



# The Physiologist

## Education in the Responsible Conduct of Research Presented at the Annual Meeting of the Association of Chairs of Departments of Physiology Michael D. Mann, Nebraska Medical Center Michael Kalichman, University of California, San Diego Francis L. Macrina, Virginia Commonwealth University

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#### Summary

Here we present a synopsis of teaching responsible conduct of research (RCR) to trainees in biomedical sciences, summarize the origins of the still evolving definition of RCR and provide an introduction to the goals, content, and strategies for teaching RCR. These should be particularly useful for those contemplating changes in existing RCR courses or the creation of new ones.

#### Scientific Misconduct and RCR

Scientific misconduct has contributed significantly to the increased attention to the Responsible Conduct of Research (RCR). In the 1980s and 1990s, defining scientific misconduct accompanied governmental and institutional activities on RCR policies and education. Both lengthy and concise definitions of scientific misconduct have appeared, have been modified, and continue to evolve. But common denominators remain throughout and are summarized as follows. *Scientific misconduct* is fabrication, falsification, or plagiarism in proposing, performing, reviewing or reporting research. *Fabrication* is making up data and recording or reporting them. *Falsification* is manipulating research materials, equipment, or processes, or changing or omitting data so as to misrepresent the research. *Plagiarism* is the appropriation of another person's ideas, processes, results, or words without proper attribution. Most definitions

affirm that honest error or differences of opinion do not constitute scientific misconduct.

In 1985, Congress enacted legislation requiring that any institution applying for or holding a grant from an agency of the Public Health Service (PHS) have a defined process for reviewing misconduct allegations and for reporting to the Secretary of Health and Human Services any investigations of "scientific fraud" that appeared to be "substantial." The late 1980s saw the creation of an oversight and regulatory infrastructure that ultimately led to the inception of the Office of Research Integrity (ORI), a component of the Department of Health and Human Services (DHHS). Definitions of scientific misconduct were promulgated by agencies such as the DHHS and the National Science Foundation, as well as scientific societies and individual research institutions. A history of these events may be found on the ORI web site (<http://ori.dhhs.gov/html/about/historical.asp>).

It was in response to well-publicized cases of scientific misconduct that legislative bodies and funding agencies began to mandate some kind of training in (RCR). However, as is often the case, no definition of RCR was offered. Thus, it has been largely defined by the educational requirements of federal funding agencies like the National

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## Open Does Not Mean Free!

The world of scientific and medical publishing has found itself embroiled in a bitter controversy about the future of academic publishing and the dissemination of information. Several months ago the controversy stimulated a number of not-for-profit publishers to issue the Washington DC Principles for Free Access to Science (<http://www.dcprinciples.org>). Several weeks ago, the debate came front and center again when Public Library of Science *Medicine*, a new online journal that purportedly provides “open access” to both readers and authors, made a call for article submissions.

Journals have played an integral role in the advancement of scientific and medical research, knowledge, and innovation since 1665—when the *Philosophical Transactions of the Royal Society* first appeared in London. The thousands of journals published each year form a vast repository of learning and discovery—our intellectual heritage, if you will—that cannot be easily duplicated or recreated. Put simply, journals help to drive science forward.

In the past, research investigators chose in which journal to publish by considering its prestige and the cost of publication. Generally speaking, authors could choose to publish in commercial journals with no author fees or an association journal with page charges. With over 5,000 scientific journals to choose from, scientists could choose from a wide-range of journals with varying fee structures and prestige. In addition, the author could choose whether to publish in a journal that provided free access immediately or within two months, six months or 12 months. The reality of the online publishing world was that both not-for-profit and commercial publishers provided authors with choices that met the needs of the scientific and medical community.

The advocates of the open access model of publishing contend that access to content and information is hindered in the current publishing environment and that the only answer is to change the existing publishing models and charge the author to allow for immediate open access to the article. This is a worthy goal but one that

fails to recognize the tremendous strides made by both not-for-profit and commercial publishers to make content available immediately online and to increase the number of articles freely available to the world. The members of the DC Principles Coalition have put over 500,000 articles online for free and they are actively scanning their archival content (back to 1900 in some cases) making it available online for free.

The supporters of an “open access” model contend that publication is the final step of the research process and, thus, should be supported by research grants provided by the Federal government or other funding agencies/organizations. Unfortunately, grants provided by the National Institutes of Health, the primary supporter of biomedical research, are often awarded in \$25,000 modules that allow for some flexibility in how to use the monies, but not enough to allow the research investigator to make realistic choices. Should funds be used to support the supplies and personnel to do the research or the cost of publication? As the head of a research lab was overheard asking, should funds be used to pay the health insurance premiums for the graduate students supported on a grant or the author fees associated with the publication of a manuscript?

In the US, the supporters of PLoS are attempting to influence funding agencies to adopt policies and to earmark funds in order to advance open access. In the UK, a committee in the House of Commons is currently conducting an inquiry regarding the pricing and availability of scientific publications. Open access advocates are also seeking Congressional support for the principles of open access through legislative efforts, including Rep. Martin Sabo's effort last year to eliminate copyright on federally funded research. Can we realistically expect the NIH and the federal government to cover the full cost of publication at a time of budgetary constraint? After all, this is the same government that has threatened to eliminate funding for one of this country's most successful science projects, the Hubble Space Telescope.

The term “open access” is actually something of a misnomer when it comes to describing online journal publishing. While readers enjoy free access to these publications, authors are required to pay \$1,500 (in the case of PLoS *Biology*) to have their work published, making it more accurately termed “author pays.” The real cost of publishing a scientific article can be \$3,000-\$4,500. Enterprises like PLoS rely on a \$9 million foundation startup grant to allow them to advocate for an author-pays-model and to only charge the author a fraction of the publications cost. Perhaps recognizing the inability to sustain this long-term, PLoS has added institutional membership fees to their funding structure at levels that are higher than most subscription fees.

The open access business model has implications far beyond the long-term viability of the journals. It means that well-funded scientists and institutions have an advantage over their less affluent colleagues when it comes to scientific publishing. Moreover, it's likely that colleges and universities will have to absorb the cost of this “pay-for-play” system, further taxing already overburdened budgets. And those universities with the most prolific researchers will end up paying the most.

The bottom line is that not-for-profit and commercial publishing has proven a successful model for advancing scientific knowledge and discovery for over two centuries. This model ensures the integrity and preservation of our intellectual heritage and provides the technology and tools to make that heritage ever more widely available. The result: scientists and doctors can do their jobs better. We believe that a free society allows for the co-existence of many publishing models, including an author pays model, and therefore believe that it would be foolish and dangerous to do away with one model for another that remains largely unproven. ▽

Martin Frank,  
Executive Director, APS

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Institutes of Health (NIH). Such requirements first appeared almost 15 years ago when the NIH mandated education in RCR for pre- and post-doctoral students whose support came from NIH training grants. By default, content areas suggested by federal agencies largely have included protections for human and animal subjects of research, data management, publication practices, peer review, collaborations, mentoring, research misconduct, and conflicts of interest<sup>1</sup>.

Other topics sometimes included in RCR instruction, but not part of the mandated list, are the appropriate use of research grant funds, environmental health and safety, sexual harassment, and discrimination. These topics are often omitted from such instruction because they do not involve misconduct specific to science, and separate agencies regulate, monitor, and prescribe training in such areas (e.g., environmental health and safety would be covered by regulations of the US Nuclear Regulatory Commission and US Department of Labor Occupational Safety and Health Administration).

The authors do not agree with the equation of the responsible conduct of research with the absence of scientific misconduct. Clearly, the absence of scientific misconduct is necessary, but not sufficient. Responsible science also requires adherence to "best practices" of research design, data collection and analysis, and students must learn how best to record, store, and share their data. Inclusion of these topics goes well beyond the instruction required by the NIH and other agencies.

### Why teach RCR?

The origins of formal RCR education can be traced to congressional hearings that date back to the early 1980s. These hearings were prompted by an increased awareness of misconduct

allegations in scientific research. Throughout the 1970s and 1980s, high-profile cases of alleged scientific misconduct came under public scrutiny and formal investigation. Awareness of and sensitivity to scientific misconduct grew dramatically during this time as reporters and writers made it a public issue. However, it also follows from the realization that part of research training should include exposure to the proper practice of science. For this reason, viable RCR instruction programs have been in place at some institutions for nearly 20 years. To many scientists and observers of science, such training seems to be a good idea, but it isn't readily apparent why we favor teaching RCR or what goals we should have for RCR instruction.

One reason to teach RCR is simply that it is *required*. Although this is not true for everyone, we are obligated under current federal regulations to provide instruction for trainees funded by NIH training grants (NIH 1992) and to key personnel for studies of human subjects (NIH 2000). In addition, for a short time, a PHS policy called for instruction of everyone funded by the PHS for research or training (PHS 2000). Complying with federal regulations is certainly an appropriate end in itself. However, a case can be made that we should not teach RCR solely because we *must* do so, but rather because we *should* do so.

The teaching of RCR is an ethical responsibility for any concerned scientist. First and foremost, we have an obligation to our trainees. The next generation of scientists must be clear about their responsibilities as researchers. Such responsibilities are too diverse and often too complex to be relegated to chance and informal socialization. Second, we have an obligation to the discipline of science. The accumulation of new knowledge depends on the trustworthiness of what is reported. If scientists value their profession, then it follows that they should have an explicit commitment to promoting the integrity of research. Third, we have an obligation to the public, which grants us the privilege of performing research studies. Our funding, space, and opportunities are, for the most part, made possible

because society sees value in research. In effect, we have a contractual obligation to deliver a research product that has value and, by extension, integrity.

It is worth noting that our ethical obligations to promote RCR education are paralleled by clear practical implications. The productivity of our research groups will be enhanced if our trainees understand and nurture their responsibilities as scientists. Scientists will be better able to build on the work of their peers if the standards of scientific conduct are sufficiently clear to have decreased the risk that flawed work will be reported. Finally, the public will be less likely to call for a withdrawal of the privilege to conduct research, and more likely to increase support for research, if it has an assurance that we take that privilege seriously.

### What are the goals for teaching RCR?

The design of an effective program of instruction will depend first on defining our intended goals. This is not as simple as it might at first seem. Based on an ongoing study (Kalichman, Paik, Smith, and Roth, *in progress*), it has become apparent that even the most experienced teachers of RCR have very different goals.

This study included three phases, two of which are now complete: (1) an informal survey of nationally recognized leaders in RCR education, and (2) focus group discussions with RCR instructors and others interested in RCR education. The third phase, now underway, is based on interviews with faculty identified by program directors of NIH training grants funded in 2000. Although data collection and analyses are not complete, it is clear that the goals of RCR instruction are multiple and varied. The range of goals most frequently identified can be categorized as seen in Table 1.

Clearly, it is not yet possible to definitively state what combination of these goals is essential for any RCR course. However, it is fair to say that meeting some combination of these goals would improve the research environment and is, thereby, worthy of our consideration.

<sup>1</sup>Many, but not all of the topics listed above are included in the APS-ACDP Professional Skill List (<http://www.the-aps.org/education/skills.htm>), which does not specifically address scientific misconduct and appropriate responses to it. Perhaps a future revision will include this topic.

## What should be taught about RCR?

The first and subsequent publications of RCR instructional requirements provided a suggested list of curriculum topics. The most comprehensive description of RCR instructional core areas appeared in the ORI policy announced in 2000 and suspended in 2001. This may be accessed at: <http://ori.dhhs.gov/html/programs/finalpolicy.asp>. The core topic descriptions are given below. These are, for the most part, taken verbatim from the ORI web site; in some cases slight modifications have been made. Moreover, the order has been changed to coincide with the list of topics given above. Following the description of each core area, one or more URLs are provided that will take the reader to web sites that will provide more information on the topic.

*Human subjects:* issues important in conducting research involving human subjects. This topic includes subtopics such as the definition of human subjects research, ethical principles for conducting human subjects research, informed consent, confidentiality and privacy of data and patient records, risks and benefits, preparation of a research protocol, institutional review boards, adherence to study protocol, proper conduct of the study, and special protections for targeted populations, e.g., children, minorities, and the elderly. (<http://ohrp.osophs.dhhs.gov/>)

*Research involving animals:* issues important to conducting research involving animals. This topic includes

subtopics such as the definition of research involving animals, ethical principles for conducting research on animals, federal regulations governing animal research, institutional animal care and use committees, and treatment of animals. (<http://grants.nih.gov/grants/olaw/references/phspol.htm>; <http://grants.nih.gov/grants/olaw/tutorial/index.htm>; <http://grants.nih.gov/grants/olaw/references/hrea1985.htm>)

*Data acquisition, management, sharing, and ownership:* accepted practices for acquiring and maintaining research data; proper methods for record keeping and electronic data collection and storage in scientific research. Along with defining what constitutes data, this topic includes data storage in notebooks or electronic files; data privacy and confidentiality; data selection, retention, sharing, ownership, and analysis; and data as legal documents and intellectual property, including copyright laws. (<http://rgp.ufl.edu/otl/goodrecords.html>, <http://www.fccc.edu/ethics/RecordKeeping.html>, <http://www.nap.edu/catalog/10613.html>)

*Publication practices and responsible authorship:* the purpose and importance of scientific publication, and the responsibilities of the authors. This topic includes subtopics such as collaborative work and assigning appropriate credit, acknowledgments, appropriate citations, repetitive publications, fragmentary publication, sufficient description of methods, corrections and retractions, conventions for deciding upon authors, author respon-

sibilities, and the pressure to publish. (<http://www.sfn.org/guidelines/>, <http://www.acponline.org/journals/resource/unifreqr.htm>, <http://pubs.acs.org:80/instruct/ethic.html>)

*Peer review:* the purpose of peer review in determining merit for research funding and publications. This topic includes subtopics such as: the definition of peer review, impartiality, how peer review works, editorial boards and ad hoc reviewers, responsibilities of the reviewers, privileged information and confidentiality. (<http://ori.dhhs.gov/html/programs/rcr-contents.asp>)

*Mentor/trainee relationships:* the responsibilities of mentors and trainees in predoctoral and postdoctoral research programs. This topic includes the role of a mentor, responsibilities of a mentor, conflicts between mentor and trainee, collaboration and competition, selection of a mentor, and abusing the mentor/trainee relationship. (<http://www1.od.nih.gov/oir/sourcebook/ethic-conduct/mentor-guide.htm>, <http://www.nap.edu/readingroom/books/mentor/>, <http://darkwing.uoregon.edu/~gradsch/guidelines.html>)

*Collaborative science:* research collaborations and issues that may arise from such collaborations. This topic includes subtopics such as setting ground rules early in the collaboration, avoiding authorship disputes, and the sharing of materials and information with internal and external collaborating scientists. (<http://ethics.ucsd.edu/courses/integrity/assignments/collaboration.html#intro>)

*Research misconduct:* the meaning of research misconduct and the regulations, policies, and guidelines that govern research misconduct in PHS-funded institutions. This topic includes subtopics such as fabrication, falsification, and plagiarism; error vs. intentional misconduct; institutional misconduct policies; identifying misconduct; procedures for reporting misconduct; protection of whistleblowers; and outcomes of investigations, including institutional and federal actions. (<http://ori.dhhs.gov/>)

*Conflict of interest and commitment:* the definition of conflicts of interest

**Table 1. Goals of RCR Instruction.**

Category	Examples
Knowledge	Rules, regulations, policies, and guidelines Options, tools and resources for addressing ethical challenges
Skills	Moral reasoning Ethical decision-making People management Conflict resolution
Attitudes	Positive disposition toward RCR Identification with the subjects of research
Behaviors	Acting to increase transparency of ethical issues through discussion Decreased likelihood of committing research misconduct Refine and define community standards of conduct

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and how to handle conflicts of interest: types of conflicts encountered by researchers and institutions. This topic includes subtopics such as conflicts associated with collaborators, those associated with publication, financial conflicts, obligations to other constituencies, and other types of conflicts. (<http://grants.nih.gov/grants/guide/notice-files/not95-179.html>, [http://grants.nih.gov/grants/policy/nihgps/part\\_ii\\_2.htm#conflictint](http://grants.nih.gov/grants/policy/nihgps/part_ii_2.htm#conflictint), <http://www.research.sunysb.edu/research/policies/nsfcoi.txt>)

### How should RCR be taught?

Once the decision has been made to start instruction in RCR, it is appropriate to ask what sort of instruction to offer. There are a number of possibilities—each has advantages and disadvantages.

