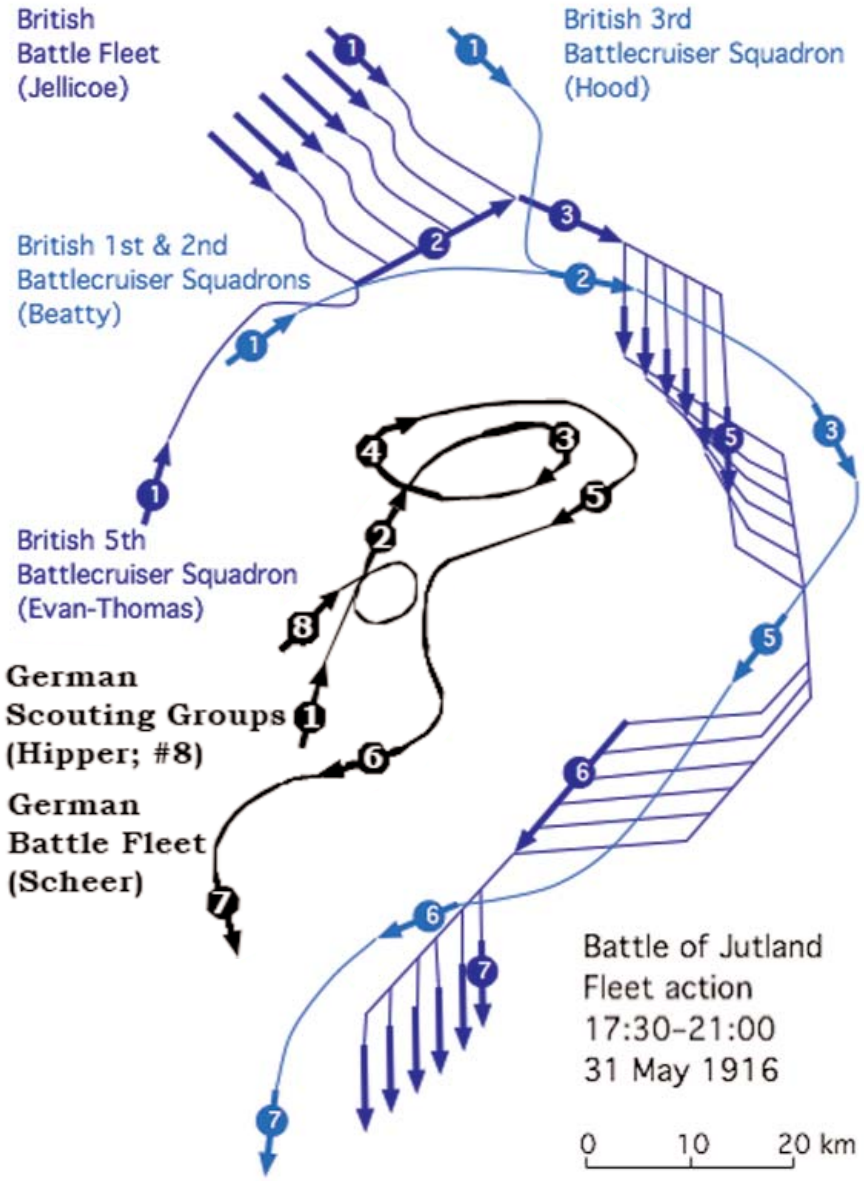
that physicians are differentiated from other healthcare workers by virtue of their knowledge of the science that underlies the practice of medicine and that this knowledge enables them to take a leadership position on the healthcare "team";

that physicians need to be able to discuss and explain the scientific rationale for their patients' diagnosis and treatment, also in the context of the information that patients will gather from other sources.

As one participant summed up this part of the discussion: what distinguishes the physician from the physician assistant is the science!

A major topic at the meeting was the importance of the USMLE—in addition to its role as a medical licensure examination. Indeed, the USMLE fulfills two other important functions, albeit functions that are not always acknowledged:

Figure 4: The British Grand Fleet's and the German Hochseeflotte's maneuvers during the Battle of Jutland. (From wikimedia.org/wikipedia/commons/4/41/Jutland_fleet_action.png). The numbers 1-7 refer to the approximate fleet positions at various times between 6 and 9 pm.



First, the USMLE has become an important pedagogical tool because, whether students are taught in a traditional or an integrated curriculum, both the basic and clinical sciences are taught (and usually also tested) in modular courses or clerkships. **Studying** for the USMLE, in particular Step 1, thus becomes the first, perhaps the only, time medical students *take control of their curriculum* to integrate the knowledge they have acquired in the different modular courses, and fill the gaps, into a coherent/organismic understanding of how the human body functions. This taking control and integration is critical for the students' ability to go beyond algorithmic decision-making to think critically/mechanistically about diagnostic and therapeutic problems that patients present to their physicians. Though seemingly self-evident, this was apparently the first time this crucial point was made in relation to the on-going evaluation of the USMLE. (It was reiterated in a student-run survey conducted by the American Physician Scientists Association. The students in the Tri-Institutional MD-PhD Program requested that the underlined text be added.)

Second, just as the MCAT serves as the "great equalizer," enabling strong students from less well-known colleges to be evaluated based on their merits when they apply to medical school, the USMLE Step I serves a similar role in the applications of MD students for post-graduate training.

In addition, though it has been stated that USMLE Step 1 prevents curricular reform, the evidence for this statement could not be identified. Indeed, the idea seemed to be based on the opinions of education deans from certain medical schools. Some participants asked: if a curricular reform causes students to do less well on USMLE Step I, does that reflect poorly on USMLE Step I or on the nature and implementation of the curricular reform?

Subsequently, the NBME established a task force to undertake a Comprehensive Review of the USMLE (CRU). The task force included representation from basic science and clinical scientists/educators and educational deans. The task force considered a number of models for a new USMLE, as well as the pedagogical and practical challenges associated with the different models. A key point in these discussions was that medical schools should prepare to teach basic science material in years 3 and 4, and to teach some clinical material in years 1 and 2.

What's Next: Based on the CEUP recommendations, it is reasonable to assume that there will be changes to the USMLE program. Although the guiding principles for the revision of the examination process have been established, the design process is just beginning. To the extent possible, the USMLE design will map to those competencies (as defined by the ACGME, see Table 1) that can be measured in a valid and reliable manner. The current blueprints correspond to the competencies in knowledge, patient care, and communication and interpersonal skills. Systems-based practice is more difficult to define, and the competencies that usually lumped under "professionalism" may best evaluated by other measures.

The changes will be incremental and evolutionary, and unlikely to prompt sudden or radical shifts in the basic science curriculum design or delivery. There will be two gateways, but a gateway is not an exam; each gateway may be composed of several (maybe two to four) "testing events" or "exam components." State medical boards may see Step scores aggregated into two clusters corresponding to the two decision points for licensure. Pass/fail scoring is not under consideration outside the Clinical Skills examination, and individual Step scores will continue to be reported to students and schools in the current manner.

In each gateway (and maybe each testing event) there will be substantial testing/integration of basic science, clinical science (clinical knowledge) and clinical skills. Step 1 will continue to focus on the "scientific foundations" of medicine; it also will test the students' qualitative and quantitative reasoning ability and ability to use literature sources, with greater integration of abnormal structure and function and translational science. The clinical vignettes that inform many Step 1 questions will continue to improve in clarity and relevance, and factoid questions will disappear.

Students taking Steps 2 and 3 will soon notice that increased numbers of clinical test questions will draw on scientific materials and reasoning processes that were emphasized in the preclinical curriculum. To an increasing extent candidates taking Steps 2 and 3 will be tested in their ability to integrate fundamental science with medical knowledge—with increased emphasis on biostatistics, epidemiology, qualitative and quantitative reasoning ability and use of the literature plus, of course, their clinical skills. Competency in medical knowledge, clinical reasoning and judgment and the ability to integrate the advances in translational science into clinical practice is likely to become increasingly important in Step 3.

As soon as practical, test materials that require interpretation and evaluation of evidence will begin to appear in all three Steps of the examination. Later, if it proves possible, test formats that require the appropriate use of on-line data base searches to make clinical judgments will be included in the examination. Simulation testing will likely be increased, though this will be gradual. Heart sound simulations have already been embedded in the examinations. More sophisticated simulations will take time to develop and deploy. Because some of these formats will be difficult to incorporate into the current structure of the exams, changes in the layouts of the testing days may be necessary.

At some time within the next five to seven years, these incremental changes—the new test item and scoring formats and the more rigorous assessment of fundamental science in the later phases of the examination—may make the current USMLE Step framework obsolete and thus require changes in the USMLE terminology. Eventually, it may no longer be possible to combine the exam components from the present and the revised USMLE; most likely, however, such combinations will be permitted for some reasonable time, as has been the case in past revisions of the USMLE

Challenges and Opportunities: Though most basic science scientists and educators are likely to claim that "we do not teach for the USMLE," any medical school's curriculum needs to prepare students to pass the USMLE, and the proposed changes in the USMLE are likely to impact on the teaching responsibilities of basic science departments. Though the increasing integration of the basic and clinical sciences could lead to a further erosion of the role of the basic sciences in the medical curriculum, the increasing emphasis on fundamental science throughout the USMLE, as well as the emphasis on qualitative and quantitative reasoning, is likely to increase the importance of the basic sciences in medical education. Thus, basic scientists—in particular physiologists—are likely to have an even greater role in medical school curriculum, going beyond the current "preclinical years."

A key concern for basic scientists and educators will be who will define what constitutes the basic science that is relevant, whether directly or indirectly, for the practice of medicine—and who will ensure

Table 1. The General Medical Competencies

Medical Knowledge	Basic & Clinical science Diagnostic modalities
Clinical Skills (Patient Care)	Physical examination Procedures & Tools Life support (basic & advanced)
Interpersonal and Communication Skills	Communicative effectively in English History taking Presentation skills (history & physical)
Professionalism	Punctuality, Dress code Reliability, Veracity Record keeping Physician impairment
Systems-based Practice	Function in a team environment Healthcare policy & Law
Practice-based Learning and Improvement	Research design Medical informatics & decision making Analysis & application of published work

that this science is taught well and tested in a satisfactory manner. As noted above, part of the reason for the declining performance on the basic science questions between Steps 1 and 2 (Figure 2) may be due to a decreased emphasis on teaching the fundamental mechanisms in the clinical clerkships, a situation that is unlikely to change given the increasing demands on the clinical faculty. But, importantly, there will be increased emphasis on the fundamental principles underlying the practice of medicine in Step 2! Thus, basic science departments will need to consider how to become involved in the teaching in years 3 and 4. This represents both an opportunity and a challenge; the latter because teaching in the clerkships usually is done in small-group sessions, with the same material being taught as often as 12 times/year! Basic science departments probably also need to consider how additional pathophysiology and translational science can be incorporated into what is traditionally considered the first year curriculum—in a manner that strengthens the basic science teaching. Finally, no matter the intent of any proposed changes to the USMLE, the devil is in the details. In this case, what is key is to ensure that the different test elements adequately probe the students' command of the basic sciences that are relevant for the practice of medicine. This responsibility cannot be delegated: The basic science faculty needs to be actively involved in the design of the new test elements.

Acknowledgments: I wish to thank Drs. Judith A. Bond (Pennsylvania State University), Lawrence F. Brass (University of Pennsylvania MD-PhD Program), David M. Engman (Northwestern University Medical Scientist Training Program), Michael J. Friedlander (Baylor College of Medicine), Paul A. Insel (UCSD Medical Scientist Training Program) and in particular Peter V. Scoles (NBME) for many helpful discussions and comments on the manuscript. I also wish to thank the students in the Tri-Institutional MD-PhD Program for our many discussions about medical education and the USMLE and their comments on this manuscript, and F.T. Nguyen and E. Schauberger (American Physician Scientists Association) for their efforts to survey medical student attitudes toward the USMLE. ❖

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82nd President of APS

engineers have been strained. In the current environment of increasingly complex, collaborative scientific and medical research, we must bring more physicians and biomedical engineers back to the APS, back to the Experimental Biology meetings and back to reading and contributing to our journals. Clinical practice and biomedical engineering are closely aligned with physiology and, in many cases, physiologists, physicians, and biomedical engineers form three-way partnerships that have transformed medicine in the past, and is crucial for the future. There are so many clinical problems to address, from diagnosis of diseases to assessing prognosis and the effectiveness of therapies. Physiology plays a key role in every aspect of clinical practice. Biomedical engineering is a way of thinking, a way of approaching a problem and a way of working toward a solution. Biomedical engineers have provided the technologies that have transformed physiological science and medical practice. Indeed, I cannot think of any topic in physiology where research studies do not depend on technologies that utilize procedures or technologies that would not be considered biomedical engineering. We need to actively recruit both physicians and biomedical engineers to the APS, involve them in our meetings and encourage submission of their work to our journals. We can learn so much through our scientific interactions and I would like to involve our membership in reestablishing this dialogue.

On the Shoulders of Giants

At the University of Nebraska Medical Center, I learned physiology with first year medical students. I also took first year medical courses in pharmacology, biochemistry, and neuroanatomy. At the same time, I took rigorous courses in physical chemistry, computer programming (Fortran), advanced engineering mathematics, and analog circuit design. In the second year, I was the teaching assistant in the medical school physiology course and continued with advanced course work in systems physiology. These courses provided a solid foundation in physiology and the necessary quantitative skills. I still recall the emphasis placed on the work of Claude Bernard, the French physician and physiologist who is often considered the father of modern physiology. Bernard's early work explored the physiologic role of the pancreas and glycogenic function of the liver, both of which contributed to an understanding of the pathophysiology of diabetes mellitus. Later, his use of the scientific method in medicine led to the discovery of the vasomotor system and its role in vasoconstriction. Bernard is best known for his formulation of the principle that the body's internal milieu or environment is maintained, "La fixité du milieu intérieur est la condition de la vie libre. Fixation of the internal environment is the condition for free life." There is little doubt that Bernard shaped the development of American physiology. The first president of the APS, Henry Pickering Bowditch (APS

president for a total of six years in 1887, 1888, and 1891-1895) was one of Bernard's students, as was Silas Weir Mitchell, the second APS president (1889 and 1890). Walter Cannon, the sixth APS president was also greatly affected by Bernard's work, and extended it in formulating the fundamental physiological concept of homeostasis. We all stand on the shoulders of giants and what impressed me, probably because of my quantitative training, was the parallel between physiological homeostasis and feedback control systems employed in engineering. Since that time, I have had a natural affinity toward biomedical engineering, even before the discipline was widely recognized. I firmly believe that physiology and biomedical engineering have much in common, and that our partnership in many cases has truly transformed medicine and all of biomedical science.

Partnerships in Physiology

I am often asked, "What does a physiologist do?" I respond that in medicine we can essentially define two basic sciences: anatomy (which studies structure at all levels from molecules to the whole body); and physiology (which studies function at all levels). Most other sciences have stemmed from these two basic sciences. This is certainly true for physiology in America.

In a collaborative effort that involved the great comparative physiologist C. Richard Taylor and the renowned functional anatomist Ewald Weibel, they proposed the exciting concept of symmorphosis or optimization of biological design. Their original concept was proposed in the context of evolution of the respiratory system. Put simply, they proposed that in evolution, no structure is formed or maintained other than that which is required to satisfy functional demands. In a complex system, the capacity of each component should be optimally matched. I would suggest that we can extend the concept of symmorphosis to the evolution of modern academic medical centers, where the capacities for basic science discovery, translational research and clinical practice must be matched. Toward this end, we must work in teams combining the expertise and insight of physiologists and other basic scientists, physicians providing direction in areas of clinical need and biomedical engineers providing transformative technologies and process improvements.

During my entire career, I have worked closely with many clinical colleagues in promoting basic, translational, and clinical research relevant to pulmonary, cardiovascular, and neuromuscular diseases. I have also worked closely with biomedical engineers, developing new technologies to promote basic discovery and enhancing a quantitative approach to improve the process of discovery. During my PhD research, I had the opportunity to move to UCLA where I was exposed to a completely new academic environment. After finishing my PhD, I stayed on at UCLA, initially as a postdoctoral fellow supported by a Public Health Service/NIH award and later as a faculty member in the Department of Anatomy and Cell Biology. I wasn't an anatomist, so I had to learn gross anatomy just hours ahead of the medical students I was "teaching." This exposure to a new discipline was extremely rewarding for me and I continued to teach anatomy for a number of years always including my physiological inclination toward function.

My career path then passed through the City of Hope where I joined the faculty in the Division of Pulmonary and Critical Care Medicine. There I worked side by side with academic physicians exploring potential therapies designed to ameliorate the symptoms of chronic obstructive pulmonary diseases. Pulmonary diseases such as asthma, emphysema and tuberculosis affect millions of people around the world. I became part of a team working toward a common goal. There are many such teams of physiologists and physicians working together with biomedical engineers to address a variety of important clinical problems. These include: cardiovascular disease, the leading cause of morbidity and mortality in the United States and around the world; diabetes, which is reaching epidemic proportions and affects millions of people worldwide; cancer, a tragedy that impacts millions; neurodegenerative diseases that dim the quality of life in our twilight years. The list goes on and on, but overall an understanding of physiology is the essential foundation.

After the City of Hope and UCLA, my career path took me to the University of Southern California where I joined the faculty in the Department of Biomedical Engineering. Here, the close affinity between biomedical engineering and physiology was again obvious. My graduate studies in physiology had provided a sound foundation in mathematics and quantitative science, and I had previously worked closely with biomedical engineers, so I felt at home in this department. In my opinion, biomedical engineering represents an approach to problem solving—the biomedical problems are often presented by physiologists and clinicians, but the solution involves a systematic engineering approach. Physiologists explore functional complexity ranging from protein-protein interactions inside the cell, to cell-cell interactions within tissue, to the organization and function of organ systems and the interactions across systems. We may call this systems biology, but it is physiology to the core. Biomedical engineering provides the tools for exploring and solving physiological complexity. Clinical practice relies on the insight provided by pathophysiological discoveries and constantly identifies needs for new technologies or process improvement that require biomedical engineering.

At the Mayo Clinic, I've been able to continue my partnerships with physicians and biomedical engineers. Early on, the Mayo brothers recognized that modern medicine is built on teamwork between physicians, scientists, and engineers. Physiologists and other basic scientists strive to answer fundamental questions about biological processes involved in disease. By understanding disease at its molecular and cellular level, the basic discoveries of scientists provide the path for designing new therapies to treat disease. It is not difficult for basic scientists to interact with clinicians. I have had the privilege to work with many physician scientists, working as a team in my laboratory. We talk to each other and they keep me focused on

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Introducing Gary C. Sieck

Gary C. Sieck is a Professor and Chair of the Department of Physiology & Biomedical Engineering at the Mayo Clinic College of Medicine. He is also a Professor of Anesthesiology and Director of the Biomedical Engineering Program. Administratively, he is the Deputy Director for Research and Vice Dean for Research at the Mayo Clinic.

Sieck was born and raised in Seward, NE and attended the Univ. of Nebraska where he received a BS degree in Zoology in 1971. He then received a PhD in Physiology and Biophysics from the Univ. of Nebraska Medical Center in 1976 under the direction of Judith Ramaley. In 1973 he went to UCLA where he conducted a significant part of his PhD thesis research in the Brain Research Institute under the guidance of Anna Taylor. He then stayed at the UCLA School of Medicine as a postdoctoral fellow. In 1979, he was appointed as a Research Assistant Professor in the Department of Anatomy and Cell Biology at UCLA. In 1981, he moved to the City of Hope National Medical Center in Duarte, CA and was appointed as a Research Scientist in the Department of Respiratory Diseases, but he retained a faculty appointment at UCLA. In 1987, Sieck joined the faculty in the Department of Biomedical Engineering at the Univ. of Southern California where he stayed until 1990, when he joined the Mayo Clinic staff. Since 2002 he has chaired the Department of Physiology & Biomedical Engineering, where he directs the Cellular Imaging and Physiology Laboratory. He is currently Deputy Director for Research at Mayo Clinic, Vice Dean for Research and Vice Chair of the Research Committee.

For more than 30 years, Sieck has focused on neural control of respiratory muscles. In particular, he and his colleagues are exploring the basis for plasticity and remodeling of neuromotor control of respiratory muscles during development and in association with pulmonary diseases, spinal cord injury, and mechanical ventilation. His studies have shown that phrenic motoneurons exert direct trophic influences over contractile protein expression and metabolic enzyme activities of diaphragm muscle fibers. Conversely, trophic influences emanating from muscle fibers affect structural and functional remodeling of phrenic motoneurons. Such plasticity is also the basis for skeletal muscle adaptations to exercise and inactivity, as well as the remarkable remodeling of neuromotor control associated with pre- and postnatal development. In all of his studies, Sieck is using state-of-the-art cellular and molecular techniques, many developed in his laboratory. He is using real-time confocal microscopy to image changes in intracellular calcium in response to stimulation, and uses confocal microscopy and three-dimensional reconstruction to evaluate structural remodeling and localize protein expression. Sieck and his colleagues are using laser capture microdissection and single cell RT-PCR techniques to examine changes in phrenic motor neuron mRNA expression. His group has also developed quantitative electrophoretic techniques to explore changes in contractile protein expression in single muscle fibers and the relationship between contractile protein content and both mechanical and energetic properties of muscle fibers. In particular, he has examined the expression of different isoforms of myosin heavy chain, which form cross-bridges with actin during force generation and contraction, and are the site of ATP hydrolysis. Thus, plasticity in the essential linkages between structure, intracellular calcium regulation, mechanical and energetic properties of muscle fibers is being comprehensively explored.

In 2004 he received the Joseph R. Rodarte Award for Scientific Distinction from the American Thoracic Society. In 2007, he was recognized as a Mayo Distinguished Investigator, and he was elected as a member of the College of Fellows of the American Institute for Medical and Biological Engineering (AIMBE). Sieck has published 231 original peer-reviewed papers, 14 invited reviews, 29 book chapters, 24 editorials and commentaries, and more than 450 published abstracts. He has also presented more than 90 invited lectures throughout the world.

Sieck has been very active in educational activities. He has served as thesis advisor for 11 PhD students, has mentored seven visiting graduate students, 45 postdoctoral fellows, 10 junior faculty members and 20 visiting scientists, as well as numerous undergraduate and high school students. Since 2001, he has directed Mayo Graduate School's Biomedical Engineering Program. He is also a member of the school's Education Committee. Sieck earned the Mayo Research Educator Award from 2001 to 2004, and in 2006, he received the Dean's Recognition Award.

In addition to his service activities at Mayo, Sieck has served on many editorial boards, including the *Journal of Applied Physiology, American Journal of Respiratory, Critical Care Medicine, Respiratory Physiology and Neurobiology, Acta Physiologica Sinica* (China), *Anasthesiologie, Intensivmedizin, Notfallmedizin, Schmerztherapie* (Germany) and *Journal of Anesthesiology and Intensive Care* (Kazakstan). From 1999 to 2005, he served as the editor-in-chief of the *Journal of Applied Physiology*. His service also includes membership on NIH study sections (Respiratory and Applied Physiology [RAP] 1991-1994; Sensory Motor Integration [SMI] 2001-2005, and Native American Research Centers for Health [NARCH] chair 2004-2005, Cardiovascular, Lung & Blood Training Grants 2006-present), Special Emphasis Panels (Biological and Physiological Sciences 1993 and 1996, Skeletal Muscle Biology 2004, Bioengineering Research 2006, and Physiology and Pathobiology of Organ Systems 2006), Program Project grant site visits and review panels, and special *ad hoc* review panels. Sieck was also a member of the Veterans Administration Merit Review Board for Respiration from 1998-2001, and he has served as a reviewer for the NSF, Department of Defense, and other funding agencies.

Within APS, Sieck has served in many roles. He is a member of the APS Respiration Section, in which he has served on the Program Committee (1996-2004) and Scientific Advisory Committee (1999-2005). He was chair of the APS Respiration Section in 2005 until he was elected to the APS Council, serving from 2005 to 2008. He also served as chair of the Respiratory Structure and Function Assembly of the American Thoracic Society (ATS) from 1996 to 1998, as a member of the ATS Scientific Conference Program Committee (1993-1995), Long-Range Planning Committee (1995-1998), Scientific Advisory Committee (1998-2002), Program and Budget Committee (1999-2003), and Publications Committee (2005-present). Sieck was also a member of the American Thoracic Society Board of Directors from 1996 to 1998. He was also a member of the National Council of the American Lung Association from 1997 to 2000. ❖

(continued from page 45)
clinically relevant issues, things that will have importance to real patients. Our collaborative research is often translational in nature, building on basic discoveries, but we always have our eye on the ball in terms of how our research will ultimately impact patients.

Disruptive Events and New Opportunities

Over the years at Mayo, I have assumed more and more administrative responsibilities. In these administrative roles, I have gained key insight into the important issues facing clinical practice, especially those related to access and reimbursements for medical care. There are major issues facing the future of healthcare, not least of which are the rising costs of medical care. The financial problems we face today in medicine are only the tip of the iceberg. The demographic changes that will follow the aging of the baby boomers will place an enormous strain on medical resources and the cost of healthcare. Undoubtedly, the rising costs of healthcare will impact the funds available for biomedical research. We are truly in the midst of what may be termed a major disruptive event with the severe depression, downturn of the financial markets, a decrease in asset values and greatly reduced liquidity. Because of past and present leadership, the financial condition of the APS is still very sound, but our investments have been affected. The important activities of the APS in education and membership support must and will continue. However, because of the financial situation we will need to be prudent and prioritize areas of support.

Out of disruptive events come opportunities, and this is true today. We have new national leadership, and the Obama administration has reacted with a major stimulus bill that includes substantial support for biomedical research through the NIH, NSF, and VA. There will be a bolus of $10 billion for the NIH alone and the only downside is that the funds will need to be spent across a two-year period. During the previous administration, there were real reductions in NIH funding, and this presented a real threat to our membership, especially younger physicians and scientists. The stimulus funds may help to stem this threat at least in the short term. However, the APS must work together with FASEB and other societies to influence future funding decisions that affect our research and clinical practice. Public engagement and education are critical to our success.

The APS has always been a leader in publishing biomedical research, since the establishment of the *American Journal of Physiology* in 1898 under the leadership of William Townsend Porter. As editor of the *Journal of Applied Physiology,* and as a member of the editorial boards for leading journals in physiology and medicine, I know firsthand how important it is to maintain the quality and excellence of our journals and our scientific meetings. The misplaced emphasis on journal impact factor does not promote quality and excellence in scientific publication. Unfortunately, the impact factor is widely abused as a surrogate of the quality of scientific publications. The APS should take a more active role in this debate and promote better metrics of scientific quality that are focused on the individual investigator and the value of the scientific discovery. The recent debate on public access has also posed a real threat to our journals and to the peer review process. I am proud that the APS was a founding member of the DC Principles Coalition, a group that proposed reasonable alternatives to immediate open access that preserved the essential funding models of scientific publications without cost shifting to investigators.