**Courses.** Courses provide repeated meetings with possibility for assignments and discussion of homework exercises. There is often ample time for extended discussion because the courses typically meet one to three hours per week and are mixtures of lectures and discussions. Advantages of courses include the possibility for trainees to develop rapport and confidence, homework assignments can continue between course meetings, and principles common to many ethical situations (e.g., basic principles of decision-making) can be emphasized and re-emphasized. There are many who think that lectures are not the optimum method of instruction for RCR; courses can degenerate into simple lecture series without opportunity for discussion or contemplation of issues. This should not be a problem if instruction is at least partly case-based. Busy schedules make commitment to repeated meetings difficult.

For examples see: Scientific Integrity Course, Virginia Commonwealth University (<http://www.vcu.edu/courses/rcr>); Scientific Ethics Course, University of California, San Diego (<http://ethics.ucsd.edu/courses/ethics>).

**Workshops.** Workshops are typically one-day events of variable duration that can be reviews of relevant resources, regulations or guidelines, invited guest lecturers or case-based

discussions. Their advantages are that they can be advertised as special events, they provide an opportunity for intense focus on single topics or a survey of several topics. However, because only a single meeting is held there is no opportunity for follow-up or discussion of assignments.

For examples see: Survival Skills and Ethics, University of Pittsburgh (<http://www.edc.gsph.pitt.edu/survival>); Clinical Research Workshops, University of California, San Diego, (<http://ethics.ucsd.edu/workshops/CRW>).

**Discussion series.** Discussion series are repeated meetings, typically of one to three hours in duration and that provide a forum for discussion that can be extended. Extensive faculty involvement is an advantage. Such series provide an opportunity to define community standards with respect to RCR. This format may be more appropriate for senior trainees; new students may be intimidated by close contact with faculty. It is important to keep group size small to facilitate discussion. For examples see: Biomedical Ethics Seminar Series, University of California, San Diego (<http://ethics.ucsd.edu/seminars>).

**Ethics seminars.** Another way to provide instruction in RCR is through periodic ethics seminars that may be mixed into ongoing departmental, lab or other similar seminar series. One advantage of this approach is that no additional time is required for instruction. Discussions can take place within a specific research group, thereby emphasizing topics in ethics as having as much importance as other topics of research. One problem with this approach is that issues common to various topics (e.g., Federal guidelines) may receive less emphasis in the context of specific discussions.

**Internet-based Training.** Busy schedules can be accommodated by offering internet-based training because this can be accessed by students from nearly anywhere, whenever they wish to do so. Repeated meetings, homework assignments, extended discussions and links to relevant resources are all easily accomplished through email, chat rooms, etc. During such discussions, everyone can have a voice; in fact, it is difficult for one stu-

dent to hide and not participate. This method allows faculty to remain in the background—lecturing is nearly impossible. Because students write their comments, they are apt to think them through more carefully than they would in the heat of a classroom discussion. One disadvantage is that trainees may choose to prepare less than for face-to-face encounters. Unless faculty members act as moderators, discussion can become long and unfocused. For examples see: Research Ethics, University of Nebraska Medical Center (<http://www.unmc.edu/ethics>); Scientific Integrity, University of California, San Diego (<http://ethics.ucsd.edu/courses/integrity>).

**Ethics in the Core Curriculum.** The most efficient way of offering instruction in RCR is to make ethics an inseparable part of professional training—ethics is inserted as just another aspect of that training. Good mentors make it part of lab meetings and individual or group discussions. It can be inserted into other courses such as writing courses as topics for writing assignments. This requires conscious commitment to RCR on the part of mentors.

For examples see: Scientific Writing Course, University of Nebraska (<http://perweb.unmc.edu:8080/~writing>), Ethics and Survival Skills, University of Pittsburgh, (<http://www.edc.gsph.pitt.edu/survival>).

**Conferences.** Opportunities for trainees to attend national conferences on RCR are increasing in frequency. They offer training by experienced instructors, presenting up-to-date materials. Attendance by individuals from many institutions lends an ecumenical flavor. The primary disadvantage is that not everyone has the resources to or will attend. For examples see: Survival Skills and Ethics, University of Pittsburgh, (<http://www.edc.gsph.pitt.edu/survival>), Teaching Research Ethics, Indiana University, (<http://www.indiana.edu/~poynter/tre.html>), RCR101, Public Responsibility in Medicine and Research (PRIM&R), (<http://www.primr.org/conferences.html>).

Different techniques are available for use in these different approaches. Lectures can be used in most approaches, but most instructors agree that *discussion* or *case studies*

are more appropriate. *Online or email discussions* are always possible and especially appropriate for internet-based instruction. *Role-playing* is used less often, but can be a useful way to help trainees examine their responses to ethical dilemmas. Many *movies* (e.g., "Fat Man, Little Boy," "Miss Evers' Boys," "Do Scientists Cheat?") and *plays* (e.g., Robert G. Martin's "Stampede of Zebras") have been used successfully in RCR instruction to present ideas and stimulate discussion. Assignments for both *reading* and *writing* can be used to expose trainees to new ideas and allow them to express their own. The authors of this paper have successfully used *surveys* to help trainees examine their own opinions and compare theirs with those of others (see <http://www.courses.vcu.edu/rcr/Main%20pages/micr510.htm>).

## Conclusion

The creation of courses in RCR education largely has occurred in response to Federal mandates. This teaching field is still new and curriculum content has been primarily driven by the suggestions made the NIH, the ORI, and some other Federal agencies. Multiple approaches to teaching RCR have been developed and tried with success. Delivery strategy does not fit any prescriptive method, and the needs of individual institutions should be carefully considered when deciding on course design and content. With nascent policies at Federal, institutional, and other levels, curriculum

content should be evaluated regularly and adjusted as needed. Fostering lifelong learning is an important goal for RCR instruction delivery to both trainees and scientists.

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## The American Physiological Society Medical Physiology Curriculum Objectives

<http://www.the-aps.org/education/MedPhysObj/medcor.htm>

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Time: 5:45 PM, Tuesday, April 20, 2004  
Place: Washington, DC

## I. Call to Order

The meeting was called to order at 5:45 PM by President **John A. Williams**, who welcomed the members to the 157th Business Meeting of the American Physiological Society. A booklet containing the agenda and a listing of all the APS award recipients was distributed.

## II. Election of Officers

Executive Director **Martin Frank** announced the results of the election of officers that was conducted by mail ballot. The membership elected **Douglas C. Eaton**, Emory University School of Medicine, GA, as President-Elect (April 21, 2004-April 5, 2005). The three newly elected Councillors for three-year terms are **Carole M. Liedtke**, Case Western Reserve University, **Thomas E. Lohmeier**, University of Mississippi Medical Center, and **Irving H. Zucker**, University of Nebraska College of Medicine (April 21, 2004-May 2, 2007). They will assume office at the close of the Annual Meeting. They are replacing **Kim E. Barrett** and **Joseph R. Haywood**, who are completing three-year terms on Council.

## III. Proposed Amendments to the Bylaws

In compliance with the Bylaws of the Society, the proposed amendments to the Bylaws to 1) allow APS the flexibility to nominate and elect officers by mail and/or electronic ballot; and 2) increase the membership of the Finance Committee from four to five members was put before the membership for a vote. The proposed amendments were published in *The Physiologist* [46(6): 357, 2003].

The motion was unanimously passed by the membership approving the amendments to the Bylaws as follows:

### ARTICLE IV. Officers

SECTION 4. a. *Nomination of Officers.* Nominations for President Elect and for members of Council will be made by mail ballot, on forms provided by the Executive Director, before January 1 of each year. Each member

may nominate no more than one candidate for each office. If a member wishes to nominate the same person for President Elect and for Councillor, he/she must nominate that individual for each position.

c. *Election of Officers.* Election of the President Elect and members of Council shall be made by mail ballot, on forms provided by the Executive Director, prior to the Spring Business Meeting. Each voting member must indicate on the ballot his/her choice of the candidate for office. The candidate(s) receiving the most votes shall be elected. In case of a tie vote, the decision shall be made by lot. Ballots will be counted according to the Election Plan. Two ballots, one for President Elect and one for Council, will be mailed together. The results of the election will be announced at the Spring Meeting of the Society and the newly elected officers shall take office at the close of the Spring Meeting of Council.

### ARTICLE V. Standing Committees

SECTION 2. *Finance Committee.* A Finance Committee, composed of four five regular members of the Society appointed by Council, shall receive the total coordinated budget proposals annually from the Executive Director and shall determine the annual budgets, reserve funds and investments of the Society, subject to approval by the Council. The term of each member of the Finance Committee shall be three years; a member may not serve more than two consecutive terms. The Council shall designate the Chairperson of the Committee who shall be an ex officio member of the Council, without vote. On advice of the Finance Committee and consent of Council, the Executive Director shall be empowered to appoint and compensate a Business Manager who shall assist in carrying out the functions of the Finance Committee under the supervision of the Executive Director. The Past President shall serve as a voting member of the Finance Committee. The President Elect, President, Executive Director, the Chairperson of the Publications Committee, and the Business Manager shall be ex officio members of the Finance Committee, without vote.

## IV. State of the Society

President **John A. Williams** addressed the membership and spoke on the state of the Society. He told the membership that over the past year, APS has moved into its new headquarters at FASEB, instituted new programs and awards, met a significant financial challenge, and began preparations for a new Strategic Plan.

### Society Finances

Williams said that in 2003, APS appeared to be heading towards a deficit, but due to cost containment measures, the Society was able to end 2003 with a positive balance of \$300,000. The Society is also on track for a budgeted modest surplus in 2004. He said that the APS staff had done a good job with cost containment, and the rate of inflation had also helped. Unfortunately, the long-term projections still show expenses growing faster than income. As a result, Council is trying to find ways to increase revenue, and diversify income sources. Currently, the main source of income is the APS publications. The Society will try to build up the Endowment Program as a source of additional income.

### Publications

In August 2004, the journal *News in Physiological Science (NIPS)* will be renamed *Physiology*. The journal has a new Editor-in-Chief, **Walter Boron**, and a new editorial board. *Physiology* will have a new format, professionally done artwork, and more color. The publication will continue to include short review articles.

New editors have been chosen for *Physiological Genomics*, *AJP: Heart and Circulatory Physiology*, and *AJP: Gastrointestinal and Liver Physiology*. Williams said that the journal impact factors remain high, and are in the top 10% of scientific journals. *Physiological Genomics* is experimenting with an open access policy. Since July 2003, 16% of the accepted manuscripts have been published through open access. The journal *Advances in Physiology Education* will be available to the membership in either paper or electronic format.

The complete content of the Legacy Project will be online by summer in a searchable format. The content will be

accessible through individual memberships or through library subscriptions. Williams said that the FASEB Directory would eventually be an electronic-only directory. APS will probably offer only the electronic version to members starting in 2006.

Williams reported on the Washington DC Principles for free access to science and how Frank had spearheaded the drafting and presentation of the DC Principles. DC Principles was created to counteract the open access supporters, and represents more than 50 scientific publishers.

### Meetings

Much of the past year has been spent planning the XXXV Congress of the IUPS, which will be held with EB 2005. The dates of the Congress are March 31-April 5, 2005. The scientific program, planned by the International and US Programming Committees, and the Joint Program Committee (JPC), is mostly complete. Williams informed the membership that there will be two APS conferences in 2004. The first, "Immunological and Pathophysiological Mechanisms in Inflammatory Bowel Disease," will be held September 8-11, 2004 in Snowmass, CO; and the second, "The Integrative Biology of Exercise," will be held October 6-9, 2004 in Austin, TX. One conference has been approved for 2005. Williams said that many of APS' conferences have been scientifically successful, but they did not draw enough attendees to meet financial expectations. Therefore, the JPC will be evaluating the format of the conference program at its June Committee meeting.

### Public Affairs

Williams said that APS continues to work with FASEB to advocate realistic increases for the NIH, NSF, and VA in this post-doubling period. APS is participating in the "Bridging the Sciences" coalition and is participating financially in the Society for Neuroscience initiative to counter animal personhood. APS has met with NIH Director Elias Zerhouni on NIH's support of Integrative Biology training programs, and with Jeremy Berg, the new director of NIGMS.

### Education

The APS/ACDP List of Professional

Skills for Physiologists and Trainees has been finalized and accepted, and is now available on the APS website. Williams thanked **Rob Carroll**, chair of the Education Committee, for his leadership and hard work on the document. Work has begun to evaluate ways in which undergraduate physiology programs are set up as a way of facilitating undergraduate physiology education. And the very successful program, *Frontiers in Physiology*, has been renewed for funding by NIH.

### Careers

APS has established a new committee, The Trainee Advisory Committee. The committee consists of one graduate student or postdoctoral fellow from each section, a faculty advisor and a council liaison member. The first meeting of the Committee occurred at EB 2004.

APS has two new award programs. The first is the Bodil Schmidt-Nielsen Distinguished Mentor and Scientist Award. The first awardee is **Clinton Webb**. The second award is the David S. Bruce Award for Excellence in Undergraduate Research. This year's David Bruce awardees are **David Arnolds**, Harvard University, **Lauren Parish**, Texas Tech University, **Jacob Rullo**, McMaster University, and **Steven Smith**, Queen's University.

### Society Governance

For the first time, APS implemented online voting for society officers. Council also established the Council liaison program where each committee is assigned a Council liaison member. This program will aid with communications between Council and the committees. Also, this is the first year of phasing in three new Councillors to increase the number of councillors from six to nine members.

### Strategic Plan

A Strategic Planning retreat will be held in fall 2005 at which time a new five-year Strategic Plan will be developed. To assist with the planning of a new Strategic Plan, a web-based Membership Needs Questionnaire is being developed and will be available to the membership this fall. The planning meeting for this retreat will be held with the fall 2004 Council meeting. The sections and committees will review the results of the Membership

Survey and will present position papers to Council before the retreat.

Williams thanked many of the APS Staff, including Martin Frank, Robert Price, Marsha Matyas, Margaret Reich, Linda Allen, Alice Ra'anan, Sue Sabur, and Linda Dresser, who have helped to make his presidency very successful. He also thanked all the committee and section chairs, especially **Rob Carroll**, **Dale Benos** and **Peter Wagner**, for all their hard work and help. And thanked all members for making APS a great organization and for making his year enjoyable and rewarding.

## V. Report on Membership

### A. Summary of the Membership Status

President-Elect **D. Neil Granger** reported on the status of the Society membership. As of March 1, 2004, the current membership of the Society is 9,866, of which 7,301 are regular members, 37 are honorary members, 1,104 are emeritus members, 47 are affiliate members, and 1,377 are student members. The Society also has 23 Sustaining Associate members.

### B. Deaths Reported Since the Last Meeting

Granger read the names of those members whose deaths had been reported since the last meeting. The membership stood and observed a moment of silence in tribute to their deceased colleagues.

## VI. Awards and Presentations

### A. Ray G. Daggs Award

Ray G. Daggs was the APS Executive Secretary-Treasurer from 1956 until his retirement in 1972. In tribute to his devotion to the Society, the Ray G. Daggs Award was established, and is given annually to a physiologist for distinguished service to the Society and to the science of physiology. The 2004 Daggs Awardee is **Alfred P. Fishman**, University of Pennsylvania School of Medicine.