Physiology Training and Communication

Physiology is important in our daily lives and in advancing medical discoveries. These essential facts must be communicated more effectively. Just this week, scientists, physicians and engineers throughout Rochester participated in a highly successful community science fair involving students from second grade through high school. Our community also has a math-science partnership that promotes educational programs in the public schools. Our labs provide opportunities throughout the year for mentoring high school students in science and engineering projects, and each summer, more than 200 students work in our labs, gaining valuable research experience that will hopefully shape their career choices. I am proud that the APS has been a leader in educational activities. We have a truly outstanding K-12 education program, and we need to consider other programs to feed the pipeline for future physiologists. Such programs might include summer undergraduate research fellowships in physiology funded by the APS. The APS has supported opportunities for high school and middle school science teachers to work in physiology labs during the summer, and we need to consider other programs to promote physiology education in middle and high schools. We also need to continue to promote physiology in undergraduate curricula. Through a variety of activities, we will encourage students to consider careers in physiology. These young physiologists will keep our society strong and vibrant into the future.

In conclusion, I want to offer my sincere thanks and grateful appreciation to the outgoing president, Irving Zucker, for all his contributions to the APS. I look forward to working with APS members and staff in furthering and expanding our goals and ensuring investment in a strong future for the society. I invite the suggestions and contributions of the entire membership in helping us achieve our goals. ❖

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APS Election Results

The American Physiological Society announces the results of the election of officers for 2009. **Peter D. Wagner,** University of California, San Diego, is the new President-Elect. The three newly elected Councillors taking office on April 22, 2009 are **David P. Brooks**, Johnson & Johnson; **Usha Raj**, University of Illinois at Chicago; and **Curt D. Sigmund**, University of Iowa. The Councillors will each serve a three year term. ❖

Peter D. Wagner

David P. Brooks

Usha Raj

Curt D. Sigmund

APS Councilors Participate in 35th Congress of the Spanish Society of Physiological Sciences

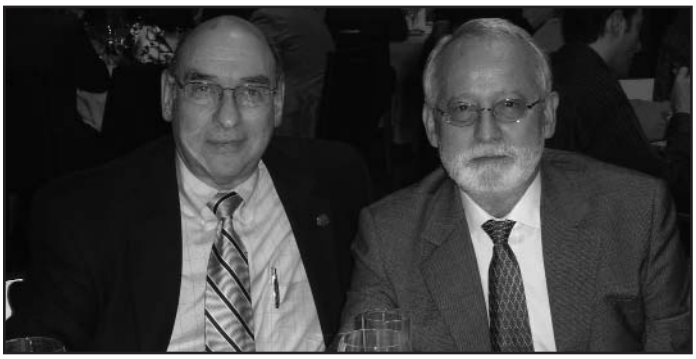
"Saludos, en nombre de la sociedad norteamericana de Physiological. Quiero dar gracias a los organizadores de la Sociedad Espanola de Ciencias fisiologicas por su invitacion. Es mi placer presentarles los resultados de nuestra investigacion corriente."

"Greetings from the American Physiological Society. I want to thank the organizers of the Spanish Society of Physiological Sciences for your invitation. It is my pleasure to present the results of our recent research."

With the above salutation, three APS Councilors presented lectures at the 35th Congress of the Spanish Society of Physiological Sciences (SECF) in Valencia, Spain on February 20, 2009. APS President Irving H. Zucker presented a talk entitled, "The regulation of central AT1 receptor expression and sympathetic tone in heart failure." Councilor David M. Pollock presented, "Endothelin: Physiolgical regulator of sodium balance and blood pressure." Councilor Joey P. Granger presented, "Pathophysiology of hypertension in response to placental ischemia during pregnancy." The session was chaired by Professor Javier Salazar, Chair of the Department of Physiology at The University of Murcia.

Approximately 350 attended the meeting which was held over a three-day period. The meeting included a teaching workshop, 21 symposia, posters and plenary talks by APS member Jose Jailfe of the University of Michigan, by Salvador Moncada of the Wolfson Institute for Biomedical Research at the University College London and by Ricardo Miledi of the University of California at Irvine.

The conference ended with a banquet at which the President of SECF, Professor Constancio González and Irving Zucker of APS congratulated the participants for an outstanding meeting. Finally, the President of the local organizing committee, Professor JoséViña added his thanks for the participants. ❖



APS President Irving H. Zucker and SECF President Constancio Gonzalez at the 35th Congress of the Spanish Society of Physiological Sciences.

APS President Irving H. Zucker and Councilors David M. Pollock and Joey P. Granger with Professor Javier Salazar of the University of Murcia.

The Arizona Physiological Society

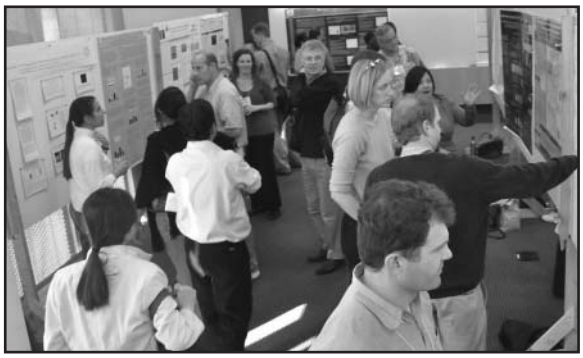
A New APS Chapter
Founded in 2008

At the 2008 Experimental Biology Meeting in San Diego, 10 APS members from the Univ. of Arizona, Arizona State Univ., Midwestern Univ. and Northern Arizona Univ. met to sign a petition and to develop Bylaws necessary to establish an APS Chapter within the State of Arizona (AzPS). Bylaws from previous and current APS Chapters were used to formulate the one submitted and approved by the APS Chapter Advisory Committee (CAC). A major intent of the Arizona Chapter was to focus on the professional preparation of undergraduate and graduate students and for postdoctoral trainees; hence, an Executive Committee was established that contained a President, President Elect, Secretary-Treasurer, a Councillor representing Postdoctoral Trainees and a Councillor representing Graduate Students. The terms of office will be two years for the President, one year for the President-Elect, three years for the Secretary-Treasurer, and one year for the Councillors. With the exception of undergraduate students, all have voting privileges and participate in the governance process. After considering the advice from current and previous Chapter officials, AzPS planners decided to locate the Secretary-Treasurer office permanently within the Department of Physiology at the Tucson campus and for the department to host the annual meeting unless otherwise requested. This arrangement was enhanced by the decision of Dr. Nicolas Delamere, Chair of the Department of Physiology, to assign Mrs. Linda Baughn of the department as Membership Coordinator for the Chapter.

Stan Lindstedt
AzPS President

After approval of the Bylaws, AzPS was able to recruit 28 Undergraduate Students, 25 Graduate Students, 12 Postdoctoral Trainees, and 49 APS or APS qualified individuals to become Regular Members. An election was held that had 58% of the eligible voters participating with Stan Lindstedt of Northern Arizona Univ. being elected as President, Erik Henriksen of the Univ. of Arizona selected as the Secretary-Treasurer, Carrie Sharoff of Arizona State Univ. for the Councillor: Postdoctoral Trainee position with Hilary Wakefield, Univ. of Arizona as the Councillor: Graduate Student Member representative.

On November 7 and 8, an inaugural meeting was held in Tucson with 90 members in attendance from five different educational institutions with financial support from APS, the Arizona Physiological Science Program and funds from membership and registration fees. The program featured the appearance of Meredith Hay, Executive Vice-President, Provost, Professor of Physiology and an active member of APS and an informative symposium entitled, "Disrupted Signaling: Cause or Consequences in Cardiovascular Diseases;" oral presentations by 12 Graduate Students, four Postdoctoral Students, and four Regular Members (Figure 2). Additionally, there were poster presentations by seven Undergraduate Students, 13 Graduate Students, 4 Postdoctoral Trainees, and five Regular Members. The APS sponsored Keynote Lecture was presented by Virginia Huxley of the Univ. of Missouri, whose interesting talk was entitled "When it comes to exchange, in health and disease, males and females follow different rules, or what the textbooks don't know." An equally well received



Select overview of the 28 posters on display.

Presentation of Graduate Student Zelieann Rivera from the University of Arizona.

Reception interactions between Nicholas Delamere, Stan Lindstedt and John Konhilas.

Keynote Lecture by Dr. Virginia Huxley.

Dr. Stuart attempting to persuade and intimidate Dr. Charles Tipton on changing the meeting location for 2009.

The Distinguished Arizona Lecture by Douglas Stuart.

presentation was the Distinguished Arizona Lecture by Douglas Stuart. His title was "Significance of integrative and comparative approaches in studies on the neurophysiology of movement."

As required by the Bylaws, a business meeting was held which featured an announcement of officers, distribution of awards (N=6) for oral and poster presentations and an unexpected lively discussion period.However, the highlight of the meeting was the reception that followed the lecture given by Dr. Huxley. Needless to say, a good time "was had by all."

Charles M. Tipton
for the Planning Committee

New Regular Members

***Transferred from Student Membership**

Jalal M. Abu-Shaweesh
Rainbow Babies & Children's Hosp., OH
Carlos D. Aizenman
Brown Univ., RI
Susanne Angelow
Univ. of Southern California
Alan David Attie
Univ. of Wisconsin, Madison
Matthew Aaron Barlow*
Pennsylvania State Univ.
Matthias Barton
Univ. Hosp., Zurich, Switzerland
Luis Afonso Bras-Rosario
Inst. Gupbenkian Liencia, Portugal
Rostislav Bychkov
Univ. Centrala Del Caribe, Bayamon, PR
Denis Pires Carvalho
Univ. Federal, Rio De Janeiro, Brazil
Lisa A. Cassis
Univ. of Kentucky
Angela Chale-Rush
USDA Nutr. Res. Ctr. Aging, MA
Shen Liang Chen
National Central Univ., FL
Yunjia Chen
Univ. of Alabama, Birmingham
Mark Peter De Caestecker
Vanderbilt Univ. Med. Ctr., TN
Helene Simone Combrisson
Alfort Sch. Vet. Med., France
Carlo J. DeLuca
Boston Univ., MA
Maggie Keck Diamond-Stanic*
Univ. of Arizona
Francesca Di Sole
Univ. of Texas Southwestern Med. Ctr.
Ying Dong
Univ. of Florida
Edward Robert Donovan*
Univ. of Nevada, Reno
Julian A.T. Dow
Univ. of Glasgow, Scotland
Charles L. Edelstein
Univ. of Colorado, Aurora
Steven Farber
Carnegie Inst. for Sci., Baltimore, MD
Biff Forbush
Yale Univ., CT
Robert Mark Friedman
Vanderbilt Univ., TN
Emilio R. Garrido Sanabria
Univ. of Texas, Brownsville
Anne Margaret Gingery
Univ. of Minnesota, Duluth
Mahasweta Girgenrath
Trustees of Boston Univ., MA
Petra Golja*
Tomlin, Slovenia
Hiroaki Gomi
NTT Comm. Sci. Labs, Japan
Kelley Wilson Grorud*
Edgewood College, WI
Shuhong Guo
Univ. of New Mexico Sch. of Med.
Darryl Lynn Hadsell
Baylor Coll. of Med., Houston, TX
Milton H. Hamblin*
Univ. of Michigan
Michael J. Hammer*
Univ. of Wisconsin
David Martin Harris
Drexel Univ., Coll. of Med., PA
Mitra Jennifer Hartmann
Northwestern Univ., IL
Travis Harvey*
USMA, NY
Matthias Heringlake
Univ. of Lubeck, Germany
Mari K. Hopper
Univ. of Southern Indiana
Keiko Ishihara
Saga Medical School, Japan
Yi Jing*
West Virginia Univ.
Hilmi Burak Kandilci*
Ankara Univ., Turkey
Alexey Karpushev
Medical College of Wisconsin
Kala M. Kaspar*
Nestlé Nutrition R&D Ctr., MN
Amanda C-L Kentner
Univ. of Calgary, Canada
Pimonrat Ketsawatsomkron*
Univ. of Iowa
Kusum K. Kharbanda
VA Medical Center, NE
Jung A. Kim
Univ. of California, LA
Sebastian Kracun
Univ. of California, LA
Hyo-Bum Kwak*
East Carolina Univ., NC
Xin Li
Univ. of Alabama, Birmingham
Clark A. Lindgren
Grinnell College, IA
Huiling Liu
Univ. of Mississippi Med. Ctr.
Harald Loppnow
Martin-Luther Univ., Halle, Denmark
Scott Thomas Magness
Univ. of North Carolina, Chapel Hill
Claudio Marabotti
Ospedale Bassa Val Di Cecina, Italy
Marshall D. McCue*
Blaustein Inst. Desert Res., Israel
John J. McGuire
Memorial Univ., NF, Canada
Adam J. Moeser*
North Carolina State Univ.
Ki Young Na
Seoul Nat'l Univ., South Korea
Marc Navre
Ardelyx Inc., CA
Brent A. Neuschwandr-Tetri
St. Louis Univ., Sch. of Med., MO
Prashant K. Nighot
North Carolina State Univ.
Vani Nilakantan
Medical College of Wisconsin
Dervla O'Malley
Univ. College Cork, Ireland
Thomas Patrick Olson*
Mayo Clinic, Rochester, MN
Leif Henrik Oxburgh
Maine Med. Ctr. Res. Inst.
Alexander Panfilov
Utrecht Univ., Netherlands
Beth A. Parker*
Hartford Hospital, CT
Tengis S. Pavlov
Medical College of Wisconsin
Amina Ann Qutub
Johns Hopkins Univ., MD
Scott Robert Richmond*
Washington Univ. Sch. of Med., MO
Per Ebbe Roland
Karolinska Inst., Stockholm, Sweden
Mirko A. Rosic
Med. Fac. Kragujevac, Serbia & Montenegro
Robert Scott Ross
Univ. of California, San Diego
Hiroyuki Sakurai
Kyorin Univ. Sch. of Med., Tokyo, Japan
Mark A. Sarzynski
Pennington Biomedical Res. Ctr., LA
Eric Peter Schmidt
Johns Hopkins Univ. Sch. of Med., MD
Reza Sharif-Naeini*
Cent. Natl. De Recherche Sci., France
Maria Siebes
Univ. of Amsterdam, Netherlands
Shantanu Sinha
Univ. of California, San Diego
Kurt Sowers
Univ. of Maryland Sch. of Med.
Fanny Marie Storck
Alfort Sch. of Vet. Med., France
Phyllis R. Strauss
Northeastern Univ., MA
Wasana K. Sumanasekera
Sullivan Univ., Louisville, KY
Krishna Mohan Surapaneni
Saveetha Med. College & Hosp., India
John R. Thistlethwaite*
Ohio Dominican Univ.
Michael J. Tisdale
Aston Univ., Birmingham, UK

Susan Plock Travers
Ohio State Univ.
Greg B. Vanden Heuvel
Univ. of Kansas
Jill W. Verlander
Univ. of Florida
Jakob L. Vingren*
Univ. of North Texas
James M. Wakeling
Simon Fraser Univ., BC, Canada
Lois Jean Wofford Harlston
Tennessee State Univ.
Stephanie Wohlgemuth
Univ. of Florida, Gainesville
Newton Harry Woo
FDA, MD
Fan Wu
Medical College of Wisconsin
Jack Yamuy
VA Greater LA Hlthcare System, CA
Sung-Ling Yeh
Taipei Medical Univ., Taipei, Taiwan
Hong Zhu
Virginia College of Osteopath Med.
Robert Zietse
Erasmus MC, Rotterdam, Netherlands

New Student Members

William Amonette
Univ. of Texas Med Branch
Elsa Baena
Univ. of Arizona
Bridgette Ann Christopher
Case Western Reserve Univ., OH
Sarah Elizabeth Dougherty
Univ. of Alabama, Birmingham
Mitzi Dunagan
Univ. of Tennessee
Kirk Evanson
Univ. of Arkanas, Fayetteville
Emanuel Couto Furtado
Gama Filho Univ., Brazil
Dustin Michael Grinnell
Pennslyvania State Univ.
Lenka Hruba
Third Faculty of Med., Czech Rep.
Heidi Jordan
Wright State Univ., OH
Kria Kawamoto
Univ. of Hawaii
Sukant Khurana
Univ. of Texas, Austin
Justin La Favor
East Carolina Univ., NC
Kenneth Lim
Harvard Med. Sch., MA
Robert Lin
Univ. of Pennsylvania
Santiago Lorenzo
Univ. of Oregon
Adam Marmon
Univ. of Colorado, Boulder
Brent Myers
Univ. of Oklahoma
Samar Nasser
Wayne State Univ., MI
Phuc Hoang Nguyen
Texas A&M Univ.
Monica Ortiz-Mesina
Univ. De Colima, Mexico
Michael Park
Emory Univ., GA
Sam Perez
Loma Linda Univ., CA
Yashoda Puttabyatappa
Medical College of Georgia
Bermary Santos-Vera
Univ. of Puerto Rico
Barbora Schutova
Third Faculty of Med., Czech Rep.
Christopher Schwartz
Michigan Technological Univ.
John Sesay
Wake Forest Univ., NC
Henrik Seth
Univ. of Gothenburg, Sweden
Jing Shao
Washington Univ., MO
Kendrick Shaw
Case Western Reserve Univ., OH
Jenna Stangland
Univ. of Missouri, Columbia
Ryan Stormont
Univ. of Oklahoma
Parker L. Tameka
Univ. of Phoenix, North Florida
Daniela Terson De Paleville
Univ. of Louisville, KY
Qian Wang
Kansas State Univ.
Susanne A. Van Weelden
Texas Tech Univ., Hlth. Sci. Ctr.
Ruben Vaughn
Ferris State Univ., MI
Tanganyika Wilder
Univ. of Illinois, Chicago
Josette J. Williams
Louisiana State Univ. HSC
Yang Yang
Georgia State Univ.

New Affiliate Member

J. Rex Lee
West Texas A&M Univ.

Recently Deceased Members

David F. Bohr
Ann Arbor, MI
Jacob Grossman
Bronx, NY
J. Carlos Romero
Rochester, MI
Gerald B. Spurr
Milwaukee, WI
Nathaniel I. Berlin
Aventrua, FL
N. Arthur Coulter
Greenville, NC
Pierre Dejours
Saint-Pierre, France
Robert N. Frank
Baltimore, MD
Albert F. Kelso
Hazel Crest, IL
Thomas J. Kennedy, Jr.
Garrett Park, MD
Samuel Meerbaum
Woodland Hills, CA
Roy. B. Mefferd
Sugar Land, TX
Barbara R. Rennick
Siler City, NC
Betty Rosoff
New York, NY
Daniel H. Simmons
Los Angeles, CA
Paola S. Timiras
Berkeley, CA

Highlights from PhUn Week 2008

About 200 APS physiologists volunteered their expertise and time in reaching out to more than 7,300 students last November during Physiology Understanding Week 2008, the Society's member-based annual outreach program to K-12 classrooms (www.PhUnWeek.org). APS members partnered with more than 70 teachers and science educators from across North America to develop engaging presentations and interactive demonstrations for students at all grade levels in 44 PhUn Week events. All events with the primary APS member and lead teacher coordinators are listed in Table 1, but note that there are many more dedicated volunteers with each event site not listed on the table. The following PhUn Week events are a sample of the outreach efforts that took place in November 2008.

For the second consecutive year, the Boston Children's Museum kicked off PhUn Week 2008 under the leadership of APS member Andrea Gwosdow, research or health-related volunteers from the Boston area, and museum staff. Families were engaged in listening to their heart beat, finding their pulse, understanding the knee jerk reflex, examining x-ray films, and experiencing the museum's KidPower Health Exhibit. Additionally, VWR Education generously loaned anatomical skeleton models for demonstration.

Jessica Clark uses Powerlab LabTutor to engage a group of students in monitoring their pulse. Equipment and software loaned by ADInstruments.

Also for the second consecutive year, ADInstruments, Inc. loaned PowerLab equipment to Jessica Clark (Washington Univ. School of Medicine, St. Louis, MO) for her PhUn Week events in her hometown of Albuquerque, NM.

Bina Joe (Univ. of Toledo College of Medicine) coordinated a classroom visit with a team of physiologists, followed by a campus visit coinciding with the Ohio Physiological Society Meeting 2008. At the meeting, a panel of six physiologists led question and answer discussions with approximately 80 high school students.

Heddwen Brooks and Zoe Cohen (Univ. of Arizona, Tucson) coordinated their PhUn Week event to coincide with the Southern Arizona Math, Science, and Technology Funfest. Funfest is an annual three day math and science extravaganza held at the Tucson Convention Center which aims to introduce fourth through eighth graders to diverse math, science, and engineering principles using real-life perspectives. More than 30 students and faculty from the Department of Physiology and the Physiological Sciences Graduate Program at the university volunteered over two days reaching more than 2,400 students.

A young child at the Boston Children's Museum makes a connection between an image on an x-ray film and an anatomical skeleton with guidance from a research volunteer. Skeleton model loaned by VWR Education.

A group of students work through the activity on their own on the LabTutor system in Albuquerque, NM.

Table 1. Lead coordinators and event sites for PhUn Week 2008. RT: APS Research Teacher (current or past fellow), K: Kindergarten, PS: Primary School, ES: Elementary School, MS: Middle School, HS: High School.

APS Member Coordinator	Institution	City, State	Teacher/Educator Coordinator	Grade Level(s)
Curt Anderson	Univ. of Idaho	Pocatello, ID	Teri Mitton (RT)	HS
Marvin Bernstein	Univ. of New Mexico	Las Cruces, NM	Sandra Cross (RT)	MS
Lorrie Brilla	Western Washington Univ.	Bellingham, WA	Carter Maden	HS
Jackie Brittingham	Simpson College	Indianola, IA	Lara Eberlein	ES
Heddwin Brooks, Zoe Cohen	Univ. of Arizona	Tucson, AZ	Stacey Forsyth	ES/MS
Gregory Brower	Univ. of South Carolina	Columbia, SC	Karen Walton (RT)	HS
Jessica Clark	Washington Univ.	Albuquerque, NM	Carmen Carrejo	ES
			Lori West	HS
Joseph Covi	Colorado State Univ., Fort Collins	Fort Collins, CO	Tom Creegan, Matthew Foster, Michelle Goodwine	HS
Jeff Falcone	Univ. of Louisville	New Albany, IN	Margaret Shain (RT)	K/MS
Peter Farrell	East Carolina Univ.	Greenville, NC	Leigh Apple	MS
Jon Fisher	Saint Louis Univ.	St. Jacob, IL	Jennifer Davis (RT)	MS
Rayna Gonzales	Univ. of Arizona	Phoenix, AZ	John Nishan (RT)	HS
Barb Goodman	Univ. of South Dakota	Vermillion, SD	Sally Stoll (RT)	MS
TanYa Gwathmey	Wake Forest Univ.	Statesville, NC	Glenn Usry	ES/MS/HS
Andrea Gwosdow	Gwosdow Associates	Boston, MA	Boston Children's Museum	ES/MS
My Helms	Emory Univ.	Atlanta, GA	Cynthia Hightower, Cowanda Leeks	pre-K
Robert Hester	Univ. of Mississippi	Jackson, MS	Chandra Stork (RT)	HS
David Holtzclaw	Univ. of Nebraska	Omaha, NE	Pamela Ford	ES
			Cara David	MS
			Kris Sandall	HS
Cynthia Jackson	Tuskegee Univ.	Tuskegee, AL	Belinda Hart	MS
			Mary Arrington	HS
Bina Joe	Univ. of Toledo	Toledo, OH	Ohio Physiological Society Meeting	HS
Kelvin Jones	Univ. of Alberta	Edmonton, Alberta, Canada	Jessica Shewchuck	MS
Richard Lieber	Univ. of CA, San Diego	San Diego, CA	Juanita Quevedo (RT)	HS
Laura Lorentzen	Kean Univ.	East Orange, NJ	Adriana Rojos	MS
Keisa Mathis	Louisiana State Univ.	New Orleans, LA	Jeff Colassi	ES
			Gwen Gilbert	MS
Steven Miller	Indiana Univ.	Indianapolis, IA	Norm Leonard (RT)	HS
Diane Munzenmaier	Medical College of Wisconsin	Milwaukee, WI	Keith Bilello, Elizabeth Siegel	HS
Thomas Pressley	Texas Tech Univ.	Lubbock, TX	Emma Lovering	MS
Kathy Ryan	US Army Inst. of Surg. Res.	Fort Sam Houston, TX	Diana Comuzzie	MS
Guido Santacana, Nildris Cruz	Univ. of Puerto Rico, Medical Sciences Campus	San Juan, Puerto Rico	Zugeily Marcano	HS
			Ana Rodriguez	HS
Christine Schnackenberg	GlaxoSmithKline	Malvern, PA	Sheri Lawrence	ES
Harold Shlevin	Chana Tikvah Pharma Partners	Atlanta, GA	Christine Hippeli	MS
Jessica Snow	Univ. of New Mexico	Albuquerque, NM	Craig Snow	MS
Patric Stanton	New York Med. College	Scarsdale, NY	Maria DeCandia (RT)	HS
Britt Wilson	Univ. of South Carolina	Columbia, SC	Lisa Norman	HS
Bill Yates	Univ. of Pittsburgh	Pittsburgh, PA	Monica Erwin (RT)	HS
n/a	n/a	Louisville, KY	Jonni Miller (RT)	HS

A kindergartner is a model in the "Dress a Scientist" group activity in which stereotypical perceptions of a scientist are debunked.

Margaret Shain, an APS Research Teacher and Mentor/Instructor, in partnership with Jeff Falcone (Univ. of Louisville) and two of his graduate students, coordinated a peer teaching PhUn Week event in New Albany, IN. She guided her 42 eighth grade students at

Students use stethoscopes to detect their heart beats while one student is monitoring and recording his heart beat into a data acquisition system.

Our Lady of Perpetual Help School in PhUn Week exercises, such as taking a wrist pulse and learning aspects of the heart, circulation, health, exercise and nutrition. The following week her troop of students engaged 30 kindergartners rotating through different stations set up throughout the school's gymnasium. The experience was exciting not only for the kindergartners, but also for the middle school students in learning how to communicate and express science concepts to younger children.

All event sites received educational resources for students such as the Science of Life, Physiology Research in Action comic books, career brochures, and promotional memorabilia such as squeezy anatomical hearts, key rings, and drawstring sport packs. The team of presenting volunteers received PhUn Week 2008 t-shirts. Additionally, APS members and lead teacher coordinators

Graduate and undergraduate physiology students perform jumping jacks to engage elementary and middle school students in taking their pulse during the Funfest event in Tucson, AZ.

received hats for their efforts in planning their local PhUn Week events. The success of this APS member-based program is a testament to the dedication of our members who make an impact on the next generation of research scientists by reaching out to young students.

Plans are developing for PhUn Week 2009 during the week of November 2. Although the theme highlights the physiology of exercise and fitness, APS members are welcome to focus on other areas of physiology. For more information, be sure to join us for coffee and a light breakfast at the PhUn Week training session on Sunday, April 19 at EB 2009 (9:00-11:00 am, Hilton Riverside, Grand Salon Room 15). Send an email to: phunweek@the-aps.org to claim a free gift at the session, and/or for notification of program updates on the www.PhUnWeek.org website. For other information, contact Mel Limson in the Education Office at mlimson@the-aps.org. ❖

Young students give attention to the researcher volunteer in taking their own pulses.

Another small group rotation on nutrition for kindergartners led by eighth grade students, coordinated by Margaret Shain and Jeff Falcone.