Fishman has been a distinguished leader in physiological research and has provided outstanding service to the profession of physiology in general and to the American Physiological

*(continued on page 158)*

(continued from page 157)



**APS President John Williams presents the Ray G. Daggs Award to Alfred Fishman.**

Society in particular for many years. It would be difficult to overestimate the impact of Fishman's leadership on the APS. He has served as APS President, 1983-1984, Chairman of the Program Committee (1964-67), Chairman of the Editorial Committee of the Handbook of Physiology (1967-72), and Chairman of the Publications Committee (1975-1981). As chair of the Publications Committee, Fishman spear-headed the sectionalization of the *American Journal of Physiology*, arguably the most significant single development in the Journal's long history. He has also served the society as Chair of the Task Force on Programming, the International Committee, and the Centennial Committee, as well as editor of the *Journal of Applied Physiology* and *Physiology for Physicians*.

While President of the Society, Fishman encouraged the US National Committee of the IUPS to assume its proper role in international science. The APS Council offered to collaborate with the IUPS to establish an international physiological journal, which was the first step toward the creation of *News in Physiological Sciences*. Fishman later served on the editorial board of this journal.

As a scientist, Fishman has made important contributions in the field of integrative cardio-respiratory physiology, especially as applied to humans. His contributions have included developing ways to use the Fick principle to determine cardiac output and to study



**APS President John Williams presents the Orr E. Reynolds Award to George Rodway.**

collateral circulation in human subjects. He has also contributed significantly to the understanding of the control of breathing and of the pulmonary circulation.

Fishman has been honored with numerous awards and distinguished lectureships. In 1980, he was elected to membership in the Institute of Medicine of the National Academy of Arts and Sciences.

In his accepting the Ray G. Daggs Award, Fishman said "The APS has been my Society ever since I entered research and academic medicine. It is my home. I appreciate this award and I thank you."

#### *B. Orr E. Reynolds Award*

The Orr E. Reynolds Award, established in 1985 in honor of the second Executive Secretary Treasurer, is presented for the best historical article submitted by a member of the Society. Members may receive the award only once, and those members who have advanced degrees in the history of science or medicine are not eligible. The recipients receive \$500 and expenses to attend the spring meeting of the Society. The 2004 Reynolds Awardees are **George W. Rodway**, University of Pittsburgh School of Nursing, for his article entitled "Prelude to Everest: Alexander M. Kellas and the 1920 High Altitude Scientific Expedition to Kamet," and **Lawrence P. Schramm**, The Johns Hopkins University School of Medicine, for his article entitled "Homer Wheelon,



**APS President John Williams presents the Orr E. Reynolds Award to Lawrence Schramm.**

M.D., Gastrointestinal Physiologist and Artist: Origins of the Decorative Tailpieces in Journals of the American Physiological Society."

#### *C. Arthur C. Guyton Teacher of the Year Award*

The Arthur C. Guyton Teacher of the Year Award was established in 1993 by the Teaching of Physiology Section and is supported by the W. B. Saunders Company, publisher of *Guyton's Textbook on Medical Physiology*, used to educate generations of medical and physiology students. The award is given to an APS member who is a full-time faculty member of an accredited college or university and involved in classroom teaching and not exclusively the teaching of graduate students in a



**George Ordway and William Schmidt present the Arthur C. Guyton Teacher of the Year Award to Rob Carroll.**



**APS President John Williams presents the Giles F. Filley Memorial Award to Sarah Gebb.**

research laboratory. The recipient receives \$1,000 and expenses to attend the Experimental Biology meeting.

Williams introduced **William Schmidt** and **George Ordway** who made the presentation to **Robert G. Carroll**, East Carolina University School of Medicine.

Ordway said "I am pleased and honored to recognize **Rob Carroll**. Rob exemplifies all that the award represents. He excels at all the criteria. He is an outstanding teacher on many fronts, and has won many teaching awards at East Carolina. Carroll is known nationally and internationally; in places such as Russia and Pakistan. He is an outstanding citizen. He has



**APS President John Williams presents the Giles F. Filley Memorial Award to Dolly Mehta.**

serviced on curriculum development committees, and has played a key role in developing the APS Teaching Section and served as chair of the Education Committee. He edits and writes for *Advances in Physiology Education*. He is an outstanding role model for all of us. No one is more deserving of this award than Rob Carroll."

#### *D. Giles F. Filley Memorial Awards*

As a result of a bequest from the family of Giles F. Filley, a memorial fund was established in 1993 to recognize excellence in respiratory physiology and medicine. Two annual awards of \$20,000 are made to investigators who hold an academic rank no higher than assistant professor and are pursuing research in respiratory physiology and medicine. Awards are made to APS members working in the United States, who have demonstrated outstanding promise based on their research program. This year the Society is pleased to recognize the promise of **Sarah A. Gebb**, University of Colorado Health Sciences Center, and **Dolly Mehta**, University of Illinois at Chicago.

#### *E. Lazaro J. Mandel Young Investigator Award*

As a result of a bequest from the wife of Lazaro J. Mandel, a memorial fund was established in 1999 to recognize excellence in epithelial or renal physiology. An annual award is made to an investigator who holds an academic rank no higher than assistant



**APS President John Williams presents the Lazaro J. Mandel Young Investigator Award to Bruce Schultz.**

professor and is pursuing research in epithelial or renal physiology. An award is made to an APS member working in the United States who has demonstrated outstanding promise based on his or her research program. Each award is for \$7,500 and is designated for the use of the awardee in his/her research program. Williams presented the 2004 Mandel Award to **Bruce D. Schultz**, Kansas State University.

Schultz received a \$7,500 check for use in his research program and a plaque.

#### *F. Arthur C. Guyton Award for Excellence in Integrative Physiology*

A donation to the Society in honor of Arthur C. Guyton led to the establishment in 1997 of an award to recognize excellence in integrative physiology. One award is made annually to a regular APS member who demonstrates outstanding promise based on his/her research program in feedback, mathematical modeling, and integrative physiology. President Williams presented the 2004 Arthur C. Guyton Award in Integrative Physiology to **Armin Just**, University of North Carolina, Chapel Hill.

Just received a \$15,000 check for use in his research program and a plaque.

#### *G. Liaison With Industry Awards*

The Liaison With Industry Awards are given to for the best abstract describing a novel disease model. This is the fourth year this award has been



**APS President John Williams presents the Arthur C. Guyton Award for Excellence in Integrative Physiology to Armin Just.**



**David Brooks, representative of the APS Liaison With Industry Committee, presents the Liaison With Industry Award to Dmitry Ostanin.**

given. Williams and **David Brooks**, representative of the Liaison With Industry Committee, presented the 2004 Liaison With Industry Awards to **Dmitry V. Ostanin**, Louisiana State University Health Sciences Center and **Eric A. Mokolke**, University of Missouri-Columbia.

#### *H. David S. Bruce Awards*

The annual David S. Bruce Awards for Excellence in Undergraduate Research is granted to up to four currently enrolled undergraduate students who are first authors on a poster presented at the EB meeting. Each will receive a cash award of \$500. This year the Society is pleased to recog-



**Tim Burkholder presents a plaque to Kevin Fitzgerald who gave the Walter C. Randall Lecture on Biomedical Ethics.**



**David Brooks, representative of the APS Liaison With Industry Committee, presents the Liaison With Industry Award to Eric Mokolke.**

nize **David Arnolds**, Harvard University, **Lauren Parish**, Texas Tech University, **Jacob Rullo**, McMaster University, and **Steven Smith**, Queen's University. (see article on page 178)

#### *I. Caroline tum Suden/Frances Hellebrandt Professional Opportunity Awards*

Thirty-six awards were made possible by the bequests of Caroline tum Suden and Frances Hellebrandt, who were long-time members of the Society. Awards are open to graduate students or postdoctoral fellows who present papers at the spring meeting. Recipients receive a \$500 check for



**APS President John Williams presents a certificate of appreciation to Francis Belloni, Outgoing Chair of the Career Opportunities in Physiology Committee.**



**APS President John Williams presents a certificate of appreciation to John Stallone, Outgoing Chair of the Animal Care and Experimentation Committee.**

travel to the Experimental Biology meeting, paid registration, and have access to the FASEB Placement Service. **Carol Liedtke**, Chair of the Women in Physiology Committee, presented the awards. (see article on page 164)

#### *J. Procter & Gamble Professional Opportunity Awards*

The Procter and Gamble Company, a multinational, technically based consumer products corporation, provides support for the APS Professional Opportunities Awards. The APS sections selected nine pre-doctoral students who are within 12-18 months of receiving a PhD degree and are pre-



**APS President John Williams presents a certificate of appreciation to Stan Lindstedt, Outgoing Chair of the Comparative Physiology Section.**



APS President John Williams presents a certificate of appreciation to William Talman, Outgoing Chair of the Public Affairs Committee.



APS President John Williams presents a certificate of appreciation to Kim Barrett, Outgoing Councillor.



APS President John Williams presents a certificate of appreciation to J.R. Haywood, Outgoing Councillor.

senting a paper as first author at the spring meeting. Paid registration and \$500 checks were given to the awardees. (see article on page 165)

#### K. Minority Travel Fellowships

Frank announced that 55 Minority Travel Fellowship awards, funded by NIDDK and NIGMS, were presented to minority students to help them

attend the Experimental Biology 2004 meeting.

#### L. Recognition of Outgoing Section Chairs

**William Chilian**, Chair of the Cardiovascular Section; **Michael Jennings**, Chair of the Cell and Molecular Physiology Section; **Stan Lindstedt**, Chair of the Comparative

Physiology Section; **Charles Lang**, Chair of the Endocrinology and Metabolism Section; and **Kenneth Baldwin**, Chair of the Environmental and Exercise Physiology Section complete their terms at the close of this meeting. Williams thanked them for their service to their sections and to APS.



APS President John Williams presents a commemorative plaque to APS Past President Barbara Horwitz.



APS President-Elect D. Neil Granger receives the gavel from APS President John William.



APS President John Williams presents a certificate of recognition to Christine E. Seidman for the Walter B. Cannon Memorial Award.



APS Past-President Barbara Horwitz presents a certificate of recognition to Robin L. Davisson for the Henry Pickering Bowditch Award.

### M. Recognition of Outgoing Committee Chairs

Williams recognized the outgoing committee chairs and thanked them for their service to the APS. The outgoing chairs are **John Stallone**, Chair of the Animal Care and Experimentation Committee; **Francis Belloni**, Chair of the Career Opportunities in Physiology Commit-

tee; **William Talman**, Chair of the Public Affairs Committee; and **Michael Barany**, Chair of the Senior Physiologists Committee.

### N. Recognition of Outgoing Councillors

Councillors **Kim E. Barrett** and **Joseph R. Haywood** will complete their terms at the close of this meet-

ing. Williams expressed his pleasure at having had the opportunity to serve on Council with them and recognized their dedication and guidance to the Society.

When presenting Horwitz with the Past president plaque Williams said that he had learned a lot from working with Barbara. "She was a steady source of guidance and calmness and



APS Past Presidents: Front row: Stanley Schultz, William Dantzler, Bodil Schmidt-Nielsen, John Williams, D. Neil Granger, Barbara Horwitz; Back row: Walter Boron, L. Gabriel Navar, Gerald DiBona, James Schafer, Brian Duling, Aubrey Taylor, Allen Cowley, Jr., John Hall, John West, Howard Morgan.

good counsel. It gives me great pleasure to present this plaque," he said.

### *O. New Business*

No new business.

### **VII. Passing of the Gavel**

Williams then passed the gavel to **D. Neil Granger**, Louisiana State University Health Sciences Center, the incoming President of the

American Physiological Society.

Granger thanked John for the past year of dedicated service to the APS saying, "Thanks, John, for your outstanding leadership. Knowing that you will be available to me and to the Council for guidance is a comfort. Please join me in thanking John." He also thanked the APS membership for electing him and said that he was looking forward to the coming year.

There being no new business, the meeting was adjourned at 6:55 PM, April 20, 2004.

*D. Neil Granger  
President-Elect*



**Council and SAC: Front row: Dale Benos, Peter Wagner, Matt Grisham, Helen Raybould, Penny Hansen, Susan Wall, Doug Eaton, D. Neil Granger, Barbara Horwitz, John Williams, Susan Barman, Martin Frank. Back row: Ken Baldwin, Charles Tipton, Rob Carroll, J.R. Haywood, Carole Liedtke, Kim Barrett, Alan Sved, Curt Sigmund, Joey Granger, Thomas Lohmeier, James Hicks, Gary Sieck, Charles Lang, Michael Jennings, Jeff Sands.**



**APS Council. Front row: Douglas Eaton, D. Neil Granger, Barbara Horwitz, John Williams, Susan Barman, Martin Frank, Jeff Sands. Back row: Dale Benos, Peter Wagner, Robert Carroll, Charles Tipton, Helen Raybould, J.R. Haywood, Kim Barrett, Carole Liedtke, Thomas Lohmeier, Curt Sigmund.**

## Graduate Students and Postdoctoral Fellows Receive Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Awards

Graduate students and postdoctoral fellows who were first authors on an abstract submitted to Experimental Biology 2004 in Washington, DC were eligible to apply for the Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Award. The APS Women in Physiology Committee, chaired by **Carole M. Liedtke**, Case Western Reserve University, selected 36 awardees from a pool of 115 applicants. Applicants were chosen based on the quality and novelty of their abstracts, and letters written by the candidates describing their career goals, research, and why they were particularly deserving of the award. Each awardee received \$500, a certificate of recognition, and complimentary registration for the EB 2004 meeting. Awards were presented during the APS Business Meeting at EB 2004. Awardees were:

**Robert A. Augustyniak**, Univ. of Texas Southwestern  
**Melanie G. Cree**, Univ. of Texas Medical Branch  
**Scott Earley**, Univ. of Vermont College of Medicine  
**Ahmed A. Elmarakby**, Medical College of Georgia  
**Francis J. Golder**, Univ. of Wisconsin  
**Jorge L. Gonzalez-Perez**, Univ. of Puerto Rico  
**Maria M. Herrera**, Henry Ford Hospital, Detroit  
**Shawn D. Hingtgen**, Univ. of Iowa  
**Darren S. Hoffman**, Univ. of Iowa  
**James C. Hunter**, Pennsylvania State Univ.  
**Eric Ispanovic**, York Univ., PA

**Dennis W. Koch**, Pennsylvania State Univ.  
**Elvira L. Liclican**, New York Medical College  
**Timothy E. Lindley**, Univ. of Iowa  
**Elizabeth D. Loomis**, Medical College of Georgia  
**Sean C. Newcomer**, Pennsylvania State Univ.  
**Allison L. Opay**, Tulane Univ.  
**Teresa A. Orth**, Univ. of Kansas  
**Matthew E. Patterson**, Tulane Univ.  
**Annemarie E. Pimentel**, Univ. of Colorado, Boulder  
**Minolfa Prieto-Carrasquero**, Tulane Univ.  
**Christine S. Rigsby**, Medical College of Georgia  
**James G. Ryall**, Univ. of Melbourne  
**Jennifer M. Sasser**, Medical College of Georgia  
**Jonathan D. Schertzer**, Univ. of Melbourne  
**Jeffrey R. Scott**, Univ. of Western Ontario  
**Melina Silberberg**, Univ. of New Mexico  
**Anita D. Smith**, Medical College of Georgia  
**Sean D. Stocker**, Univ. of Texas San Antonio  
**Michael K. Stickland**, Univ. of Alberta  
**Shozo H. Sugiura**, Univ. of Medicine and Dentistry  
of New Jersey  
**Sebastian Thalmann**, Univ. Hospital Lausanne  
**Caitlin S. Thompson**, Pennsylvania State Univ.  
**Elethia A. Woolfolk**, Meharry Medical College  
**Xiang-Qun Yang**, Michigan State Univ.  
**Andrea G. Zabka**, Univ. of Wisconsin