APS/NIDDK Minority Travel Fellowship Awards Program

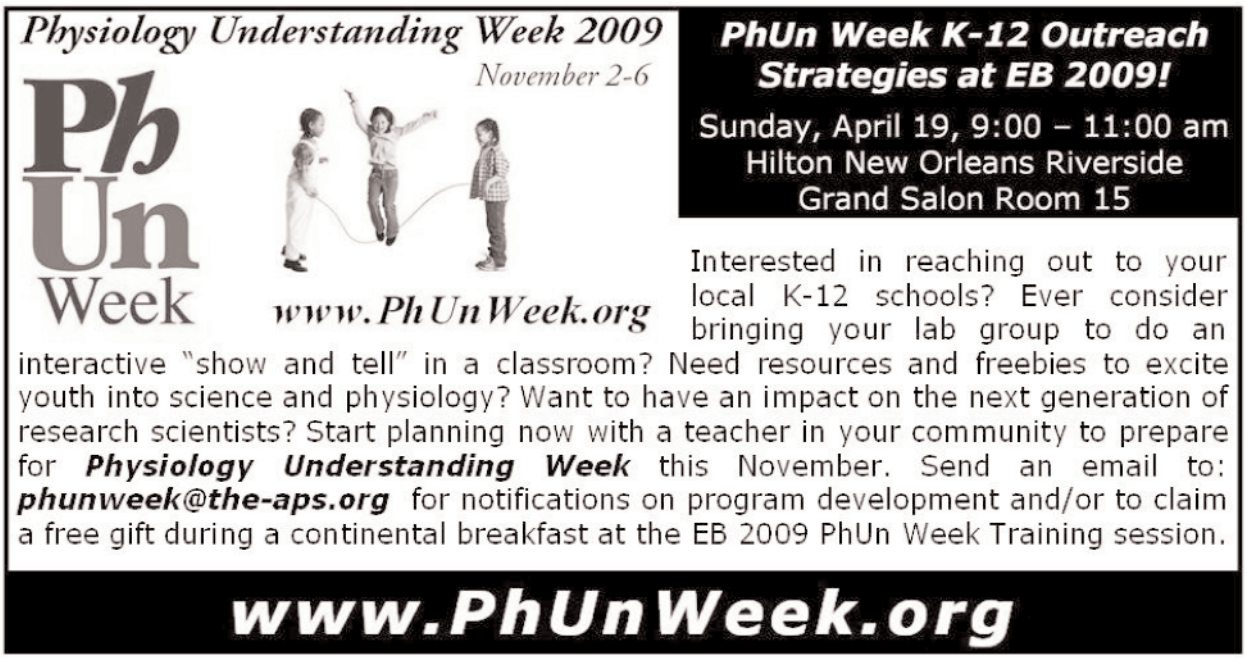
Experimental Biology 2009 April 18-22 New Orleans, LA

Since its inception in 1987, the APS/NIDDK Minority Travel Fellowship Program has awarded more than 730 travel fellowships to over 500 undergraduate, graduate, and postdoctoral students and to faculty members at minority institutions. It is an effective program model that capitalizes on a critical impact point where professional societies can make a real difference—catalyzing the development of important professional networks for undergraduate, graduate, and postdoctoral minority students in physiology and biomedical research that can increase their retention in these fields.

The APS, on behalf of the Porter Physiology Development Committee, is pleased to congratulate the following awardees of the APS/NIDDK Minority Travel Fellowship Awards to attend Experimental Biology 2009:

Adebowale Adebiyi, Univ. of Tennessee HSC
Imo Akpan, Univ. of Pennsylvania
Gustavo Ares, Henry Ford Hospital
Krystal Brinson, Medical College of Georgia
Raquel Brown, Southern Illinois Univ.
Heidy Contreras, Univ. of California, Irvine
Zeilieann Craig, Univ. of Arizona
John Dubinion, Univ. of Mississippi Medical Center
Jorge Gamboa, Univ. of Kentucky
Fernanda Giachini, Univ. of Sao Paulo/Med. College of Georgia
Shea Gilliam-Davis, Wake Forest Univ. School of Med.
Albert Gonzales, Colorado State Univ.
Helmut Gottlieb, Univ. of the Incarnate Word
Dolores Guest, Univ. of Illinois, Urbana-Champaign
Andres Hernandez, Auburn Univ.
Marcela Herrera, Henry Ford Hospital
Michael Hoffman, Univ. of Wisconsin-Madison
Debra Irsik, Univ. of Nebraska Medical Center
Erin Keen-Rhinehart, Harbor UCLA Medical Center
Anna Leal, UT Southwestern
Natasha Lugo-Escobar, Univ. of Puerto Rico Med. Sci.
Jeffrey Mason, Univ. of PA School of Vet. Med.
Cathy Moore, Univ. of North Carolina at Charlotte
Norma Ojeda, Univ. of Mississippi Medical Center
Karl Pendergrass, Wake Forest Univ.
Arthur Pope, Univ. of Florida
Clintoria Richards-Williams, Univ. of Alabama
Lilliana Sanchez, Univ. of New Mexico
Olga Santiago, Ponce School of Medicine
Aerial Singleton, New Mexico State Univ.
Mesia Steed, Wake Forest Univ.
Carmen Troncoso Brindeiro, Univ. of Nebraska Med. Ctr.
Carla Trujillo, New Mexico State Univ.
Johana Vallejo-Elias, Midwestern Univ. - Arizona Osteopathic School of Medicine
Vabren Watts, Meharry Medical College
Letitia Weigand, Johns Hopkins Bloomberg School of Public Health
Leslie White, Univ. of Florida-College of Medicine
Justin Wilson, Howard Univ.

For more information about the APS Minority Travel Fellowship Awards, contact Brooke Bruthers, Minority Programs Coordinator, at bbruthers@the-aps.org. ❖



APS Offers Advice on ILAR *Guide* Update

In January, the APS Animal Care and Experimentation Committee submitted comments to a panel convened by the National Academy of Sciences' Institute for Laboratory Animal Research (ILAR) that has been asked to update the *Guide for the Care and Use of Laboratory Animals.* The panel has been asked to bring the 1996 edition of the *Guide* into line with "new scientific information related to the issues already covered in the *Guide.*" It is also supposed to "add discussion and guidance on new topics of laboratory animal care and use related to state-of-the-art animal research programs." Several organizations, including FASEB and the American Association of Immunologists and the American Association of Anatomists, endorsed the APS statement. The *Guide* update is expected to be completed in the fall of 2010.

The APS recommended that the updated *Guide* continue to rely upon "performance-based standards and the exercise of professional judgment" because this approach "represents the best way to optimize animal welfare and the successful achievement of the research objective while minimizing non-productive regulatory burden." Specific topics addressed in the APS statement included study design; minimizing pain and distress; environmental enrichment; multiple major surgeries; housing; and exercise research.

Under **Study Design**, the APS recommended that the updated *Guide* encourage IACUCs to rely on outside experts and prior reviews from funding agencies, if needed, to assist them in assessing the scientific merits of a proposal. The statement also noted that "[r]epeating studies to validate or build upon published literature is an important part of the scientific process."

The section on **Minimizing Pain and Distress** endorsed the general guidelines provided by the 1996 *Guide*, noting that updated references are needed and should be made available online.

The APS cautioned against mandating **Environmental Enrichment** because many interventions intended as enrichment may have unintended consequences. These include deleterious effects on animal well-being itself or adding confounding variables to the research. The addition of confounding variables leads to a tension between the drive to refine procedures and the drive to reduce the number of animals needed to obtain statistically valid data.

The APS also noted that the definition of M**ajor Surgery** as "penetrate[ing] and expos[ing] a body cavity" does not take into account newer surgical techniques that are less invasive and produce relatively little post-operative pain or distress. The APS urged that the definition of major surgical procedure be revised to focus on the actual pain or distress of a given procedure because this has the potential to reduce the number of animals needed.

Under **Housing**, the APS provided numerous post-1996 references on the topic of housing densities and noted that there have been many innovations in caging systems. The APS suggested that the *Guide* eschew setting specific parameters and instead offer "information to help institutions develop and assess performance-based standards" and consider densities, temperatures, and humidity levels, and environmental enrichments as "parts of an integrated environment" instead of as discrete variables.

The APS also recommended that the updated *Guide* incorporate the ***APS Resource Book for the Design of Animal Exercise Protocols*** [http://the-aps.org/pa/resources/additional/exercise.htm].

APS Urges USDA to Revise Contingency Planning Rule

In February the APS submitted comments to USDA on a proposal to require contingency plans to care for animals regulated under the Animal Welfare Act in the event of an emergency or natural disaster. Under the proposal, facilities would be required to develop a plan for situations it "might experience" and to provide training to personnel on plan implementation. USDA inspectors would also review contingency plans and training as part of regular AWA compliance inspections. According to the *Federal Register* notice, the goal of the proposal was to "heighten the awareness of licensees and registrants regarding their responsibilities and help ensure a timely and appropriate response should an emergency or disaster occur."

In the comments submitted on this proposal, APS President Irving Zucker told USDA's Animal and Plant Health Inspection Service (APHIS) that while the APS concurs that contingency planning is important, the Society has "serious concerns about how APHIS proposes to implement planning and training requirements." In the *Federal Register* notice, APHIS acknowledged that due to differences in circumstances among regulated entities it would not try to specify what should be included in contingency plans. The APS concurred that flexibility is appropriate, while noting that it also produces a situation where there are no objective criteria for facilities to develop plans or for APHIS inspectors to evaluate them.

The APS also echoed concern raised in comments submitted by National Association for Biomedical Research (NABR) and the Council on Government Relations (COGR) in which they pointed out that the phrase "situations the facility might experience" would create an impossible planning burden for facilities. APS concurred with their recommendation that the phrase "likely to experience" as more appropriate.

The proposal also failed to distinguish between contingency planning for emergencies such as a fire, power outage, or equipment failure, as opposed to planning for pervasive natural disasters such as hurricanes, floods, wildfires or earthquakes. One of the lessons to be learned from catastrophic events such as Hurricane Katrina is the fact that while planning is necessary, it may not be sufficient. In extreme cases, effective response may ultimately depend upon timely and accurate information.

Stimulus Legislation Contains Major Boost for Science

On February 17, 2009, President Barack Obama signed the American

Recovery and Reinvestment Act of 2009 (H.R. 1). The $789 billion stimulus measure is aimed at reviving the American economy by providing an infusion of funds for infrastructure priorities, including scientific research. The National Institutes of Health (NIH), National Science Foundation (NSF), Veterans Affairs (VA) and NASA will all receive additional funding under the provisions of the stimulus. The terms of the legislation stipulate that most of the funds must be spent before September 30, 2010, and recipients of stimulus money will be subject to new reporting requirements aimed at increasing government transparency (1).

NIH

Thanks to the leadership and vision of Senators Arlen Specter (R-PA) and Tom Harkin (D-IA), the NIH will receive a total of **$10.4 billion** of stimulus funding. $8.2 billion is allocated to the Office of the Director, $7.4 billion of which will go to the Institutes and Centers and to the Common Fund. The remaining $800 million will be retained in the Office of the Director to fund priority areas of science that can be expected to make measurable progress within two years.

The National Center for Research Resources (NCRR) will receive $1 billion for construction and renovation of extramural research facilities and $300 million for shared instrumentation and other capital research equipment. Another $500 million will fund high-priority repair, construction and improvement projects for the NIH intramural campus. The remaining $400 million will go to conduct comparative effectiveness research.

The fact that the stimulus money must be spent in the next two years represents a significant challenge for the NIH. With many details yet to be worked out, the NIH has released a broad outline of how the money will be allocated. The research funding will be spent in three categories:

funding for highly meritorious R01 applications that have already been submitted and peer-reviewed. Some new R01s that can be expected to make progress in two years may also be funded;

targeted supplements to existing grants;

new two-year challenge grants that will provide $500,000 per year for two years.

More information about how NIH plans to distribute the money is available here: http://www.nih.gov/about/director/newsletter/newsletter.pdf.

NSF

The stimulus bill provides **$3.0 billion** for the NSF, divided between Research and Related Activities ($2.5 billion), Education and Human Resources ($100 million) and Major Research and Facilities Construction ($400 million).

Of the $2.5 billion for Research and Related Activities, $300 million will go to Major Research Instrumentation and $200 million is for Academic Research Infrastructure to modernize facilities. The remaining $2 billion is for research grants.

Of the $100 million for E&HR, $60 million will go to the Noyce Teacher Scholarship program; $25 million is for the Math and Science Partnership program and $15 million will go to Professional Masters of Science programs.

With the addition of $3.0 billion from the stimulus package, the FY 2009 NSF budget will exceed the $7.3 billion funding level authorized under the America COMPETES Act of 2007. This will put NSF on the track to double its budget over the next ten years.

Veterans Affairs

The Department of Veterans Affairs (VA) Veterans Health Administration will receive **$1.25 billion** in stimulus funds. While the legislation does not specifically designate funds for medical research, $1 billion will go to maintenance of medical facilities. The remaining $250 million includes $50 million for Information Technology Systems, $150 million for General Operating Expenses, and $50 million for National Cemetery Administration.

NASA

The stimulus plan allocates **$1 billion** for NASA. Of that total, $400 million will go to NASA Science programs, with an emphasis on climate change research. Other stimulus funding will go to aeronautics research ($150 million), repairs to NASA facilities damaged by recent natural disasters ($50 million), and development of Constellation Systems, the human spaceflight program that is slated to succeed the shuttle program when it is retired ($400 million).

1. Information on stimulus spending will be made available to the public through the website: http://www.recovery.gov.

Advocacy Tools for 111th Congress

Wondering where newly elected Members of Congress stand on research issues? Check out FASEB's new online guide to the 111th Congress. The website compiles a wealth of resources with information about the more than sixty freshman Members of Congress, including their statements and positions on issues such as federal funding for science, stem cell research, regulatory issues and science, technology, engineering and mathematics (STEM) education, as well as the amount of federal research money that flows into their state or district. The online guide also includes links to:

FASEB's Washington Update, the Office of Public Affairs' biweekly newsletter;

up to date budget and appropriations information;

a legislative action center to facilitate contacting Members of Congress on pending issues that affect research;

information about relevant Congressional committees, as well as Congressional calendars and scheduled hearings.

The 111th Congress Information and Advocacy Center can be accessed at: http://opa.faseb.org/pages/Publications/congressinfocentermain.htm. ❖

Communications Update

As *The Physiologist* went to press, the Communications Department and Communications Committee were finalizing plans for the hands-on symposium, ***The Wiki Wiki Workshop: Your Fast Track to the New APS Web Site.*** The symposium will take place at 1 p.m., Saturday, April 18, at **Experimental Biology 2009**, in the Ernest N. Morial Convention Center in New Orleans.

Members are expected to be part of a humorous and fast-paced four-part presentation on what APS and other organizations are doing to connect science, health, and the public in the Web 2.0 era. Among the topics being discussed are the APS wiki, a member-driven collaborative site that will serve as the basis of our upgrade of the consumer-based site ***PhysiologyInfo.org***. There will be a hands-on learning segment to introduce participants to the wiki.

At press time, the following speakers had been confirmed:

Meg Farris, Medical Reporter, *WWL-TV* Channel 4, in New Orleans. The CBS affiliate reaches southeastern Louisiana and parts of southern Mississippi. She does the high-profile segment *Medical Watch,* which appears four times per week. Her episodes range from the multi-faceted topics of health care to interviews with nationally known medical and fitness specialists.

Marin P. Allen, Director of Public Information at the National Institutes of Health. She is a former director of communications for the National Institute on Deafness and Other Communication Disorders, directed public relations at Gallaudet College and has received two EMMY Awards for programs she produced for *Discovery Channel* and *PBS*.

Christie Nicholson, freelance science journalist, podcast and internet video series producer and contributing editor at *SciAm.com,* where she helped launch two video series, *Instant Egghead* and *The Monitor;* and two audio podcasts, *60-Second Psych* and *60-Second Earth*. She won a Webby and a People's Voice award for a site she helped create and produce, *Science of Sex*.

Communications Committee Chairman Frank Belloni, of the New York Medical College, will moderate the session. He has led the committee since 2006. Under his direction, the committee developed and launched the APS podcast series, *Life Lines* (2007) and has overseen revitalization of the APS consumer web site, *PhysiologyInfo.org* and the development of the APS wiki. ❖

The Physiologist
Vol. 52, No. 2, 2009

Delivering a Dynamic Job and Chalk Talk

Susan McKarns
Univ. of Missouri

During your interview visit, you will be asked to give a "job talk"—a formal presentation on your current research and demonstration of your skills; a "chalk talk"—an informal presentation to discuss your future goals and the fundability of your work; and/or a "teaching talk"—either a simulated or guest lecture. In any case, this talk is crucial, as it provides the best opportunity for a candidate to showcase his/her intellect, skills, congeniality, and teaching promise.

Goal: Your goal is to engage your audience. Typically, you will have about 90 seconds to capture a person's attention and convince them that they really want to spend their time listening to you. You want your audience to remember what you said and why you said it. You want everyone leaving the room talking about your talk. Remember—you want *them* to hire *you*!

Format: The style of the interview talk will differ between academic, industry, government, and teaching institutes. It is *your* responsibility to know to which type of institute you are applying and exactly what type of talk the institute requests from you. Regardless of the format, apply the old adage "Tell them what you are going to say, say it, and then tell them what you said." *Always* introduce yourself, cordially thank the organizers, and be enthusiastic, focused, punctual, engaging, courteous, and sincere.

Basic Rules for Every Job Talk

Know your audience: This is essential and the only way to know exactly how much introduction you need to provide. Equally important, you will also need to determine whether the composition of your talk should be general and broad or specific and detailed. It is highly unlikely that there is going to be anyone in the audience who cares more about your research than yourself—don't try to tell them everything but, rather, focus on the highlights.

Before you begin preparing your talk, find out who will be attending. It is absolutely critical that you address your entire audience—everyone matters! A tremendous amount of enthusiasm can be generated from a really good job talk, and everyone in the room can become your advocate, so utilize this opportunity to reach beyond the scope of the search committee to portray your talents.

Audiences differ. The audience at a research institute will be other scientists—they will be representative of all levels and will come from within as well as outside of the department. The audience at a teaching institute is more generalized and will be comprised of faculty, administrators, and students. Make an extra effort to connect with the students; it is likely that they have been encouraged to provide feedback. The audience for an industry position will include scientists, business administrators, and representatives from human resource, financial, and marketing divisions. Typically, a research institute hires for scientific excellence, a teaching institute for your teaching capacity, and industry for your technical skills. Set the tone, focus, and organization of your talk accordingly. Always deliver your talk to the "outsiders," not to the few experts in the audience. *Always* acknowledge everyone.

Susan McKarns

Understand the rules: *Be certain that you understand what type of talk is requested*. Again, you may be asked to give a "science talk," a "teaching talk," or a "chalk talk." The science talk is usually given on the first day of a two-day visit and is usually 45-50 minutes in length. A chalk talk usually comes on the second day of the first visit or during a second visit and can last from 45 to 90 minutes. A teaching talk, depending on whether you are asked to simulate or provide a guest lecture, may be 60 to 75 minutes.

Know what the audiovisual requirements are. For example, don't assume the institute will have the latest version of Microsoft Office or the software required to run any movies that you may have included in your talk. Also, the institute may ask you to e-mail a copy of your presentation in advance; be prepared to do this. Do not make any assumptions regarding program compatibility and equipment function—take overheads as an alternative backup resource!

Know how much time you have. This will vary between institutes. If they don't tell you, then ask. It is better to deliver a talk that is too short than one that is too long—but aim for the time allotted. It is essential to leave time for questions—ten minutes is a good rule of thumb. If you prepare your talk early and practice, you will likely anticipate some of the questions that may come from the audience. Practice your answers! Include extra slides at the end of your talk to aid in focusing your responses.

Going over time can be a kiss of death. If you are running short on time, don't speed up—cut slides. Incorporate guideposts into your talk that will help you determine whether you are staying on your time schedule. You should generally not use more than 30-35 slides for a 50-minute talk.

Know what the size of the room will be. Prepare your slides accordingly. There is no excuse for poor slides that cannot be read easily by everyone in the audience. Practice speaking at the volume that will be needed. Find out if a microphone will be available. Determine whether you will need to dim lights to view images.

Know what is being evaluated: Often times the individual trumps the science. In addition to your scientific excellence, *you* will be evaluated. Will you fit into the department/division? Are you an effective teacher? Do you possess the leadership and management style that works well with the organization? Do you share a common vision? Your ability to demonstrate enthusiasm, display a willingness to collaborate, share credit, identify people who actually did the work, relate your work in context of what others have done before you, and be open to new ideas as you address questions are all key elements to any talk that will help your audience to evaluate *you* as well as your science.

Tell a story: "Tell a story; don't read a paper." You don't need to tell your story in the chronological order in which it actually happened. Clearly present a big picture. Tell your audience why the big picture is important. Identify your unique contribution to the big picture. What did *you* accomplish? What is the significance of *your* work? Where is it

going? Remember that your audience does not care about the details the way that you do. Less is more. A common mistake in many job talks is to include too much material and too many details. Focus to highlight only your key point so that you tell an effective story. If someone wants details, they will ask questions. Repeat for remembrance. It may be a good idea to use transition slides to emphasize the key points as you move to each new topic. Don't memorize your talk. Use body language, eye contact, and gestures to help turn your talk into a story that engages and excites your audience. It is your responsibility to let them know that you want the job.

Have high quality slides: Good slides will not rescue bad data, but bad slides will do great harm! Less is more. Simplify your slides as much as possible. Show only the most relevant data. Don't put any more data on an individual slide than a person can digest in 30 seconds. If your slides are too complicated or too difficult to read easily, your audience will "tune out."

Limit the number of colors that you use. Don't use extraneous words. Minimize animation. Eliminate sound. San-serif fonts are easiest to read from a distance. Each slide should have a title and the title should be 40 points and **bold**. The title should summarize a key finding and state the take home message. This will enable your audience to get back on-track if needed. If your slides are difficult to see, your audience will stop listening and start reading—this is not what you want. The font size for all major points should be 24 to 30 points. All caps can be difficult to read. **Bold** text is easier to read than *italics* or underlined. Lines on graphs should be at least 3 points. The resolution of your computer screen will probably be greater than that of an LCD projector. Avoid red-green color schemes—someone in the audience may be color blind. If you are going to show movies, consider taking your own computer—don't forget the adaptors.

Check List of Items to Bring

Disk/memory stick copy of your talk
E-mail copy of your talk
Printout of your talk
Laptop
Computer adaptor
Laser Pointer
Batteries
Bottle of water
Eye drops
Cough drops
Tissue
Extra contact lenses
Lens cleaner

Hope for the best; prepare for the worst. Make sure that you have a plan in place should things go wrong. What if the computer won't start? Can you begin speaking without your first slides? Also, consider in advance what you will do if your presentation is taking longer than you anticipated. You should decide a priori what slides or what material you can skip or gloss over. It may be a good idea to format one section of your talk that you can either delete completely or significantly de-emphasize. Do not simply just speed up—your audience will zone out.

Be engaging and personable: There is no doubt that the audience is interested in your science, the technical skills that you have to offer, and/or your ability to capture the attention of a classroom, but they are also interested in *you*. Your dress, body language, facial expressions, and movements will make a strong first impression. Do not overlook these factors as you practice your talk. Prepare introductory remarks that will enable you to easily and immediately connect with your audience.

Do not memorize your entire talk, but it is a good idea to memorize the first two sentences, the final slide, and any particularly difficult transitions. Make eye contact with your audience. Use a microphone if available. Move away from the podium if possible. Never turn your back to the audience. Be enthusiastic—don't let nervousness overshadow your enthusiasm. Difficulty using a pointer or slide advancer will be viewed as nervousness and lack of self-confidence. Get to the presentation room early. Familiarize yourself with the room layout and the instrumentation. Take the responsibility to make sure that everything works to your satisfaction. If you are more comfortable using your own equipment, then do so.

It is possible that someone in the audience will fall asleep. Simply assume that they just had a long night or are feeling ill. Be sympathetic, retain your focus, and move on.

Nail your questions: Answering questions can be difficult, but you should genuinely welcome them. Be sincere, gracious, open, and complete with your responses. If you don't understand a question, don't be embarrassed to ask to have it repeated or for clarification. You may need to adjust to accommodate background noise or unfamiliar accents. You can make a strong impression if you are able to pause, clearly decipher the question, provide a complete and genuine response, and then immediately get back on track with the remainder of your presentation. Never ignore a question. Remember that you are a guest. The use of humor can be dangerous—and this can quickly turn against you. Don't use humor unless you have consistently received positive feedback from practice with your colleagues. Anticipate what your questions will be and practice your answers. Be able to cite references in your answers.

Start early: Nothing will compensate for preparedness. Start preparing for your talk early and practice often. Begin with an outline, write everything down, and then convert this to Power Point slides. Get constructive, critical feedback and lots of it. Discuss your job talk strategies with mentors and colleagues inside as well as outside your field. Attend job seminars or other job interviews within your own department.

Concluding Remarks: Institutes want more than just great scientists. They want to surround themselves with great colleagues. They want to fill their departments with good citizens and focused leaders and their classrooms with outstanding teachers. To accomplish success, prepare your talk to capture all of these elements and practice until you have mastered each of them.

Finally—ATTITUDE, ATTITUDE, ATTITUDE! ❖

To comment on this article, go to: http://www.the-aps.org/careers/careers1/mentor/Jobtalk.htm.

Susan McKarns is an assistant professor in the Center of Cellular and Molecular Immunology at the Univ. of Missouri. She received her BS from The Ohio State Univ., MS from the Univ. of Tennessee at Oak Ridge National Laboratories, and PhD from the Dept. of Pharmacology and Toxicology at Michigan State Univ. in the laboratory of Norbert E. Kaminski. She completed a postdoctoral fellowship with Ronald Schwartz at The National Institutes of Health. In 2007, she was appointed tenure-track assistant professor in the Hugh E. Stephenson Jr., MD. Dept. of Surgery and the Dept. of Molecular Microbiology and Immunology in the College of Medicine at the Univ. of Missouri. She mentors undergraduate, graduate, and medical students and postdoctoral scholars in her Laboratory of TGF-β Biology, Epigenetics and Cytokine Regulation.

Postdoctoral Fellowship in Cardiovascular Studies (salt-induced hypertension): A postdoctoral position is available in the laboratory of Dr. Bruce Van Vliet, BioMedical Sciences Division, Faculty of Medicine, Memorial Univ. of Newfoundland, St. John's, Canada. Van Vliet's research interests (http://www.med.mun.ca/Medicine/Faculty/Van-Vliet,-Bruce.aspx) broadly concern the regulation of blood pressure, and his current interests include the mechanisms and dynamics of salt induced hypertension in rats and mice. Candidates are expected to have a doctoral degree and experience in a relevant research area. Please direct applications and inquiries to Dr. Bruce Van Vliet (vanvliet@mun.ca). Applications should include a CV, description of research interests and career goals, and names and contact information for three references. Review of application will begin immediately and continue until the position is filled.