## Procter & Gamble Professional Opportunity Awards

Once again, the APS has been able to recognize the valuable contributions of 12 predoctoral students to the science of physiology as a result of a generous contribution provided by the Procter & Gamble Company. Students who were first authors on an abstract submitted to EB 2004 in Washington, DC were eligible to apply for the Procter & Gamble Professional Opportunity Award through one of the 12 sections of the Society. Award recipient selection was made by the sections. Each awardee received \$500, a certificate of recognition, and complimentary registration for the Experimental Biology meeting. They were presented their awards at the APS Business Meeting at EB 2004. Awardees were:

### *Cardiovascular Section*

**Eric R. Gross**, Medical College of Wisconsin

### *Cell & Molecular Physiology Section*

**April C. Carpenter**, Louisiana State Univ.

### *Central Nervous System Section*

**Kimberly M. Gerecke**, Univ. of Alabama at Birmingham

### *Comparative Physiology Section*

**Vanessa I. Toney**, Brown Univ.

### *Endocrinology & Metabolism Section*

**Raul Camacho**, Vanderbilt Univ.

### *Environmental & Exercise Physiology Section*

**Jordan D. Miller**, Univ. of Wisconsin

### *Gastrointestinal Section*

**Robert B. Dorman**, Univ. of Arkansas Medical School

### *Neural Control & Autonomic Regulation Section*

**Matthew C. Zimmerman**, Univ. of Iowa

### *Renal Section*

**Jennifer L. Pluznick**, Univ. of Nebraska

### *Respiration Section*

**Jamie H. Rosenblum-Lichtenstein**, Harvard Univ.

### *Teaching of Physiology Section*

**Mark K. Todd**, Univ. of Southern California

### *Water & Electrolyte Homeostasis Section*

**Norman Taylor**, Medical College of Wisconsin



## Physiology in Perspective Walter B. Cannon Memorial Lecture

The Cannon Memorial Lecture, sponsored by the Grass Foundation, honors Walter B. Cannon, President of the Society from 1913-1916, and is presented annually at the spring meeting to an outstanding physiological scientist, domestic or foreign, as selected by the President-Elect with the consent of council. The recipient presents a lecture on "Physiology in Perspective," addressing Cannon's concepts of "The Wisdom of the Body." The lecture is considered for publication in the Society journal of their choosing. The recipient receives an honorarium of \$4,000, a plaque, and reimbursement of expenses incurred in association with delivery of the lecture. The membership is invited to submit nominations for this lecture. A nomination shall be accompanied by a candidate's curriculum vitae and one letter detailing the individual's status and contributions.

More information on the award and nomination procedures are available at <http://www.the-aps.org>. Nominations must be submitted by **October 1**. Nominations should be sent to: The APS Cannon Lecture Award, c/o Linda Jean Dresser, 9650 Rockville Pike, Bethesda, MD 20814-3991; or submitted online at [http://www.the-aps.org/cgi-bin/Election/Lecture\\_form.htm](http://www.the-aps.org/cgi-bin/Election/Lecture_form.htm).

## Bowditch Award Lecture

The Bowditch Lectureship is awarded to a regular member, under 42 years of age, for original and outstanding accomplishments in the field of physiology. Selected by the APS President, the recipient presents a lecture at the Experimental Biology meeting, which is considered for publication in the Society journal of their choosing. The recipient receives an honorarium of \$2,500, reimbursement of expenses incurred while participating in the Experimental Biology meeting, and a plaque. The membership is invited to submit nominations for the Bowditch Lecturer. A nomination shall be accompanied by a candidate's curriculum vitae and one letter detailing the individual's status, contributions, and potential.

More information on the award and nomination procedures are available at <http://www.the-aps.org>. Nominations should be sent to: The APS Bowditch Lecture Award, c/o Linda Jean Dresser, 9650 Rockville Pike, Bethesda, MD 20814-3991; or submitted online at [http://www.the-aps.org/cgi-bin/Election/Lecture\\_form.htm](http://www.the-aps.org/cgi-bin/Election/Lecture_form.htm).

## XXXV International Congress of Physiological Sciences Tentative Program of Scientific Sessions

### Lectureships

#### 2nd Ernst Knobil Memorial Lecture

Chaired: **Jan-Ake Gustafsson**

#### August Krogh Distinguished Lectureship of the APS Comparative & Evolutionary Physiology Section and the Scandinavian Physiological Society

Chaired: **Roy E. Weber**

#### Carl Ludwig Distinguished Lectureship of the APS Neural Control & Autonomic Regulation Section

Chaired: **Julian Paton**

#### Carl W. Gottschalk Distinguished Lectureship of the APS Renal Section

Chaired: **Soren Nielsen**

#### Claude Bernard Distinguished Lectureship of the APS Teaching of Physiology Section

Chaired: **Ann J. Sefton**

Title: *Charting a Global Future for Education in  
Physiology*

#### Edward F. Adolph Distinguished Lectureship of the APS Environmental & Exercise Physiology Section

Chaired: **Erik A. Richter**

#### Ernest H. Starling Distinguished Lectureship of the APS Water & Electrolyte Homeostasis Section

Chaired: **Guiseppe Bianchi**

Title: *The Genetic Control of Renal Na Handling in  
Primary Hypertension*

#### Henry Pickering Bowditch Award Lecture

Chaired: **Ormond MacDougald**

#### Horace W. Davenport Distinguished Lectureship of the APS Gastrointestinal & Liver Physiology Section

Chaired: **Ann Hubbard**

#### Hugh Davson Distinguished Lectureship of the APS Cell & Molecular Physiology Section

Chaired: **Randy Schekman**

#### IUPS President's Lecture

Chaired: **Allen W. Cowley**

#### Joseph Erlanger Distinguished Lectureship of the APS Central Nervous System Section

Chaired: **Sten Grillner**

#### Julius H. Comroe, Jr. Distinguished Lectureship of the APS Respiration Section

Chaired: **Gabby Haddad**

Title: *Tolerance to Low O<sub>2</sub>: Lessons from Invertebrate  
Genetic Models*

#### Physiology in Perspective—The Walter B. Cannon Memorial Award Lecture

Chaired: **Gerald F. DiBona**

#### Robert M. Berne Distinguished Lectureship of the APS Cardiovascular Section

Chaired: **Roberto Bolli**

Title: *Preconditioning: A Paradigm Shift in the Biology  
of Myocardial Ischemia*

#### Robert Pitts Lecture

Chaired: **Jurgen Schnermann**

#### Solomon A. Berson Distinguished Lectureship of the APS Endocrinology & Metabolism Section

Chaired: **Amira Klip**

#### The Microcirculatory Society Landis Award Lecture

Chaired: **Virginia Huxley**

#### The Wallace O. Fenn Lecture

Chaired: **Peter Agre**

#### Walter C. Randall Lecture in Biomedical Ethics

Chaired: **Robert Williamson**

Title: *The Future of Physiology in the Era of the Human  
Genome: Medical Miracles or Ethical Dilemmas?*

## Calcium Signaling Track

### Symposia:

*Integrative Aspects: Ca<sup>2+</sup> Signaling in the Nervous System*

**Alex Verkhatsky**

*Molecular Basis of Disease*

**Cecilia Hidalgo**

*Proteins*

**Andras Spät**

### Featured Topics:

*Overview: From Organelles to Organ*

**Irene Schulz**

*Techniques*

**Tobias Meyer**

### Controversy:

*The Mechanism of Action of the Ca<sup>2+</sup> Releasing Messenger NAADP*

**Luigia Santella**

## Cardiac Track

### Symposia:

*Cardiac Electrophysiology and Arrhythmia Mechanisms*

**Denis Noble**

*Cardiac Remodeling*

**Christine Seidman**

*Excitation-Contraction Coupling*

**Andrew Marks**

### Featured Topics:

*Cardiac Mechanics*

**Andrew McCulloch**

*Cardiac Metabolism and Energetics*

**Joanne Ingwall**

*Regenerative Capacity of the Heart*

**Nadia Rosenthal**

## Ecophysiology for the 21st Century Track

### Symposia:

*Biologging: Monitoring the Ecophysiology of Animals in the Marine Environment*

**Barbara A. Block**

*Cardio-Respiratory Physiology of Diving:*

*Extreme Physiology at Depth*

**Patrick J. Butler**

*Functional Genomics of Macromolecular Damage*

*Responses and Environmental Stress Adaptation*

**George Somero**

*Rescue Mechanisms from Hypoxia*

**Peter Lutz**

### Featured Topics:

*Molecular Physiology of Diving*

**Terrie M. Williams**

## Education Track

### Symposia:

*Effective Uses of Information Technologies in Physiology Education*

**Simon Carlile**

*Research in Physiology Education from the Classroom to the Teaching Community*

**Harold Modell**

### Refresher Course:

*Integrating Genomics Into Physiology Courses: A New Paradigm or Just More Information?*

**Daniel E. Lemons and Anne Kwitek**

### Featured Topics:

*The Many Faces of Problem-Based Learning:*

*A Framework for Integrative Physiology Education*

**Penny Hansen**

*The Role of Student Practical Laboratories in Physiology Education*

**Dee Silverthorn and Maria Jose Alves da Rocha**

## Epithelia Track

### Symposia:

*Epithelial Cells and their Neighbors*

**Hannah V. Carey and Helen E. Raybould**

*Epithelial Polarity: Development to Disease*

**Catherine Fuller and Michael J. Caplan**

*Novel Mechanisms of Transporter Regulation*

**Rene Bindels and Irene Schulz**

*PDZ Domain Scaffolding Proteins and their Functions in Polarized Cells*

*Supported by: The Journal of Physiology*

**Mark Donowitz and Yoshihisa Kurachi**

### Featured Topics:

*Epithelial Genomics, Proteomics and Genetic Models*

**Mark A. Knepper and J.E. Melvin**

*The Molecular Basis of Epithelial Disease*

**David N. Sheppard**

## Feeding, Fuel and Fat: Energy Metabolism Track

### Symposia:

*Body Weight Regulation Throughout the Life Cycle*

**I. Caroline McMillen**

*Genetic Determinants of Obesity and Metabolic Disease*

**Claude Bouchard**

*Metabolic Syndrome: From Clinical Insights into New Therapies*

**Christine Schnackenberg**

*Molecular Bases of Energy Balance and Fuel Partitioning*

**J.M. Friedman**

*Neural Control of Energy Balance*

**Roger Cone**

**Featured Topics:**

*Adipose Tissue: Fat Depot, Fuel Stat,  
and Endocrine Organ*

**Susan K. Fried**

*Molecular Mechanisms of Fuel Sensing*

**Luciano Rossetti and David Grahame Hardie**

**Genomics Track****Tutorial:**

*Computational and Bioinformatic Applications  
to Systems Biology*

**Daniel Beard**

**Symposia:**

*Discovery of Genes for Polycystic Kidney Disease*

**Peter Harris**

*Genomics of Circadian Clocks*

**Julian Dow**

*Genomics of Transport and Sensory Functions*

**Kevin Strange**

*Imprinting, Development and the Programming  
of Adult Health*

**Kent Thornburg**

**Featured Topics:**

*Complex Pathway of Function and Disease  
Deduced from the Whole Genome Perspective*

**Edward M. Rubin**

*Genetic Basis of Cardiopulmonary Disorders*

**Scott Weiss**

**Mechano-/Chemotransduction Track****Symposia:**

*Molecular Mechanisms of Thermosensation*

**Ardem Patapoutian**

*Structure-Function of Mechano-Gated Ion Channels*

**Masahiro Sokabe and Frederick Sachs**

**Featured Topic:**

*Regulatory Mechanisms of Mechanosensory Cells*

**Akimichi Kaneko**

**Muscle-Exercise Track****Symposia:**

*Force Generation*

**Jim Spudich**

*Skeletal Muscle Plasticity*

**John Holloszy**

*Spring Molecules*

**Henk Granzier**

*Stem Cells of Cardiac and Skeletal Muscle*

**Michael Schneider**

**Point/Counterpoint:**

*Is the Creatine Shuttle Critical for Muscle Function?*

**Martin Kushmerick**

**Featured Topics:**

*Muscle as an Endocrine Organ*

**Ronald Terjung**

*Muscle Dystrophies of the Dystrophin Complex*

**H. Lee Sweeney**

**Neural Control of Locomotion:  
From Genes to Behavior Track****Symposia:**

*Initiation and Adaptation of the Locomotor Pattern*

**Tatiana Deliagina**

*Modulation of the Locomotor Pattern Generators  
by Neurotransmitters and by Sensory Afferents*

**Keir G. Pearson**

**Featured Topics:**

*Locomotor Pattern Generators: Developmental, Molecular  
and Cellular Organization in Vertebrates*

**Sten Grillner**

*Long Term Plasticity and Spinal Cord Injury*

**Serge Rossignol**

**Regulatory Brain Track****Symposia:**

*Molecules and Genes: Brainstem Development  
Underlying Breathing*

**Martyn Goulding**

*Neural Control of the Circulation in Health and Disease*

**Patrice Guyenet**

**Featured Topics:**

*Molecules Underlying Diseases of the Central  
and Enteric Nervous Systems*

**George Richerson**

*Respiratory Long-Term Facilitation:*

*Mechanisms and Implications*

**Gordon S. Mitchell**

*The Phylogeny of Dual Respiratory Rhythm*

*Generating Networks in Vertebrates*

**William K. Milsom**

**Renal Control of Blood Pressure Track****Symposia:**

*Cell Biology of Sodium Transport in Kidney*

**Francois Verrey and Rebecca Hughey**

*Comparative Genomics of Blood Pressure Control:*

*Genetic Maps in Humans, Rats and Mice*

**Pierre Corvol and Anne Kwitek**

*Renal NaCl Reabsorption: Molecular Insights  
into Human Blood Pressure Control*

**Paul A. Welling**

**Controversy:**

*Role of Kidney Versus Brain in Blood Pressure  
Control and Hypertension*

**Roger Dampney and Thomas Lohmeier**

## Featured Topics:

*Gender Effects on Arterial Pressure Regulation*

**Chris Baylis**

*Genetic Models of Hypertension*

**Curt Sigmund**

*IUPS Grand Rounds on Hypertension*

**John Hall**

## Thermoregulation and Energetics Track

### Symposia:

*Gene Regulation for Survival at Low Temperatures*

**Jeremy H.A. Fields**

*Integrative Neuronal Mechanisms for Thermoregulation*

**Kazuyuji Kanosue and Ruediger Gerstberger**

*Life and Death: Metabolic Rate and Lifespan*

**Kim Hammond**

*Scaling of Metabolic Rate with Body Size: How and Why?*

**Ewald Weibel and Anthony J. Hulbert**

### Featured Topic:

*Pyrogen-Sensing and Suppressing Pathways Mediating the Febrile Response*

**Clark M. Blatteis**

## Tissue Dynamics in the Lung Track

### Symposia:

*Cellular and Molecular Aspects of Lung Parenchymal and Airway Remodeling*

**Rubin Tudor**

*Comparative Genomics of the Lung*

**John S. Torday**

*Genetic and Developmental Insights into Pulmonary Vascular Pathobiology*

**Marlene Rabinovitch**

*The Making of the Vertebrate Lung*

**Jeffrey A. Whitsett**

### Featured Topics:

*Pro-inflammatory Signaling in Lung Endothelial Cells*

**Jahar Bhattacharya**

*Receptors and Signaling Pathways in Lung Injury and Repair*

**Courtney Broaddus**

## Vascular Physiology Track

### Symposia:

*Angiogenesis*

**Brant Weinstein**

*Central Role of Ion Channels in the Regulation of Vascular Tone*

**Mark T. Nelson**

*Coordinating Interactions Between Endothelium and Smooth Muscle*

**Ruddi Busse**

*Emerging Modes of Ca<sup>2+</sup> Signaling in the Regulation of Smooth Muscle Contractile Proteins*

**Avril V. Somlyo**

*Stem Cells and the Modification of Vascular Functions*

**Keith March**

*Vascular Inflammation: The Role of Inflammatory Cell Extravasation in Tissue Inflammation and Injury*

**Joel Linden**

### Featured Topics:

*Atherosclerosis: The New Inflammatory Disease?*

**Gary K. Owens**

*New Aspects of Endothelial-Cell Matrix Interactions: The Glycocalyx*

**Herbert H. Lipowsky and Fitz-Roy Curry**

*Regulation of Coronary and Skeletal Muscle Circulation*

**Jos A.E. Spaan**

## Free Standing (Non-track) Symposia

*Calcium Channels, Tyrosine Kinases and Smooth Muscle Function*

**Hamid I. Akbarali and Michael J. Davis**

*Sex and Gender Differences in Pain and Analgesia*

**Karen J. Berkley**

*Physiological Proteomics*

**Charles A. Blake and Steven R. Goodman**

*Molecular Mechanisms Linking Sodium Retention to Hypertension*

**Mordecai P. Blaustein**

*The Microcirculatory Society President's Symposium:*

*Vascular Regulatory Abnormalities in Obesity:*

*Consequences of the Epidemic*

**Glenn H. Bohlen**

*How do Emotions and Motivations Interact with Autonomic Functions?*

**Ruud M. Buijs**

*Signaling Pathways in Gut Mechanosensitivity*

**Fievos Christofi and Michael Schnemann**

*International Collaboration: Science Knows no Boundaries*

**Melinda R. Dwinell and Francisco H. Andrade**

*Gravity and Evolution: From Cells to Snakes*

**Alan R. Hargens and Peter Norsk**

*New Advances in Understanding Control of the Cerebral Circulation*

**Donald D. Heistad and David R. Harder**

*Phospholipid Oxidative Signaling in Regulation of*

*Apoptosis and Phagocytosis*

**Valerian E. Kagan**

*International Harmonization of Animal Welfare Standards*

**Kevin Kregel and Pontus Persson**

*Computational Biology of Cardiac Arrhythmias: From Ion Channel to Therapy*

**Andrew McCulloch and Wayne Giles**

*Cellular and Molecular Mechanisms of Synaptic Plasticity*

**Roger A. Nicoll**

*Phylogeny and Ontogeny of the Renin-Angiotensin System*

**Hiroko Nishimura and Kenneth W. Gross**

*Oxygen Sensing and Hypoxia: Development, Adaptation and Disease*

**Nanduri Prabhakar**

*Stem Cells in the Developing and Adult Brain*

**Pasko Rakic**

*Atherosclerosis: Immune and Inflammatory Aspects*

**Allison B. Reiss and Steven Carsons**

*Neural Regulation of Hydroelectrolytic Homeostasis*

**Jose Antunes Rodrigues and Maria Jose Alves da Rocha**

*Lipid Rafts—Floating from Bench to Bedside*

**Thomas L. Roszman and Jens Goebel**

*TRP Channels: Physiological Genomics and Proteomics*

*Supported by: The Journal of Physiology*

**Stewart O. Sage and Bernd Nilius**

*Old Receptor: New Functions*

**Jacques Samarut**

*Inflammatory Aspects of Hypertension: Insights from the Microcirculation*

**Geert W. Schmid-Schonbein**

*Nuclear Receptor Co-Regulators*

**Roland Schule**

*Diagnosis and Treatment Utilizing Natriuretic Peptides*

**David L. Vesely**

*Special Session: Panel Discussion on Ethics and*

*Physiology in the Era of the Human Genome*

**Ewald Weibel**

## Free Standing (Non-track) Featured Topics

*The Role of the Choroid Plexus*

**Peter Brown**

*Gut Interactions with Pancreas and Liver*

**Patricia L. Brubaker**

*Sex/Gender, Hormones and Cardiovascular Function*

**Sue Duckles and Valerie Schini-Kerth**

*The Nature of Intestinal Adaptations:*

*Cellular Diversity and Versatility*

**Ronaldo P. Ferraris**

*Mechanisms of Metabolic Depression: Comparative Aspects*

**Gerhard Heldmaier**

*Amino Acid Transporters*

**Yoshikatsu Kanai**

*Endothelial Nitric Oxide and Cardiovascular Disease*

**David Lefer and Joseph Loscalzo**

*Current Ideas in Pulmonary Ventilation and Blood Flow*

**Mark Olfert and Kim Prisk**

*Impact of Gravity on Physiological Systems*

**Robert W. Phillips**

*Role of Reactive Oxygen and Nitrogen Species in Lung Injury and Diseases*

**Bruce R. Pitt and Brooke T. Mossman**

*Mechanical Ventilation and Lung Injury*

**Deborah Quinn**

*Acid-Base Transporters*

**Michael Romero**

*HIF-1 and Molecular Regulation of Oxygen Homeostasis*

**Gregg L. Semenza**

*Urea Transporters in the Post Genomic Era*

**Craig P. Smith and Jeff M. Sands**

*Transport: PKD, Cilium*

**Stefan Somlo**

*Mosso and Muscular Fatigue: 116 Years After the First Congress of Physiologists*

**Charles M. Tipton and Thomas Nosek**

*Sensing Cardiovascular Homeostasis:*

*Novel Molecules as Mechano- and Chemosensors*

**Donna H. Wang and Donald L. Gill**

*Reactive Oxygen Species in the Vasculature*

**Michael Wolin and Paul Vanhoutte**

## New Regular Members

\*transferred from Student Membership

- Nikolai Aljuri**  
Massachusetts Inst. of Technology
- Amy R.G. Aslamkhan\***  
Nat'l Inst. Environ. Hlth Sci., NC
- Maria F. Barile**  
NIH, MD
- John Neil Barrett**  
Univ. of Miami Med. Sch., FL
- Marc D. Basson**  
Wayne State Univ., MI
- Sandor Batkai**  
NIH, MD
- Nathalie Berthiaume\***  
IPSPharma, Canada
- Steve Bibeviski\***  
Case Western Reserve Univ., OH
- Aliza Brown**  
Ctrl. Arkansas Vets Hlth. Sys.
- Bruno J. Chenuel**  
Univ. of Nancy, France
- Jonathan M. Cordeiro**  
Masonic Medical Research Lab, NY
- Elizabeth C. Cropper**  
Mt. Sinai Medical School, NY
- Victor M. Darley-USmar**  
Univ. of Alabama, Birmingham
- Matthew J. DiMagno**  
Univ. of Michigan
- Gabriel E. DiMattia**  
London Regional Cancer Ctr.
- Robert Di Nicolantonio**  
Univ. of Melbourne, Australia
- R. Brian Doctor**  
Univ. of Colorado
- Ines Drenjancevic-Peric\***  
Med. Faculty, Univ. of Osijek, Croatia
- Oliver Eickelberg**  
Univ. of Giessen, Germany
- Adviye Ergul**  
Univ. of Georgia
- Andreas Fahlman**  
Univ. of Buffalo, NY
- Guo-Chang Fan**  
Univ. of Cincinnati, OH
- Reza Forough**  
Texas A&M Univ.
- Mark Richard Fowler**  
Univ. of Leeds, UK
- Theodore C. Friedman**  
Charles R. Drew Univ., CA
- Yoshiyuki Fukuoka**  
Prefectural Univ. Kumamoto, Japan
- Scott Allen Gahr\***  
USDA/ARS/NCCCWA, WV
- Michele Giugliano**  
Univ. of Bern, Switzerland
- Simon Green**  
Univ. of New England, Australia
- David Marshall Guidot**  
Emory Univ., GA
- Susan Hall Guttentag**  
Univ. of Pennsylvania
- Xiaonan Han**  
Cincinnati Childrens' Hospital, OH
- Zhaosheng Han**  
Ohio State Univ.
- Jorn Wulff Helge**  
Univ. of Copenhagen, Denmark
- Nathan J. Hellyer**  
Mayo Clinic Coll. of Med., MN
- Matthew R. Hodges**  
Yale Univ., CT
- Troy Alan Hornberger\***  
Univ. of California, San Diego
- Sandy Hsieh**  
Natl. Taiwan Normal Univ., Taiwan
- Jon-Philippe K. Hyatt\***  
Georgetown Univ., DC
- Kojiro Ide**  
Univ. of Calgary, Canada
- Masaki Isoda**  
National Eye Inst., NIH, MD
- Asker E. Jeukendrup**  
Univ. of Birmingham, UK
- Radhika Kajekar**  
Univ. of California, Davis
- Randall E. Keyser**  
Univ. of Maryland
- William J.H. Kim**  
Columbia Univ., NY
- Richard J. Krauzlis**  
Salk Inst. for Biological Studies, CA
- Vivek Kumar**  
Mayo Clinic, CA
- Ping La**  
Univ. of Pennsylvania
- Alexandre Legrand**  
Univ. of Mons Hainaut, Belgium
- Jeffrey Lemmer**  
Michigan State Univ.
- Jocelyn Leung**  
Louisiana State Univ.
- Tzer-Bin Lin**  
Chung Shan Med. Univ., Taiwan
- Nicole L. Lohr**  
Medical College of Wisconsin
- Martina B. Merfels**  
Univ. of Giessen, Germany
- Ali Merrikh**  
Univ. of Texas Southern Med. Ctr.
- William Craig Michel**  
Univ. of Utah Sch. of Med.
- John Pratt Miller**  
Montana State Univ.
- Tamara Mirzapoiazova**  
Johns Hopkins Univ., MD
- Nikolai N. Modyanov**  
Medical College of Ohio
- Afsana Momen**  
Pennsylvania State Univ.
- Takashi Nakahari**  
Osaka Medical College, Japan
- Suguru Nakamura**  
Murray State Univ., KY
- Ramzi Ali Ockaili\***  
Virginia Commonwealth Univ.
- Pal Pacher**  
NIH, MD
- Douglas Paddon-Jones**  
Univ. of Texas Med. Branch
- Frank Park**  
Louisiana State Univ.
- Shane Aaron Phillips\***  
Medical College of Wisconsin
- Cristina Pislaru**  
Mayo Clinic, MN
- Minolfa C. Prieto-Carrasquero\***  
Tulane Univ. Hlth. Sci. Ctr., LA
- Nilima Raina**  
Univ. of Toronto, Canada
- Decheng Ren**  
Michigan State Univ.
- Jean-Michel Rigo**  
Limburgs Univ. Centrum, Belgium
- Chantal A. Rivera**  
Baylor College of Medicine, TX
- Don Robertson**  
Univ. of Western Australia
- Kazuhito Rokutan**  
Univ. of Tokushima, Japan
- Tsutomu Sakuma**  
Kanazawa Medical Univ., Japan
- Johannes C. Schittny**  
Univ. of Bern, Switzerland
- Pietro Scillia**  
Erasmus Univ. Hospital, Belgium
- Eric Sibley**  
Stanford Univ. Medical Ctr., CA
- Nicholas L. Simmons**  
Univ. of Newcastle Med. Sch., UK
- Baljit Singh**  
Univ. of Saskatchewan, Canada
- Bryan K. Smith**  
Univ. of Kansas
- Wook Song\***  
Univ. of Texas, San Antonio
- Paul S. Steels**  
Limburgs Univ. Centrum, Belgium

**Xiao Su**

Univ. of California, San Francisco

**Scott C. Supowit**

Texas A&M Univ., Sch. of Med

**Timothy A. Sutton**

Indiana Univ. Sch. of Med.

**Ian R. Van Driel**

Univ. of Melbourne, Australia

**Ad Van Gorp**

Numico Research, The Netherlands

**Saraswathi Viswanathan**

Vanderbilt Univ., TN

**Xiaoyan Wang**

Georgetown Univ., DC

**Xiaoyin Wang**

Virginia Commonwealth Univ.

**Dan A. Wiginton**

Univ. of Cincinnati, OH

**Zhonglin Xie**

East Tennessee State Univ.

**Wei Zhou**

Univ. of California, Irvine

**Longkun Zhu**

West Virginia Univ.

## New Student Members

**Luke S. Acree**

Univ. of Oklahoma

**Sofia Adamidi**

Natl. Univ. of Athens, Greece

**Caroline Rebecca Addis**

Univ. of South Carolina Sch. of Med.

**Amornpan Ajjimaporn**

Mahidol Univ., Thailand

**Ellen M. Andrews**

Loyola Univ., Chicago, IL

**John W. Apolzan**

Purdue Univ., IN

**Adesina P. Arikawe**

Univ. of Lagos, Nigeria

**Dustin D. Armstrong**

Univ. of Illinois, Chicago

**Yuriko Atsumi**

Plymouth State Univ., NH

**Sudip Bajpeyi**

East Carolina Univ., NC

**Brent A. Baker**

Natl. Inst. of Occ. Safety & Hlth, WV

**Brian D. Barnes**

Univ. of Texas, Austin

**Amanda J. Bell**

Texas A&M Univ.

**Jeffrey R. Bernard**

California State Univ., Northridge

**Derek D. Best**

Univ. of Rochester Sch. of Med., NY

**James A. Betts**

Loughborough Univ., UK

**Erin A. Booth**

Univ. of Michigan

**Michael J. Boulwera**

Univ. of Minnesota

**Scott L. Bryer**

Univ. of Illinois, Chicago

**Kirsten A. Burgomaster**

McMaster Univ., ON, Canada

**Ben Busby**

Univ. of Maryland, Baltimore

**Rodica P. Bunaciuc**

Univ. of Kentucky

**Vanessa A. Bussau**

Univ. of Western Australia

**David C. Butler**

West Virginia Univ.

**Gabriela Camporeale**

Univ. of Nebraska, Lincoln

**Yau Chi Chan**

Chinese Univ. of Hong Kong

**Astra I. Chang**

Univ. of Ottawa Heart Inst., Canada

**Natasha N. Chattergoon**

Tulane Univ. Sch. of Med., LA

**Yu-Wen Chen**

Chang Gung Univ., Taiwan

**Zhongming Chen**

Oklahoma State Univ.

**Christine Chiappini-Williamson**

Univ. of Akron, OH

**Cynthia F. Chi**

Univ. of MA, Amherst

**Catherine R. Clark**

Univ. of Texas, Southwestern Med. Ctr.

**Jessica A. Clark**

Univ. of Arizona

**Emily Cozzi**

East Carolina Univ., NC

**Anne M-J Deschamps**

Med. Univ. of South Carolina

**K. B. Devalaraja-Narashimah**

Univ. of Nebraska Med. Ctr.

**Michaela C. Devries**

McMaster Univ., ON, Canada

**Betsy B. Dokken**

Univ. of Arizona

**Ryan A. Dombkowski**

Univ. of Notre Dame, IN

**Kelly A. Dougherty**

Pennsylvania State Univ.

**Noor Naibi B. Dudekula**

Univ. of Houston, TX

**Katie E. Ek-Pangerl**

Univ. of Wisconsin, Stout

**Anne L.M. Escaron**

Univ. of Wisconsin, Madison

**Brandi Marie Eveland**

Middle Tennessee State Univ.

**Salah Gandur (Ghandour)**

Tibbiye Cad. Marmara Univ., Turkey

**Arnaud Goolaerrs**

Free Univ., Brussels, Belgium

**Kym Janese Guelfi**

Univ. of Western Australia

**Stephen G. Guill**

Virginia Tech. Univ.

**Kathleen Elizabeth Hall**

Virginia Commonwealth Univ.