Assistant/Associate Professor: Ross University School of Medicine, located on the beautiful Caribbean island of Dominica in the West Indies, invites applications for a faculty post as Assistant/Associate professor in any of the following disciplines: endocrine, reproductive, respiratory, renal or gastrointestinal physiology. Our mission is to prepare highly dedicated students to become effective, successful physicians in the United States. Basic science coursework is taught in Dominica and students then complete their clinical studies in the United States. After passing all prerequisite examinations, Ross graduates are licensed to practice medicine in all 50 states of the US. Ross University School of Medicine is a division of DeVry, Inc (NYSE:DV). Education is the primary focus of the faculty. The academic year is divided into three semesters with a new class of students admitted each semester. Lectures and other educational responsibilities continue throughout the year. Effective teachers are sought, particularly individuals who are interested in improving medical education and who work well on a team. Research opportunities exist, primarily in the area of medical education. **Essential Duties and Responsibilities:** the preparation of course material (handouts etc.); the delivery of effective lectures; the preparation, administration, marking and reporting of examinations; undergo training to qualify as a facilitator in the problem-based learning program; supervise educational activities of students under actual or simulated situations; prepare instructional plans and career analyses to reflect current changes in the field; advise individuals or groups of students in academic matters and exercise professional judgment in referring students to appropriate personnel; develop new instructional materials and teaching techniques with participation in on-going reviews and revision of curriculum planning; actively participate in relevant professional activities in order to improve teaching and subject matter competence; serve on faculty committees as appointed or elected, and confer with advisory groups in order to modify course content; prepare, administer and evaluate examinations to assess the development of student accomplishments; participate in other activities as assigned by the department chair or executive dean. **Qualifications:** content expertise in endocrine, reproductive, respiratory, renal or gastrointestinal physiology; ability to relate physiology to clinical scenarios; experience in computer-assisted delivery of course content; excellent communication skills in English; strong teaching skills and experience or evidence of potential; interest in medical education; desire for self improvement; flexibility and ability to work well on a team. **Education, Experience, Knowledge and Skills:** PhD, MD or MD/PhD degree in physiology; enthusiastic teacher with previous teaching experience at a North American or United Kingdom medical school. Ross University offers a competitive potentially tax-free annual salary, relocation assistance to and from the island, a deferred pension program, tuition assistance benefit, scholarship program for dependents, 100% medical benefits paid for the employee, travel benefits, a living allowance, 35 days of paid annual leave is provided along with opportunities for professional development, which includes a conference and book allowance. To apply, please visit our website http://www.rossu.edu; select Careers and complete our online application process. [EOE] ❖

44th Annual Biological Transport Group Meeting

June 21-June 23, 2009
Lake Cumberland State Resort Park
Jamestown, KY

The Lake Cumberland Biological Transport Meeting is an excellent, inexpensive forum for principal investigators, postdoctoral fellows and graduate students to present both published data or work in progress and receive feedback. Submission of a presentation title (ie. no abstracts) is all that is necessary. Cell biology, physiology, molecular biology, and biochemistry presentations centered around the theme of biological transport are all welcome. Presentations are made in an informal atmosphere with open discussion encouraged. The scientific sessions will be held morning and evening. Afternoons are free to enjoy swimming, fishing, golfing, riding, hiking, or just relaxing in this beautiful 3,000 acre state park.

Registration fees are only $15 for students, $25 for postdocs, and $60 for established investigators. To find out more, please visit http://iupucbiol.iupui.edu/cumberland or contact the Chair (Kenneth Gagnon, kenneth.gagnon@vanderbilt.edu), Vice-Chair (Stephen Kempson, skempson@iupui.edu), or Chair Emeritus (Syed Khundmiri, syed.khundmiri@louisville.edu). ❖

Our Marvelous Bodies: An Introduction to the Physiology of Human Health
Gary F. Merrill
North Carolina, USA: Rutgers Univ. Press, 2008, 240 pages, 22 illustrations, 24 tables, $39.95
ISBN: 978-0-8135-4281-2

According to the author, *Our Marvelous Bodies: An Introduction to the Physiology of Human Health* is written for a wide audience including, among others, high school students, undergraduate students and allied health students. The overall goals are to demonstrate that physiology is a foundation for medicine, and to show how an understanding of physiology is a useful tool in making decisions about one's health.

Merrill begins the book with explanations of some foundational concepts that are important in understanding the mechanisms of human body function. In subsequent chapters he explains selected functions of the nervous, endocrine, cardiovascular, respiratory, renal, gastrointestinal, reproductive, muscular, and immune systems. The author finishes each chapter by relating the physiology of the system to health and disease. Merrill describes a lot of personal life-stories to illustrate how physiology is useful in understanding and making decisions that impact one's health. The author also includes references to the history of physiology and details of specific studies that emphasize the experimental basis of physiology.

The goals of the book are compelling, and the enthusiasm of the author for physiology is evident in the writing. Unfortunately, the book does not achieve expectations. There are a few significant errors and many minor ones that detract from the author's goals. Overall, I think that a physiology student may become excited about physiology while reading the book, but the student would not improve her understanding of the science.

Having students recognize and understand the foundational concepts in physiology is a proven approach to helping them solve physiological problems. The first chapter aims to explain concepts including structure function relationships, gradients, steady state, equilibrium, homeostasis and control mechanisms. Unfortunately, the discussion of many of these basic concepts does not account for common student misconceptions. For example, the author defines homeostasis using the unqualified terms "constant" and "static" that support the misconception that control systems prevent variables from changing. The book does not include a discussion of the limitations of control systems. Given that students often believe that control systems are capable of returning variables to the set point irrespective of the external conditions, this is a significant omission. The author seems to use steady state and equilibrium as if these terms are interchangeable, and this is also a significant error because many physiology students have difficulty distinguishing between these very different energy states. Merrill explains structure function relationships and gradients more effectively, but, overall, this important foundational chapter is the weakest part of the book.

Subsequent chapters describe the physiology of individual systems and include applications of the physiology to health and disease. Merrill uses some useful and entertaining analogies to simplify the physiology. The quality of these chapters suffers because of the inclusion of a significant number of errors. In some cases the examples that the author uses are misleading. For example, in describing control of ventilation, the author uses an example in which a decrease in the arterial PO_2 triggers an increase in ventilation. The example is not inaccurate, but without a corresponding discussion of the relative importance of arterial PCO_2 and $[H^+]$, the student may erroneously conclude that arterial PO_2 is normally the most important of these three controlled variables. Some of the errors in the book reflect a careless use of language. For example, although the author defines physiology as mechanistic, he frequently uses teleological statements as he refers to control systems responding to the "needs" of the body. A few examples of the many careless errors include: the description of a plasma pH of 7.4 as a "neutral," diffusion across "cell walls" instead of cell membranes, myelinated "nerves" instead of axons. More careful editing is necessary to ensure the accuracy of the explanations.

Many of the examples that are used to relate physiology to health and disease are relevant and interesting. However, in some cases it is not clear why a particular example was used in the context of a particular system. For example, allergies were described in the context of the respiratory system instead of the immune system. Obviously, the symptoms of allergies do manifest as respiratory problems, but an understanding of the mechanisms associated with allergies is an application of the immune system. In other cases, I think that the stories could be edited to more clearly connect to the physiology.

In summary, the goals of the book are worthwhile, and the author is obviously enthusiastic about physiology. I think that students would find many of the analogies and stories in the book interesting. Unfortunately, I am not comfortable recommending the book to students given the number of inaccuracies in this edition. With a significant amount of editing the book could be a useful ancillary to an undergraduate physiology text. ❖

Lynelle Golden
Bastyr University

Books Received

Pharmacology for the Health Care Professions
Christine M. Thorp
New Jersey, USA: Wiley Publishers, 2008, 364pp. illus, index, $50.00
ISBN: 047051017X

Adventure Sport Physiology
Nick Draper and Chris Hodgson
New Jersey, USA: Wiley Publishers, 2008, 440pp. illus, index, $70.00
ISBN: 047001511X

Repair and Redesign of Physiological Systems
Edited by: M.A. Atherton, M.W. Collins and M.J. Bayer
Massachusetts, USA: WIT Press, 2008, 304pp, illus., index, $190.00
ISBN: 9781845640965

APS Members Named AHA Distinguished Scientists

Seven APS members have been named 2008 American Heart Association (AHA) Distinguished Scientists. Each year this distinction is proudly bestowed upon prominent AHA members whose work has advanced the understanding and management of cardiovascular disease and stroke. The awards were presented during the 2008 AHA Scientific Session, November 8-12, in New Orleans, LA.

The APS members named Distinguished Scientists are:

Peter Courtland Agre, Univ. Professor and Director, Johns Hopkins Malaria Research Institute, Baltimore, MD;

Roberto Bolli, Chief, Division of Cardiovascular Medicine, Director, Institute of Molecular Cardiology, Univ. of Louisville, KY;

Richard J. Havel, Professor Emeritus of Medicine, Former Director of Cardiovascular Research Institute, Univ. of California, San Francisco, CA;

Louis J. Ignarro, Distinguished Professor of Pharmacology, UCLA School of Medicine, Beverly Hills, CA;

Ferid Murad, J.S. Dunn Professor, Regental Professor, Director, Cell Signaling Center, Institute of Molecular Medicine, University of Texas, Houston;

Richard J. Traystman, Professor and Vice Chancellor for Research, Univ. of Colorado, Denver;

E. Kenneth Weir, Professor of Medicine and Physiology, Univ. of Minnesota, Chief, Section of Cardiology, Veterans Administration Medical Center, Minneapolis, MN.

Marc Basson is presently a Professor and Chair at Michigan State University, Department of Surgery, Lansing. Prior to this position, Basson was a Professor, Chief at Wayne State University, Detroit, MI.

Sujit Basu is in the Department of Pathology, Ohio State University, Columbus. Prior to this position, Basu was in the Department of Biochemistry and Molecular Biology, Mayo Clinic, Rochester, MN.

Mehmet Bulbul is in the Zablocki VA Medical Center, Medical College of Wisconsin, Milwaukee. Prior to this position, Bulbul was a Research Assistant in the Department of Cad Akdeniz u Saglik Bilmleri, Akdeniz Univ., Faculty of Medicine, Antalya, Turkey.

Alex F. Chen is Director, VA Vascular Surgery Research, Univ. of Pittsburgh School of Medicine, Pittsburgh, PA. Prior to this position, Chen was an Assistant Professor, Department of Pharmacology and Toxicology, Michigan State University College of Medicine, East Lansing.

Liming Chen is currently an Associate Professor at Huazhong Univ. of Science and Technology, Beijing China. Previously, Chen was a Senior Research Associate at Case Western Reserve University, Cleveland, OH.

Gregory Mark Dick is an Assistant Professor in the Department of Exercise Physiology at West Virginia University, Morgantown. Prior to this position, Dick was an Associate Professor in the Department of Cellular & Integrative Physiology at Indiana University School of Medicine, Indianapolis.

Thomas Hancock is presently at Eastern Washington University Department of Biology Science, Cheney, WA. Hancock was formerly at James Madison University, Department of Biology, Harrisonburg, VA.

Shannon Kelleher is an Assistant Professor at Pennsylvania State University, Department of Nutritional Sciences, University Park. Kelleher was formerly an Assistant Professor at California Univ., Davis, CA.

Ganesh K. Kumar is currently a Professor at the Univ. of Chicago, Department of Medicine, IL. Previously, Kumar was an Associate Professor at Case Western Reserve Univ. School of Medicine, Department of Biochemistry, Cleveland, OH.

Michael M. Lockard is in the Department of Exercise Science, Willamette Univ., Salem, OR. Prior to this position, Lockard was in the Department of Kinesiology, Univ. of Maryland, College Park, MD.

Boris Martinac is currently an ARC Professional Fellow and conjoint Professor at the Victor Chang Cardiac Research Institute, Sydney, Australia. Prior to this position, Martinac was Professor/Foundation Chair in Biophysics, Univ. of Queensland, Brisbane, Australia.

Todd McWhorter is presently a Lecturer at Univ. of Adelaide School of Veterinary Science, Australia. Prior to this position, McWhorter was a Postdoctoral Fellow at Murdoch Univ., Department of Veterinary Biology and Biomedical Science, Murdoch Australia.

Michael Morissette is currently an Assistant Professor at West Virginia Univ., Department of Exercise Physiology, Morgantown. Previously, Morissette was an Instructor in the Department of Medicine at Beth Israel Deaconess Medical Center, Boston, MA.

Lewis P. Rubin is in the Univ. of South Florida Division of Neonatology of the Univ. Medical Service Assoc., Inc., St. Petersburg, FL. Prior to this position, Rubin was in the Division of Neonatology, Univ. Medical Service Assoc., Inc., Tampa, FL.

Thomas H. Schindler is a Postdoctoral Fellow in the Department of Intermedicine, Division of Cardiology, Univ. Hospital of Geneva, Switzerland. Prior to this position, Schindler was a Postdoctoral Fellow in the Department of Pharmacology, Univ. of California, Los Angeles, CA.

Peter M. Tiidus is the Acting Dean of Science at Wilfrid Laurier Univ. (Waterloo, ON, Canada). Prior to this appointment, Tiidus had served as the Chair of the Department of Kinesiology & PE at Wilfrid Laurier Univ.

Ai-Lun Yang is presently an Associate Professor at Taipei Physical Education College, Graduate Institute of Transition and Leisure Education for Individuals with Disabilities, Taipei, Taiwan. Prior to this position, Yang was an Assistant Professor at National Cheng-Kung Univ., Department of Physical Therapy, Taiwan. ❖

Letter to Harvey Sparks

Oscar Scremin writes: "I turned 70 years old on September 27 this year and I received an invitation from you to tell my story for the APS Seniors Committee. I delayed it a bit because it is always painful to talk about why I left my native country, but here it is.