**Brian J. Hardin**

Univ. of Kentucky

**Trent Alan Hargens**

Virginia Polytech Inst. & State Univ.

**Brandon E. Harris**

Univ. of New Hampshire, Manchester

**Gregory Stuart Harris**

East Carolina Univ., NC

**Michael Joseph Hartman**

Univ. of Oklahoma

**Kevin Scott Heffernan**

Univ. of Illinois

**Kim Heinge**

Univ. of Southern California

**Gregory M. Helbig**

Indiana Univ. Sch. of Med.

**Bela A. Horvath**

Semmelweis Univ., Hungary

**Krista R. Howarth**

McMaster Univ., ON, Canada

**Jiaxue Huang**

Univ. of Oklahoma

**Hyun Seok Hwang**

Univ. of Michigan

**David S. Hydock**

Univ. of Northern Colorado

**Narveen Jandu**

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**Melissa Anne Janiec**

East Carolina Univ., NC

**Cathleen Jenkins**

Univ. of Akron, OH

- Myau G. Jenkins**  
Mississippi Valley State Univ.
- Sultan A. Jenkins**  
Univ. of Maryland
- Yi Jia**  
Purdue Univ., IN
- Emmanuel Y. Jingwi**  
Howard Univ., DC
- Christina K. Jones**  
Southern Univ., LA
- W. Shane Journey**  
Univ. of Saskatchewan, Canada
- Daniel Adam Judelson**  
Univ. of Connecticut
- Lisa Suzanne Jutte**  
Brigham Young Univ., UT
- Hilmi B. Kandilci**  
Hacettepe Univ., Turkey
- Rushaniya A. Khairova**  
East Carolina Univ., NC
- Zahida Khan**  
Univ. of Pittsburgh, PA
- Hyunju Kim**  
Seoul National Univ., Rep. of Korea
- Min-ho Kim**  
Pennsylvania State Univ.
- Irene K. Klein**  
Univ. of Illinois, Chicago
- Phillip G. Kopf**  
Univ. of New Mexico
- Matthew A. Kostek**  
Univ. of Connecticut
- Shathiyah Kulandavelu**  
Samuel Lunenfeld Res. Inst., Canada
- Romesh D. Kumbhani**  
Univ. of Pennsylvania
- Hyo-Bum Kwak**  
Texas A&M Univ.
- Laura R. La Bonte**  
Univ. of Arizona
- Ka Man Amy Lam**  
Univ. of Hong Kong
- Dale A. Lauver**  
Univ. of Michigan
- Christine M. Layman**  
Michigan State Univ.
- HeyJoo Lee**  
Case Western Reserve Univ., OH
- William Lee**  
CA Poly, Pomona
- Gabor Lenzser**  
Wake Forest Univ., NC
- Xiaoyan Li**  
Univ. of Louisville, KY
- Yuehua Li**  
East Tennessee State Univ.
- Na Li**  
Univ. of Med. and Dentistry, NJ
- Xiaopeng Li**  
Michigan State Univ.
- Lihua Liang**  
Univ. of Alabama, Birmingham
- Timothy L. Liparulo**  
West Virginia Univ. School of Med.
- Lan Chi T. Luu**  
Univ. of Kentucky
- Mojmir Mach**  
Wright State Univ., OH
- Brandon R. Macias**  
Univ. of California, San Diego
- Vinay Mahajan**  
MA Inst. of Technology
- Katharina Mahn**  
King's College, London, England
- Debeshi Majumdar**  
Univ. of Alabama, Birmingham
- Amy E. Mark**  
McMaster Univ., ON, Canada
- Alexandre Marles**  
Univ. D'Artois, France
- Susan Marsh**  
Univ. of Queensland, Australia
- Charbel F. Maskiny**  
Medical College of Ohio
- Ashish C. Massey**  
Albert Einstein College of Med., NY
- Darcel A. McDonald**  
Univ. of Wisconsin
- Miguel G. Meira e Cruz**  
Inst. Superior De Ciencias  
Da Saude Sul, Portugal
- Manssa E. Mendelsohn**  
Univ. of Western Ontario
- Adrian W. Midgley**  
Univ. of Hull, UK
- Adam R. Mitchell**  
Georgetown Univ., DC
- Mohammad W. Mohiuddin**  
Texas A&M Univ.
- Daniel R. Moore**  
McMaster Univ., ON, Canada
- Elizabeth A. Mullen**  
Univ. of Wisconsin, Madison
- Jennifer L. Mummery**  
Dalhousie Univ., NS, Canada
- Yong-Shan Nan**  
Nagoya Univ. Sch. of Med., Japan
- Desiree M. Nardini**  
Finch Univ., IL
- Tresa L. Nesbitt**  
Univ. of South Carolina Sch. of Med.
- Deepthi M. Nimmagadda**  
North Dakota State Univ.
- Benedict O. Nwokedi**  
Univ. of Lagos, Nigeria
- Ose Rap Obhimon**  
Ambrose Alli Univ., Nigeria
- Yuji Ogura**  
Juntendo Univ., Japan
- Stephanie M. Otto**  
Middle Tennessee State Univ.
- Ian J. Palmer**  
Univ. of Oklahoma
- Joon Y. Park**  
Univ. of Maryland
- Sheetal S. Patil**  
Michigan State Univ.
- Guy L. Pellegrini**  
Michigan Technological Univ.
- Karl D. Pendergrass**  
Wake Forest Univ., NC
- Alex A. Perez-Rivero**  
Michigan State Univ.
- Demetra G. Perlegas**  
Univ. of Virginia
- Jonathan M. Peterson**  
West Virginia Univ.
- Antoli P. Petridou**  
Aristotle Univ., Greece
- Prasad V. Phatarpekar**  
Texas State Univ., San Marcos
- Emidio E. Pistilli**  
West Virginia Univ.
- Andrea Y. Plate**  
Univ. of Minnesota
- Manu O. Platt**  
Georgia Inst. Tech./Emory Univ.
- Rebecca R. Quesnell**  
Kansas State Univ.
- Raja Shpkar Rachakatla**  
Kansas State Univ.
- Senthil Kumar Rajasekaran**  
Sir Ramachakra Med. College, India
- Mark Rakobowchuk**  
McMaster Univ., ON, Canada
- Gautham K. Rao**  
Michigan State Univ.
- Lasse E. Rasmussen**  
Univ. of Southern Denmark
- Patricia Reger**  
Temple Univ., NJ
- Louis P. Richer**  
Hopital Du Sacre-Coeur, Canada
- Jenniger L. Rogers**  
Georgetown Univ., DC
- Jason M. Roper**  
Univ. of Rochester, NY
- Daniela A. Rubin**  
Univ. of North Carolina, Chapel Hill
- Rebecca Ruster**  
East Carolina Univ., NC
- Edward J. Rybka**  
Midwestern Univ., IL
- Jesus R. Salazar**  
Univ. of Michigan
- Martha C. Sanchez**  
Loma Linda Univ., CA
- Hiromi Sanders**  
East Carolina Univ., NC

**Olga Santiago**  
Ponce Sch. of Med., Puerto Rico

**Rie Sasake**  
Univ. of Missouri, Columbia

**Minga M. Sellers**  
Texas A&M Univ.

**Weiwei Shi**  
Georgia State Univ.

**Maria Sol Morales Silva**  
Ohio State Univ.

**Kurinji Singaravslu**  
Univ. of Nebraska Med. Ctr.

**Kiwon Sohn**  
Univ. of Minnesota

**Roberto Solano**  
Univ. of Costa Rica

**Suma Somasekharan**  
Kansas State Univ.

**David K. Spierer**  
Coler Goldwater Specialty Hosp., NY

**Damian C. Stanziano**  
Univ. of Miami, FL

**Liza Stathokostas**  
Univ. of Western Ontario

**Quiona C. Stephens**  
Ohio State Univ.

**Emma Jane Stevenson**  
Loughborough Univ., UK

**Melanie Sweazey**  
East Carolina Univ., NC

**Paul Tannous**  
Univ. of Texas Southwestern Med. Sch.

**Joshua A. Tende**  
Ahamdu Bello Univ., Nigeria

**Geroge N. Theolilidis**  
Aristotle Univ., Greece

**Sridhar Thirumalai**  
Univ. of Louisville, KY

**Benjamin C. Thompson**  
Univ. of Toledo, MI

**Britta N. Torgrimson**  
Univ. of Oregon

**Claudia Toyar-Palacio**  
Univ. of Nacional Autonoma Mexico

**Sofia G. Tsalouchidou**  
Aristotle Univ., Greece

**Torben R. Uhrenholt**  
Univ. of Southern Denmark

**Phillip Watson**  
Loughborough Univ., UK

**Heather E. Webb**  
Univ. of Mississippi

**Jonathan E. Wingo**  
Univ. of Georgia

**Andrea L. Wooles**  
Sheffield Hallam Univ., UK

**Mandy T. Woolstenhulme**  
Brigham Young Univ., UT

**Karen Y. Wondrs**  
Univ. of Northern Colorado

**Rachel E. Wood**  
Queensland Univ., Australia

**Jimin Yang**  
Purdue Univ., IN

**Jaquin F. Zalacain**  
Univ. of Puerto Rico Sch. of Med.

**Ming Zhang**  
Temple Univ., PA

**Zhentao Zhang**  
Purdue Univ., IN

**Xiaoli Zhao**  
Univ. of Med. & Dentistry, NJ

**Lei Zhu**  
Vanderbilt Univ., TN

**Shu Zhu**  
Medical College of Georgia

**Yael Zilbertsein**  
Tel-Aviv Univ., Israel

## New Affiliate Members

**Kathleen T. Brown**  
Georgia Military College

**Mitchell Friedman**  
New Orleans, LA

**Edward F. MacNichol, Jr.**  
Concord, MA

**Bruce Weekley**  
West Point, PA

**Christian B. Wenger**  
Natick, MA

## Recently Deceased Members

**Mitchell Friedman**  
New Orleans, LA

**Edward F. MacNichol, Jr.**  
Concord, MA

**James B. Preston**  
Manlius, NY

**Henry L. Price**  
Bryn Mawr, PA

**Paul Edward Segall**  
Berkeley, CA

**George W. Thorn**  
Beverly, MA

**Bruce Weekley**  
West Point, PA

**Christian B. Wenger**  
Natick, MA

## The Third Gulf Coast Physiological Society Meeting

The Gulf Coast Physiological Society (GCPS) met at the Adam's Mark Hotel in Mobile, AL on March 5-6, 2004, hosted by the University of South Alabama and the USA Medical Sciences Foundation. The meeting attracted 143 attendees from 14 institutions or research centers, including the University of South Alabama, Alabama State University, Auburn University, University of Alabama at Birmingham, Talladega College, Spring Hill College, University of Mississippi Medical Center, Tulane University, Louisiana State University (LSU) New Orleans, LSU Shreveport, Pennington Biomedical Research Center, Xavier University, University of New Orleans, and Emory University. One of the successes of the meeting was the significant participation of undergraduate students and undergraduate faculty advisors from regional institutions. The meeting was organized by **Mary Townsley**, President of the GCPS. The local organizing committee also included **James Parker**, **James Downey**, **Thomas Lincoln**, and **Michael Cohen**.

The two-day meeting opened with a welcome from the GCPS President, who introduced the keynote speaker, **Clinton Webb**. Webb is the Robert B. Greenblatt Professor and Chair of the Department of Physiology at the Medical College of Georgia. His lecture on "Integration of sympathetic

neural control and inflammatory mediators in the regulation of blood pressure" was sponsored by the American Physiological Society (APS). The keynote address was followed by an oral session organized around renin-angiotensin signaling and hypertension. An additional oral session on Friday afternoon began with a talk from invited speaker **Michael Cohen**, whose talk on signaling involved in cardioprotection set for focus for oral presentations in the session. The poster session was held early Friday evening following a talk by **D. Neil Granger**, the new APS President, who gave an overview of APS and discussed goals for his term of office.

The banquet on Friday evening concluded with a brief business meeting and election of new officers. **Patricia Molina** (LSU, New Orleans) was elected as President. **Michelle Meneray** (LSU, New Orleans) will serve as Secretary/Treasurer. New Councillors for the Society include **Mouhamed Awayda** (Tulane University), **Barbara Alexander** (University of Mississippi Medical Center), **Matt Grisham** (LSU Shreveport), and **Mark Taylor** (University of South Alabama).

The meeting continued Saturday morning with two oral sessions. Invited speakers **William Chilian** and **Thomas Lincoln**, gave talks on control of coronary vascular tone and

vascular signaling due to nitric oxide and cyclic nucleotides, respectively, which set the focus for other oral presentations in those sessions. Overall, attendees presented more than 80 abstracts, programmed either as oral presentations or as posters.

Patricia Molina will chair the organizing committee for the next meeting of the GCPS, targeted for spring, 2005 in New Orleans.

*Mary Townsley  
President, GCPS*



**Mary Townsley, President of the Gulf Coast Physiological Society addresses the annual meeting attendees.**



**APS President-Elect D. Neil Granger, Mary Townsley, and Thomas Lincoln at the Gulf Coast Physiological Society meeting.**



**Gulf Coast Physiological Society President Mary Townsley questions a poster presenter at the meeting.**

## APS Recognizes Outstanding High School Students at the 55th Annual International Science and Engineering Fair

The 55th Annual International Science and Engineering Fair (ISEF) was held in Portland, OR in May 2004. Over 1,200 exuberant, enthusiastic high school students from 40 different countries jostled with each other in setting up their posters at the elegant Portland Convention Center. In addition to the Grand Awards presented by the Intel Foundation and five other organizations, Special Awards were given by 93 scientific, professional, industrial, educational, and governmental organizations in the form of scholarships, tuition grants, summer internships, scientific field trips, and equipment grants. As is our tradition, the APS presented Special Awards in the form of cash prizes and student subscriptions to select finalists with the best projects in the physiological sciences, including cellular physiology, animal physiology, and neurophysiology.

Following is the first-hand account of the proceedings as reported by **P.K. Rangachari** from the O'Brien Centre for the Bachelor Health Sciences at the University of Calgary, who headed up the APS judging team.

### APS: Rewarding Excellence at the ISEF

The atmosphere was quite giddy with excitement. I was not alone in feeling exhilarated by the waves of enthusiasm that surged through those halls. My fellow judges **Virginia Brooks**, **Charles Roselli** and **John Resko**, all from the Department of Physiology and Pharmacology at the Oregon Health and Sciences University, were equally impressed. Using the Finalist Directory as our starting point, we tried to fulfill our mandate from the APS, which was to recognize and reward outstanding projects in the physiology realm. It was not easy, as many projects were quite interdisciplinary. We did, however, select half-a-dozen through several iterations that seemed to fit in the category of "physiology." We interviewed the candidates, specifically to probe their knowledge of the subject under study and also to get a personal feel as to the process of inquiry that they had engaged in.

**Allison Jaye Landstrom**, a senior

from Southridge High School, Beaverton, OR, was our unanimous choice for the first prize (\$1,000). She sought to determine whether the preponderance of anterior cruciate ligament tears in females resulted from an enhanced response to relaxin (*The Effects of the Relaxin Hormone on the laxity of Male and Female Anterior Cruciate Ligament Tissue, in vitro*). She used porcine tissues (Achilles tendon strips) in an in vitro study done entirely in her school laboratory. All of us were impressed with her poise, as well as her awareness of the pitfalls and potential implications of the study.

**Samuel Gregory Finlayson**, a freshman from San Ramon Valley High School in Danville CA was awarded the second prize (\$500). He, too, did much of his project beyond the ivy-covered walls of academe, in his case, quite literally out of doors. He sought to gauge the effects of chlorine on the lung function of outdoor swimmers (*Effect of Chlorine on Lung Function of Outdoor Swimmers*). Finlayson's study was a neat example of integrative physiology. Once again, we were impressed with his ability to marshal limited resources and conduct a well-controlled study. He stood up to some serious questioning, all the more impressive considering his age. The two third prize winners, who received \$500 each, were **John Zeqi Luo** of Bishop Hendricken High School, Warwick, RI and **Jason Scott Pellegrino** from Manhasset High School, Manhasset, NY. Interestingly, both had worked on different aspects of glucose homeostasis. Whereas John focused on the effects of an extract of American ginseng root on insulin secretion in beta cells (*Alternative Medicine A relief for diabetes, Phase 3*), Jason used transgenic mice for his project (*Analysis of Metformin's Effect on Brain Insulin Receptors*). In contrast to the other two winners, these studies were conducted with the help of mentors in university laboratories and the techniques used were far more sophisticated than those used by Alison and Samuel. John and Jason were well aware not only of the conceptual basis but also the technical

aspects of their study. John knew quite well the pitfalls in his project and Jason, whose interest in the subject was sparked by being a diabetic himself, was able to breathlessly cite relevant publications. Allison, John and Jason also picked up awards from the Endocrine Society.

In addition to the four award winners, the APS judging team recognized two other students with honorable mentions: **Julian Clint Hong**, a senior from Ronald Reagan High School in San Antonio, TX (*Restraining Restenosis: Combating Vascular Disease-Year 4*) and **Lisha Laura Constantine**, a senior from the American Senior High School in Hialeah, FL (*Characterization of a Truncated form of Slow Skeletal Troponin T that causes Nemaline Myopathy*). These outstanding students will receive a one-year subscription to *Physiology*.

I found the experience to be richly rewarding. I stayed behind for the Awards Ceremony the day after the judging and so had the chance to walk through the halls looking at the other posters. The breadth of coverage was impressive, with topics ranging from the construction of an astronomical spectrograph to exploring group dynamics in Beadlet anemones to moral reasoning in teens. I stopped next to a poster attractively labeled *Hormesis*. My curiosity was piqued, since I had been involved in a study looking at the effects of low dose radiation on colonic transport. I was treated to a delightful explanation of U-shaped dose-response curves, the relevance of exploring that phenomena and its potential significance. So infectious was the enthusiasm of the young lady from Arlington, VA that had I known nothing at all about the subject, I would have been tempted to rush to my room for a "Googling" session to learn more.

Often, teenagers get a bad rap from the media and the world in general. Teens are frequently portrayed as narcissistic, callous, casual and irresponsible. If that is so, the students participating in the 2004 ISEF must have been raised on some other planet. I left Portland oddly elated. When I volunteered to be the lead judge and rep-

resent the APS, I hardly realized what a tonic it was going to be for me. Curiously, the Canadian edition of *Time* magazine for that week had a lead article on the confusion raging in the brains of teenagers. If there was any lack of decision-making abilities on the part of those who jostled the exhibit halls that week, it was certainly well-concealed. Their determina-

tion, exuberance, skill and competence were rather scary to an aged one like me! Modern travel has become quite unpleasant. Crossing borders even more so. But the hassles of the well-choreographed dances we perform across innumerable airports (placing shoes on trays, cell-phones off, shuffling unsmilingly with out-stretched hands past grim-faced security

guards), seemed somehow quite trivial. The world seemed a better, braver one for having such wondrous creatures in it. In dreams, said Yeats, begin responsibilities. These kids are dreaming well, very well. The future seemed so much safer with them.

*P.K. Rangachari,  
APS Education Committee*



**P.K. Rangachari congratulates ISEF award winners Allison Landstrom Samuel Finlayson, Jason Pellegrino, and John Luo.**



**John Resko, Charles Roselli, P.K. Rangachari, and Virginia Brooks served as judges for selecting APS special awards at ISEF.**

## R. Clinton Webb Receives First Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Award

The Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Award honors a member (male or female) of the American Physiological Society who is judged to have made outstanding contributions to physiological research and demonstrated dedication and commitment to excellence in training of young physiologists whether by mentoring, guiding and nurturing their professional and personal development, developing novel education methods/materials, promoting scientific outreach efforts, attracting individuals to the field of physiology, or by otherwise fostering an environment exceptionally conducive to education in physiology.

The award was established to recog-

nize **Bodil M. Schmidt-Nielsen**, the first woman President of the Society and a distinguished physiologist who has made significant contributions in her field.

The APS Women in Physiology Committee, chaired by **Carole M.**



**Carole Liedtke, Bodil Schmidt-Nielsen, R. Clinton Webb and John Williams at the first Bodil Schmidt-Nielsen Award Presentation.**

**Liedtke**, Case Western Reserve University, selected **R. Clinton Webb**, Medical College of Georgia, from a large pool of candidates. Webb was chosen based both on his outstanding record of mentoring and research.

The award of \$1,000 plus travel expenses and a commemorative plaque were presented to Webb by Liedtke, APS President **John Williams**, and **Bodil M. Schmidt-Nielsen** at a special luncheon honoring him during the Experimental Biology 2004 meeting in Washington, DC. During the luncheon Webb spoke on "Mentoring, a Mission to Initiate and Inspire" to the attendees, which included current and former students of Webb as well as some of his own mentors.

## Undergraduate Students Receive David S. Bruce Awards for Excellence in Undergraduate Research

Undergraduate students who were first authors on an abstract submitted to Experimental Biology 2004 in Washington, DC were eligible to apply for the David S. Bruce Awards for Excellence in Undergraduate Research.

The award is named in honor of APS member David S. Bruce (1939-2000), who served as Chair of the APS Teaching Section and was a professor of physiology at Wheaton College from 1978-2000. Bruce was a dedicated physiology educator who had a particular interest in engaging undergraduate students in scientific research. Bruce not only encouraged and supported his students in participating in research, but he also regularly brought undergraduate students to the Experimental Biology meeting, often to present their research findings.

The APS Education Committee, chaired by **Robert G. Carroll**, East Carolina University, initially selected 12 finalists from a pool of 19 applicants.

Finalists were chosen based on the quality and novelty of their abstracts, and letters written by the candidates describing their career goals, research, and why they were particularly deserving of the award. The 12 finalists were:

**David Arnolds**, Williams College  
**Shaun Best**, Univ. of Kansas  
**Matt Buelow**, Medical College of Wisconsin  
**Rachel Byerley**, Indiana Univ.



**Janet Bruce, center, presents undergraduate students with certificates for the David S. Bruce Awards for Excellence in Undergraduate Research. The awardees were: Jacob Rullo, Lauren Parish, David Arnolds, and Steven Smith.**

**Jennifer DiPenta**, Acadia Univ.  
**Justin Long**, Indiana Univ.  
**Lauren Parish**, Texas Tech Univ.  
**Jacob Rullo**, McMaster Univ.  
**Alisa Sato**, Tripler Army Med. Center  
**Steven Smith**, Queen's Univ.  
**Heather Spaulding**, Louisiana State Univ.  
**Carmen Troncoso**, Univ. of New Mexico



These students then made oral presentations of their posters to a subcommittee chaired by **Jeffrey L. Osborn** (University of Kentucky) and **Nancy L. Kanagy** (University of New Mexico). Four awardees were selected

based on their knowledge of their research project. Each awardee received \$500 and a certificate of recognition. Awards were presented by Carroll and Janet Bruce during a special APS Undergraduate Poster

Session at EB 2004. The awardees were:

**David Arnolds**, Williams College  
**Lauren Parish**, Texas Tech Univ.  
**Jacob Rullo**, McMaster University  
**Steven Smith**, Queen's University

*Janet Bruce's offered the following comments about David at the award ceremony:*

"David proactively involved undergraduate students in research throughout his entire career. He invited the students who has worked with him on a project to present it with him at the Experimental Biology meetings, and he followed through with getting the research published with the students listed as co-authors.

"David was intentional about life and did a lot of things well. He was a husband, father, professor, researcher, and naturalist. We met in French class in college. David loved French pronunciation! I'm not sure he always knew what he was saying. During the 'Pink Panther' years of popularity he had a lot of fun imitating 'Inspector Clouseau, you know.' There was as much laughter as labor in the research lab.

"But it was also a serious business. A former student researcher, now a cardiac surgeon, said in his tribute to David that 'precision' was a verb to

David Bruce.

"My hearty congratulations to all of you for qualifying to present a poster here, and special congratulations to the finalists and award winners."

*Another tribute came from Bill Cliff at Niagra College. This was published in the Teaching Section newsletter shortly after David died.*

"Although I can't say I really knew him as a friend, in the times that I had to share his company at the FASEB meetings, I came to appreciate him more and more for who he was—a fellow who quietly and unobtrusively lived out his personal faith and remained steadfast in his passion for undergraduate science education. Words fail me as I try to describe his impact upon the circles we shared at FASEB. But I will say this: In a community that always seems to be rushing from latest trend to latest trend, he was one who exerted a profound settling and stabilizing effect on the folks who got to know him. We will miss him."



**Rob Carroll reflects on Janet Bruce's comments regarding her late husband, David, at the first David Bruce Award ceremony.**

## New APS Education Web Design

The APS Education Department has unveiled a new web design. The new look closely resembles the APS home page, with pages that are easy to identify as being part of the "APS Package," while maintaining an individual Education emphasis and pages that are easier to navigate. Check out the new look and feel directly from the APS home page, followed by the Education link: <http://www.the-aps.org>.

## 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>.

## Summer Research Teachers and Research Hosts Honored at Luncheon

As the culmination of their 12-month fellowship, the 2003 Frontiers in Physiology and Explorations in Biomedicine Summer Research Teachers attended Experimental Biology 2004 to learn about the latest science research findings, meet with physiologists, attend workshops and tour the posters and exhibits. Six of the sixteen Research Teachers also presented posters about their summer research projects along with their research hosts and lab teams.

The 2003 Summer Research Teachers and their APS member Research Hosts were honored at a luncheon during Experimental Biology 2004. Teachers received certificates of achievement, and their Research Hosts were presented certificates of appreciation for their participation in the 12-month fellowship. **Robert Carroll**, Chair of the Education Committee, served as the master of ceremonies. Past President **Barbara Horwitz**, President **John Williams**, President-Elect **Neil Granger** and Executive Director

**Martin Frank** offered their congratulations while presenting the certificates to the teachers and their hosts.

The Frontiers in Physiology and Explorations in Biomedicine programs are designed to create ongoing relationships between research scientists and middle and high school teachers; and to promote the adoption of the National Science Education Standards for K-12 science content and pedagogical techniques among middle and high school teachers. The Explorations in Biomedicine project works intensively with the science faculty at Montana schools and tribal colleges that serve Native American students to create an atmosphere that encourages science studies, and the exploration and pursuit of biomedical research careers.

The Summer Research program offers teachers nationwide a full-time, hands-on laboratory experience for seven to eight weeks at APS members' research labs. Teachers also attend a one-week workshop at the Airlie Center in Warrenton, VA, where they

explore hands-on, inquiry based teaching strategies, consider classroom equity and technology-use issues, and begin to develop their own inquiry lab activities.

Frontiers in Physiology is sponsored by APS, the National Center for Research Resources (NCRR), Science Education Partnership Awards (SEPA), and the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) at the National Institutes of Health. The Explorations in Biomedicine program is administered through a partnership between APS and the American Indian Research Opportunities (AIRO) consortium of Montana tribal colleges and Montana State University-Bozeman, Bozeman, MT.

More information about these programs is available on the APS website at [http://www.the-aps.org/education/edu\\_k12.htm](http://www.the-aps.org/education/edu_k12.htm).



The 2004 Research Teachers pictured during a week long workshop in July 2003. Front row: Judy Toledano, Alita Thompson, Sandie Nichols, Diane Ford, Mary O'Leary. Middle row: Becky Carney, Larissa Raven, Barbara Behnke, Melissa Gildehaus, Linda Dearth-Monroe. Top row: Elizabeth Quick, Christin Arnini, Sonal Patel, Bonnie Moody, Tim Crane, Tim Craddock, Melissa Maringer.

## Undergraduate Research Highlighted at Experimental Biology Meeting

For the first time at the Experimental Biology meeting and as a result of the establishment of the David S. Bruce Awards for Excellence in Undergraduate Research, APS was pleased to host a special APS Undergraduate Poster Session to highlight the contributions of undergraduate researchers to physiology.

This special session was held in addition to the regularly scheduled poster session that the students were programmed into as part of the EB scientific program. It was held Sunday

afternoon of the EB meeting and culminated in the presentation of the David Bruce Awards.

Of the 88 undergraduate first authors invited to present at the APS Undergraduate Poster Session, 75 came to the session and had the opportunity to put up their poster and present it to interested scientists and guests. The session not only provided the undergraduate students with an opportunity to highlight their research but also to meet faculty from many graduate schools and medical schools

to discuss their future plans. Approximately 200 APS members and guests were in attendance at the session, with many comments heard as to the high quality of research being presented by the students.

APS looks forward to hosting APS Undergraduate Poster Sessions at future Experimental Biology meetings and encourages APS members to have their undergraduate students to submit abstracts for EB, apply for the David Bruce award, and attend the poster session in 2005.



Undergraduate students hang their posters in preparation for the first APS Undergraduate Poster Session at Experimental Biology.



Dee Silverthorn poses questions to an undergraduate student presenting a poster.

## American Physiological Society Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Award

The **Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Award** honors a member of the American Physiological Society who is judged to have made outstanding contributions to physiological research and demonstrated dedication and commitment to excellence in training of young physiologists whether by mentoring, guiding and nurturing their professional and personal development, developing novel education methods/materials, promoting scientific outreach efforts, attracting individuals to the field of physiology, or by otherwise fostering an environment exceptionally conducive to education in physiology.

The award was established to recognize **Bodil M. Schmidt-Nielsen**, the first woman President of the Society and a distinguished physiologist who has made significant contributions in

her field. The award of \$1,000 and a commemorative plaque will be presented at the annual Experimental Biology meeting where the awardee will meet with APS members and young scientists. The first award was made at EB 2004 in Washington, DC.

Nominations can be submitted to the Women in Physiology Committee by any member of the American Physiological Society. The nomination should include the following:

1. a letter stating the basis for nomination with a synopsis of the nominee's scientific contributions and mentoring skills and evidence related to the criteria, such as: assisting students with research funding or job placement, success of graduates, publications and presentations of graduate students, participation in graduate education activities, successful role model, teaching awards, descriptions

- of innovative teaching methods, etc.;
2. a list of current and former trainees and their current positions and any award they received;
3. at least two and up to five additional support letters;
4. nominee's current curriculum vitae.

The nomination packet should be submitted by either a nominator(s) or by a nominator and the nominee.

Applications can be sent to the following address: Bodil Schmidt-Nielsen Distinguished Mentor and Scientist Award, American Physiological Society, Education Office, 9650 Rockville Pike, Bethesda, MD 20814-3991.

Applications are due by **October 1, 2004**.

For questions, please contact the APS Education Office at 301-634-7132 or [education@the-aps.org](mailto:education@the-aps.org).

## American Physiological Society David S. Bruce Undergraduate Research Award

### History

David S. Bruce (1939-2000) served as Chair of the APS Teaching Section and as a professor of physiology at Wheaton College from 1978-2000. Bruce was a dedicated physiology educator who played active roles in both the APS and the Human Anatomy and Physiology Society. As an undergraduate educator at Wheaton College, Bruce had a particular interest in engaging undergraduate students in scientific research. Bruce not only encouraged and supported his students in participating in research, but he also regularly brought undergraduate students to the Experimental Biology meeting, often to present their research findings. In 2000, Bruce died at the age of 61 of complications following a kidney transplant. The David Bruce Award will honor Bruce's commitment to promoting undergraduate involvement in research, in the APS annual meeting, and, ultimately, in research careers.