"The year was 1976, and Argentina was sinking into the worst human rights catastrophe of its history. I was a physiologist, a member of the faculty at the Department of Physiology in the University of Rosario Medical School, and an established investigator within the Argentine National Research Council (CONICET). During a brief democratic interlude that lasted from 1973 to 1976, there was a period of intense activity between university faculty and students in the interest of redirecting both the curricula and purpose of the public higher education system in order to better serve the national interest. During this process, I was appointed Dean of the Medical School in Rosario. This didn't last long. As the civilian government disintegrated, reactionary elements initiated the persecution of anyone that would try to defend democratic principles and soon after, a military coup installed a bloody dictatorship. Dissent was punished with kidnapping, disappearance, and death. Like many others, I was fired from all my positions and had to go into exile to escape a death squad. Many of the bravest that stayed on or could not leave were less fortunate. An estimated 30,000 perished at the hands of the horrible dictatorship that persisted until 1983. As we left the country, friends offered their home in Los Angeles for our family of five. This included my wife Erika, who had just graduated as an MD, and our children Luciano (5 years old), Tristan (2 years old) and Maria Aurelia (6 months old). Soon after, I was offered a job at the Physiology department of UCLA Medical School where I still teach today. We had the support of many people within and outside of the university in this country, to whom we are eternally grateful. While in Los Angeles, my wife Erika completed her medical specialty training in the VA-UCLA Physical Medicine and Rehabilitation Service which she now chairs, and our children grew and became successful citizens. Luciano is a pilot with United Airlines, Tristan is a law student at the People's College of Law in Los Angeles, and Maria Aurelia is a DO currently training in internal medicine at the VA/Cedars-Sinai residency program. Erika and I both work at the Greater Los Angeles VA Hospital that generously supports our research. This country is home to our family now, but the old country is still in our hearts. After many years of struggles, democracy is now flourishing in Argentina, human rights have been restored, and many of the assassins and kidnappers in the former dictatorship are being tried for their crimes. It is a democracy that has lasted for 25 years, indeed the longest uninterrupted democratic period without a military coup ever. Last year, on November 15, the authorities of the University of Rosario restored my faculty position and returned my former laboratory to me. It was an intensely emotional ceremony that reunited many of the people that left the country during those years, as well as some of the families of the disappeared. If you can handle Spanish, here is a link with some of the details http://www.portal.unr.edu.ar/periodico/secciones/2007/noviembre/____actodesagravio.htm.

Hugo Besedovsky, Oscar Scremin, and Dante Chialvo

"Going back to the laboratory that day was like walking into a time machine. We found an empty room, with paint peeling and a leaky roof. What was once a bustling place with many research projects was now completely deserted. The biggest surprise was when we opened the doors under the counters. Some of our old equipment was still there, and had not been used in decades. Our exit from the lab had been very hurried, so we even found postcards addressed to friends abroad we had written and didn't have time to mail. I have attached a picture of the moment when Dante Chialvo (now at Northwestern University in Chicago) Hugo Besedovsky (now at Marburg University in Germany) and myself contemplated a Tektronix pulse generator we had used more than 30 years ago and still ticks! It was at that moment when the three of us decided to start an effort to change this morose state of affairs. Previously, we had all helped faculty and students of our alma mater with equipment, advice and also had hosted students and faculty of that Department in our labs in the US and Germany over the years, but we are now embarking on a journey to restore the present research environment so that Physiology can again shine in Rosario. We are volunteering time to train students and faculty and also are raising and providing funds to remodel the building, procure equipment, chemicals, glassware; everything needed for a standard physiology laboratory. As of today, new research projects are already underway. We founded a non-profit organization to receive donations of funds and equipment and the flow of resources has already begun. So much to do but hey, we are so young! We have a life (a second one) ahead of us and considering the statistics on physiologists in the senior division at the APS, it is going to be a long one! Thanks for the time and space given to our musings and we may be contacting you soon to see if you still have some old but good working physiology instruments on our wish list that you might be able to part with."

Letter to Julio Cruz

David Ianuzzo writes: "Thank you for your letter and the welcome to the senior physiologist club. I just retired from Wheaton College as professor and chair of Applied Health Science in June of 2008. The years at Wheaton College were great years but I soon found that retirement wasn't for me at age 70. I have just accepted a position at the University of Medicine and Health Sciences in St. Kitts to teach physiology in a relatively new medical school. My wife, Sigrid, and I arrived at St. Kitts on January 3, 2009. A major positive about the academic world it is not boring and, in fact, the ongoing learning is fun and exciting even though I only have one neuron that is functioning.

"The best to all my colleagues." ❖

The Physiologist
Vol. 52, No. 2, 2009

The Wine Wizard

Peter Wagner

First, a list of nine non-vintage (NV) Champagne/Sparkling wines tasted side by side recently at my local wine shop, then some new release Cabernets.

Sparklers: these ranged from $12 to $40. Frankly, I still like Freixenet (the Spanish Cava house), both of their offerings, one in black label (Cordon Negro); one in frosty glass (Carta, NV). They are right at $10 and quite reliable. No, they are NOT great or special occasion wines, but they are tasty, have good fruit intensity, are really decently dry, even if not bone dry, the way purists demand, and are reliable as stated. That said, in order of preference (I would not drop beyond the first four myself) are the nine I tasted:

Roederer Brut Premier NV $40. Classic bubbly. Tart, citrussy but well-flavored, very dry, slightly yeasty, very clean, excellent length. High class, classical. Good enough for really special occasions.

Schramsberg Mirabelle Brut Rose NV (North Coast) $19. Slightly floral nose, with nice apply/lemon fruit and fairly dry finish with a bit of yeast. Good enough for group celebrations. Fairly good value, but I would go for Freixenet myself at half the price. (yes, this is rose and the Freixenets are white, but who is looking?)

Schramsberg Gosset Brut Excellence NV $30. Nice lemony fruit, but not the zing of the Roederer. If I were going to look for what I regard as a moderately expensive sparkler, I would pay the extra $10 and get the Roederer. Nevertheless, quite drinkable, clean.

Guinot Cremant de Limoux NV $11. If you like something a bit different, and with definite, but not too much sweetness, here is your drop at a fair price. Yeasty, toasty nose, toasty palate (yes, really like lightly toasted white bread), slight sweetness, excellent lime and apple fruit. Must be drunk very cold. You will either like this or dislike it, but likely not be neutral on it.

Roederer Rose NV (Anderson Valley) $23. Slightly oxidized nose and palate (which some experts see as a good thing but would not call it oxidized of course), lemony tart, dry.

Gloria Ferrer Blanc de Noirs, NV, Carneros $12. This is a generally first rate California sparkler specialist, but this wine is a bit dirty on the nose. Palate is cleaner with nice lemon and tropical fruit. It is slightly sweet though. If you like the style, price is fair.

Peter Wagner

Duval-Leroy Brut NV $29. Oxidized nose (see above), herbal, medium dry, OK intensity but to pay this much for a wine with an oxidized character – not for me.

Perrier-Jouet Grand Brut NV $26. I was looking forward to a nice wine, but was disappointed in a wet wool nose and palate that hid most of the fruit.

Mumm Cordon Rouge Brut NV $24. More dashed hopes. Dirty, cat pea, wet wool, dull and awful. I regard this as various forms of sulfur contamination.

Four new Cabernets from 2006 (also in order of appeal, but note the prices).

2006 Caymus, Napa $70. This is their regular, not "Special Select" bottling, which is more than twice the price. A special occasion wine, but one you will really like if the occasion merits the price (got a grant, grandchild, *Nature* paper). Deeply colored, forward nose with spice, dark berry, oak, and dill. Palate is lush, ripe, forward, accessible with dark berry fruit, some background flavors of herbal green olive and cedar. Tannin and acid are both beautifully in balance, excellent length. Big and structured but good now. Good enough to serve the Dean at dinner.

2006 Francis Ford Coppola, Alexander Valley, "Director's Cut" $26. Probably available for less. Deep color, but a restrained slightly herbal nose gives way to very nice, rich dark berry fruit and a nice herbal edge. It is velvety in mouthfeel, with softer tannins, pleasant acid and good length. Good enough to serve the Department Chair at dinner.

2006 J. Lohr "Seven Oaks" Paso Robles, $17. This is a reliable wine I like every year, and remains good value. You can usually get it at Costco for $12. Deep in color, lots of dark berry fruit, slightly herbal on the nose. It is lush (dark berry fruit) and not too oaky on the palate, but may be a bit too herbaceous for some. Nice balance of acid and tannin. Good enough to serve the Division Head at dinner.

And one from 2007: 2007 Kaiken Mendoza (Argentina) Cabernet $9. The nose has some butterscotch and slight green bean, a bit odd, but the palate is rich and mouthfilling. There is blueberry fruit and vanilla. Medium high tannins and good acid gives it structure and excellent value for the price. ❖

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 7-9
Focused Meeting: New Drugs in Cardiovascular Research, Dresden, Germany. *Information:* Internet: http://www.bps.ac.uk/site/cms/contentCategoryView.asp?category=258.

May 12-15
The North American Research Conference on Complementary & Integrative Medicine, Minneapolis, MN. *Information:* Internet: http://www.imconsortium-conference.org/.

May 14-16
3rd International IVI Congress, Madrid, Spain. *Information:* Internet: http://www.comtecmed.com/ivi/2009/.

May 15-17
Human Integrative Physiology: The Legacy of the Copenhagen School; in the Footsteps of Lindhard and Krogh, Copenhagen, Denmark. *Information:* Bengt Saltin, Copenhagen Muscle research Centre, Rigshopitalet, 7652, Blegdamsvej 9, DK-2100 Copenhagen. Tel. +45-35457582; Email: bengt.saltin@rh.regionh.dk.

May 15-20
2009 American thoracic Society International Conference, San Diego, CA. *Information:* ATS International Conference Department, 61 Broadway, 4th Floor, New York, NY 10006. Tel.: 212-315-8652; Fax: 212-315-6471; Email: ats2009@thoracic.org; Internet: http://www.thoracic.org.

May 24-27
3rd Annual Canadian Neuroscience Meeting (CAN), Vancouver, Canada. *Information:* Katherine Jolin, Sponsorship & Exhibit Manager, Felicissimo, Rossie & Associates International, Conference Organizers, Edifice Place du Quartier, 1111 St. Urbain, Suite 116, Montreal H2Z 1Y6, Quebec, Canada. Tel.: (514) 874-1998; Fax:(514) 874-1580; Email: katherine@fa-events.com; Internet: http://www.fa-events.com.

May 26-29
31st Meeting of the North American Section of the International Society for Heart Research (ISHR), Baltimore, MD. *Information:* Internet: http://www.ishr2009.umaryland.edu/.

June 1-4
Muscle as Molecular and Metabolic Machines, 14th International Conference on the Biochemistry of Exercise, Ontario, Canada. *Information:* Internet: http://www.uoguelph.ca/~ibec09/.

June 4-6
The Organization for the Study of Sex Differences (OSSD) 3rd Annual Meeting, Toronto, Ontario, Canada. *Information:* Viviana Simon, 1025 Connecticut Avenue, NW, Suite 701, Washington, DC 20036. Email : viviana@ossdweb.org; Internet: http://www.ossdweb.org.

June 7-September 6
FASEB Summer Research Conferences - held in Carefree, AZ; Saxtons River, VT; Snowmass Village, CO; and Lucca, Italy. Information: FASEB Summer Research Conferences, 9650 Rockville Pike, Bethesda, MD. Internet: http://src.faseb.org/.

June 14-19
Eleventh International Workshop on Physical Characterization of Pharmaceutical Solids (IWPCPS-11), Stamford, CT. *Information:* ASSA International, 3B East Lake Road, Danbury, CT 06811. Tel.: 203-312-0682; Email: workshops@assainternational.com; Internet: http://www.assainternational.com/workshops/iwpcps_11/iwpcps_11.cfm.

June 21-23
44th Annual Biological Transport Group Meeting, Jamestown, KY. *Information:* Internet: http://iupucbiol.inpui.edu/cumberland.

June 24-28
89th Annual Meeting of the American Society of Mammalogists, Fairbanks, AK. *Information:* Internet: http://www.mammalsociety.org.

June 26-28
The First International Conference of Hydrogen Sulfide in Biology and Medicine (H2S Biology 2009), Shanghai, China. *Information:* Internet: http://www.h2sbiology2009.org.

June 28-July 1
SEB at Glasgow 2009 (SEB Annual Main Meeting 2009), Glasgow, UK. *Information:* Kate Steel, Conference and Web Officer, The Society for Experimental Biology, 3 The Carronades, New Road, Southampton, SO14 0AA. Tel.: +44(0)2380224824; Fax: +44(0)2380226312; Email: k.steel@sebiology.org; Internet: http://www.sebiology.org/meetings.

July 11-16
XXII Congress of the International Society on Thrombosis and Haemostasis (ISTH 2009), Boston, MA. *Information:* MCI Suisse SA, Rue de Lyon 75, 1211 Geneva 13 - Switzerland. Tel.: +41 22 33 99 587; Fax: +41 22 33 99 621; Email: isth2009@mci-group.com; Internet: http://www.isth2009.com/welcome.html.

August 3-7
11th International Congress on Amino Acids, Peptides and Proteins, Vienna. *Information:* Internet: http://www.meduniwien.ac.at/ICAAP09/index.html.

September 4-8
8th World Congress on Neurohypophysial Hormones (WCNH2009), Kitakyushu, Japan. *Information:* Email: wchn2009@mbox.med.uoeh-u.ac.jp; Internet: http://www.wcnh2009.jp.

October 6-9
Placenta: The Key to Pregnancy Success (IFPA Meeting 2009), Adelaide, Australia. *Information:* Nina Cosgrove, IFPA 2009 Conference Secretariat, Elsevier, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK. Tel.: +44 (0) 1865 843297; Fax: +44 (0) 1865 843958; Email: n.cosgrove@elsevier.com; Internet: http://www.ifpaconference.org/2009.

Meetings & Conferences

of the American Physiological Society

2009 APS Conference:
Sex Steriods and Gender in
Cardiovascular-Renal Physiology and Pathophysiology
July 15-18, 2009 • Broomfield, Colorado

2009 APS Conference:
ET-11: APS International Conference on Endothelin
September 9-12, 2009 • Montréal, Canada

Experimental Biology 2010
April 24-28, 2010 • Anaheim, California

2010 APS Intersociety Meeting:
Global Change and Global Science:
Comparative Physiology in a Changing World
August 4-7, 2010
Location to be Determined

2010 APS Conference:
Inflammation, Immunity and Cardiovascular Disease
Date and Location to be Determined

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