### Procedure

The David S. Bruce Awards will be made each year at the Experimental Biology meeting to up to four undergraduate students who have both submitted abstracts for the meeting and award application materials. Abstracts will be reviewed by the David S. Bruce Award Committee prior to the Experimental Biology (EB) meeting. The award committee includes selected members of the APS Education Committee and, if deemed necessary, additional APS members to provide a breadth of coverage for major topic areas. The Award Committee will select 12-15 finalists. These students will be notified of their finalist status well in advance of the meeting.

At EB, all undergraduate students will be invited to present their research posters not only during their regular scientific session but also at a special poster session prior to the Bowditch Lecture. Earlier in the day, the 12-15 finalists will be asked to set up their posters in the same room. They will be interviewed by the Award Committee in the afternoon. After the

interviews, the Committee will decide the final awardees. The final awardees will be announced and will receive their certificates during the undergraduate poster session. Winners will also be announced at the APS Business Meeting.

### Eligibility

Applicants for the David S. Bruce Award must:

1. be enrolled as an undergraduate student at the time of the application and at the time of the EB meeting;
2. be the first author on a submitted abstract for the EB meeting. Students may not submit more than one abstract for the award competition each year;
3. be working with an APS member who attests that the student is deserving of the first authorship;
4. have not previously won the David S. Bruce Award;
5. submit a one-page letter that discusses his/her role in the research, the significance of the research, and his/her career plans.

### Review Criteria for Abstracts

Abstracts and student letters will serve as the basis for selection of the 12-15 finalists. Review criteria include the following:

- The abstract displays a clear logic and flow of ideas.
- The scientific problem includes a clear hypothesis to be tested, a well-described approach to the problem using clear experimental methods or model.
- The results of the study are presented succinctly.
- The discussion and/or conclusions are concise and follow logically from the results presented.
- The student's letter indicates that s/he played a significant role in the research, has an understanding of the significance of the research, and has some interest in a biomedical and/or physiology-related career.

### Review Criteria for Poster Presentations

As noted above, the Award Committee will interview the 12-15

finalists during the special undergraduate poster session. Winners will be selected from among the finalists. The Awards Committee will consider:

- quality of the poster and oral presentation;
- quality of graphics used;
- organization of the poster;
- creativity used in displaying and describing the research as well as in the development of the research project;
- novelty of the research project;
- student display of his/her understanding of the work and its significance.

### Awards

Following the poster presentation, the Awards Committee will meet to make their final selections. The APS Council previously recommended that the total number of awards be not greater than 10% of the applicant pool, with a maximum of four awards annually. Each of the awards will include:

- \$500 travel award;
- award certificates for both finalists and awardees.

Note: All undergraduates already are eligible for free registration to EB; therefore, registration is not part of the award.

### Award Presentation

As noted earlier, the awards would be presented at the end of the undergraduate poster session and will be noted at the APS Business Meeting. Presentation of the awards during the weekend is important since most undergraduate students are unable to stay at the meeting until the business meeting.

### Award Program Evaluation

The student finalists and awardees will be contacted in subsequent years to both determine their career progress and to invite their continued participation in APS meetings and activities such as the Summer Research Program.

**Deadline: November 2004**

## APS/IUPS Relaunch *NIPS* as *Physiology* with New Features, Outlook and Integrated Design

APS and the International Union of Physiological Sciences (IUPS) are relaunching the journal *News in Physiological Sciences* (*NIPS*) in August as *Physiology*.

**Walter Boron**, who has been editor of *NIPS* for a year and will continue to lead *Physiology*, is a former APS President and is professor in the Department of Cellular and Molecular Physiology at the Yale University School of Medicine.

"The 'inaugural' August issue of *Physiology* is going live with all-new features, and a totally new look—a new cover concept, and new, integrated artwork," Boron said. "As part of the interview process that led to my becoming editor, it quickly became clear we all felt strongly that this most exciting science we call 'physiology' lacked the kind of focal publication that many other leading-edge scientific disciplines enjoy," he added.

Boron noted that this lack of a driving publication became increasingly noticeable over the past 10 years, "which is about the same period during which physiology itself has been undergoing a transformation, as it exploited advances in molecular biology and genetics. The Human Genome Project—and genome projects for other organisms—have been a major boost to the discipline.

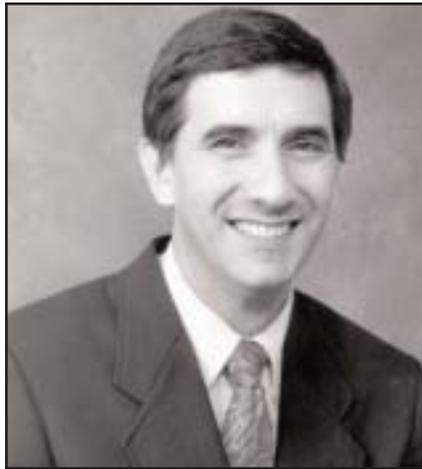
### *Physiology*: 'The Place to Be'

It became clear that physiology could play a major role in understanding how newly discovered molecules function, and that powerful molecular approaches could help answer some longstanding questions in physiology.

"Many younger scientists realized that physiology was the place to be," Boron said.

So the next steps were relatively obvious. Since 1986, the role of *NIPS* had been to provide educators and enthusiasts with short reviews describing recent advances in physiology. *Physiology* will continue to focus on publishing invited, incisive reviews on cutting-edge topics in physiology.

Next Boron recruited "an editorial board of eminent physiologists, includ-



Walter Boron

ing two dynamic colleagues to serve as associate editors—**Michael Caplan** and **Ulrich Pohl**—and **Gerhard Giebisch** to serve as special advisor."

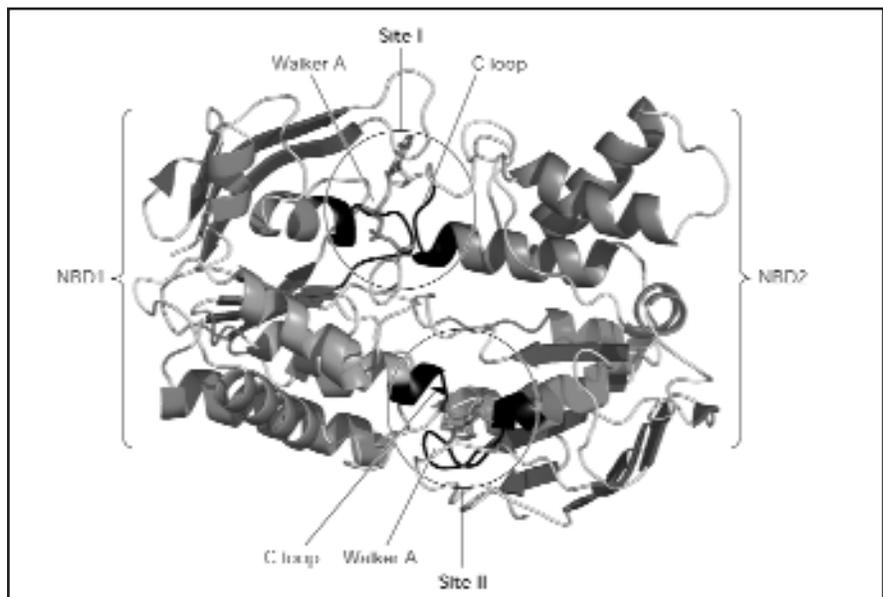
### *Physiology* designed to appeal to broader audience

**Dale Benos**, chair of the APS Publications Committee agreed, saying, "Walter Boron has assembled an

outstanding and enthusiastic and committed editorial board, ensuring the success of this new endeavor. The transformation of *NIPS* into *Physiology* is another exciting innovation of the APS publications program of the American Physiological Society. It's more than a name change. *Physiology* will showcase the most up-to-date, cross-cutting physiological research in a manner that will appeal to scientists of all disciplines."

With the help of Margaret Reich, APS Director of Publications and Executive Editor, the design firm of J/B Woolsey Associates of Philadelphia was chosen to develop a completely avante garde design for the publication, and also to produce complete original, innovative artwork for all future articles in *Physiology*. (See box on next page for more information on the unique design concept for *Physiology*.)

According to Reich, "*NIPS* has had a loyal following, especially internationally, but we are very excited about the redesigned journal drawing even a broader audience, especially with the



This diagram is from an article by Rupert Abele and Robert Tampé of Goethe University entitled "The ABCs of Immunology: Structure and Function of TAP, the Transporter Associated with Antigen Processing" in the inaugural issue of *Physiology*. It's a colorful model of the ATP-bound dimer of NBD1 and NBD2, viewed toward the cytosol.

new title, *Physiology*, 'claiming' the field.

"Hopefully, a whole new audience will discover this beautiful, readable journal, and in doing so, rediscover physiology itself," Reich said.

Boron noted that APS, IUPS and the editors started out "with high, but realistic, hopes for the development of *Physiology*. But we're already far ahead of our targets and milestones: Our success rate for recruiting our first-choice authors has been extremely high, and the submissions have been coming in quickly.

"It's really a reflection of the growth of physiology and its role in integrating function from the molecule to the whole organism," he added. "Now that we know the identities of the molecular players, physiologists are working to understand how these molecules work, the roles they play, and how changes in these molecules affect the function of everything from individual cells to the whole organism," Boron said.

### Among the new features in *Physiology* are:

Highlights from the Literature, a summary of a dozen or so current papers nominated by the editorial board and editors of physiology journals around the world;

Emerging Tools and Emerging Technologies, discussions of new methodologies of interest to physiologists;

Emerging Topics, brief discussions of new concepts in physiology.

### And planned for upcoming issues:

Point/Counterpoint, collegial discussions of opposing viewpoints;

Timelines, brief historical articles describing how a particular field developed to where it is today, sometimes linked to current reviews in *Physiology*.

### Thanks to Former Editors

Boron noted that for more than 18 years, under the leadership, first, of **Knut Schmidt-Nielsen**, then **John Shepherd**, and, most recently, **Stanley Schultz**, *NIPS* achieved its mission admirably.

## Art Borne of (Neuro)Physiology Inspires *Physiology*

**Walter Boron** first "met" the Woolsey family when Professor Woolsey, the brother of John, was his anatomy professor at Washington University in St. Louis. Many years later, Boron was collaborating with Emile Boulpaep on their comprehensive textbook for medical and graduate students, *Medical Physiology. A Cellular and Molecular Approach*, published by Saunders in 2003. Their editor suggested they meet a new artist with a unique approach: John Woolsey, president of J/B Woolsey.

Woolsey has a rather unique approach to his work: "I've always used the question-and-answer, collaborative approach to medical illustration," he said. Woolsey's father was a professor of neurobiology and editor of the *Journal of Neurophysiology*, so John grew up in a scientific environment.

What was unique about designing *Physiology*, Woolsey says, is that "Walter Boron wanted to make it a more widely read journal and he recognized the importance of graphic communication." So collaboratively, of course, they agreed on a "fresh, new design approach" that not only utilized modern typefaces and elements, but one that brought an editorial view into a process we call 'graphic development,'" Woolsey said.

"Physiology is a pretty overarching field and includes specialists at different corners of the science," Woolsey noted. "So one of the things we wanted to do, without diluting the artwork, is to bring more accessibility, even for novice readers. Part of it

is to spell out acronyms, and not use concepts in the art that aren't used in the text. Basic simple things that too many journals overlook."

Woolsey's association with *Physiology* hasn't ended with the August launch. His studio is responsible for every illustration, table, and photograph, as well as the overall presentation of every article in future issues. This will assure not only consistency within each article, but also for that issue and beyond.

For instance, Woolsey's "rigorous in using a consistent palette" in terms of particles, organs and other physiological building blocks being the same color, and using like symbols and representations throughout." Another thing that Woolsey tries to be consistent about is to "make sure the art is near the text it's describing."

In some diagrams (for instance in the Pautler "emerging technologies" article on "Mouse MRI," in the August issue) "text balloons" and figure legends are used right in the illustration so the reader doesn't have to jump back and forth from the illustration to the caption. It's all right there.

And it's not a one-way street in deciding illustrations, either. In the August article by Lundkvist et al, "Why trypanosomes cause sleeping sickness," Woolsey suggested that a distribution map of Africa showing where the different types of sleeping sickness are prevalent would help readers understand the issue better. It's that kind of attention to the article as a whole that makes Woolsey's contribution so positive.

He also thanked the APS Publications Committee, chaired by **Dale Benos**, and the APS Council, under the leadership of former president **Barbara Horwitz**, Past-President **John Williams**, and President **D. Neil Granger**, and the enthusiastic support of **Martin Frank**, APS Executive Director. The IUPS Council (**Allen Cowley**, President) approved the journal's transformation to *Physiology*, as did the APS/IUPS Joint Managing Board-

**Dale Benos** (Chair), **Ewa Szczepanska-Sadowska**, **Aki-michi Kaneko**, and **Jimmy Neill**.

"At the APS Publications office, Margaret Reich, Jessica Darago (Journal Copy Editor who also does all the layout and production), and Eric Pesanelli (Art Director) carefully nurtured *Physiology* through the 18-month incubation period," Boron said. "And, finally, Charleen Bertolini, who joined *Physiology* as editorial coordinator, deftly pulled it all together."

## 2003 Impact Factors Are Published by Thomson/ISI

Thomson/ISI has released its 2003 Science Edition of the Journal Citation Reports, which gives journal impact factors and rankings of 5,907

science journals. The 2003 impact factors of the journals of the APS, along with a comparison of the past two years, are given in the table below. The

table also shows the rank of APS journals in the physiology category, and each journal's rank in its related field, as well as each journal's cited half-life.

**Table 1. 2003 ISI Impact Factors**

Journal	2001	2002	2003	2003 Cited Half-Life	2003 Rank, Physiology (out of 73)	2003 Rank, Related Field	Related Field
<i>PRV</i>	30.061	26.532	36.831	6.6	1		
<i>Phys Gen</i>	3.352	4.667	4.368	2.6	6	38/156 53/156	Cell Bio Biochem & Mol Bio
<i>AJP-Renal</i>	4.523	5.044	4.344	6.1	8	3/49	Urol & Neph
<i>AJP-Cell</i>	3.896	3.936	4.103	5.9	9	41/156	Cell Bio
<i>JN</i>	3.517	3.743	3.876	7.5	11	36/198	Neuroscience
<i>AJP-Endo</i>	3.324	3.62	3.828	6.3	13	17/88	Endo & Met
<i>AJP-Lung</i>	3.658	3.9	3.735	4.6	14	5/31	Respiratory
<i>NIPS</i>	1.817	2.715	3.682	4.2	15		
<i>AJP-Heart</i>	3.232	3.369	3.658	6.2	16	8/70	Cardio
<i>AJP-Regu</i>	2.437	3.156	3.627	5.9	17		
<i>AJP-GI</i>	3.66	3.346	3.421	5.9	19	9/47	Gastro & Hep
<i>JAP</i>	2.581	2.72	3.027	>10	20	2/71	Sport Sciences
<i>Advances</i>	0.186	0.744	0.755		67		

## Keeping Track of All Those Searches in the Online Journals

In 2002, *The Physiologist* began a series of short articles highlighting tools and features available when you search through, or work with, the online content of the APS Journals. The online editions of the Society Journals are hosted by HighWire Press, and all of the features described here are accessible from the portal on the HighWire Library of the Sciences and Medicine. The site is at <http://highwire.stanford.edu> or you can access it from the APS Journals' home pages.

In this issue, we take a step back from all the search and discovery features we've covered in the previous articles in this series. In this article,

we look at how you can keep track of the different searches you've tried as you are exploring a new topic, and how you can most easily review them and refine them. Because subject/topic searching is an exploration process, rather than a direct "go to the article with this citation" process, you will often have a large number of "trial and error" searches. Along the way, some will have been very productive and you might want to return to those and refine them. The HighWire portal supports this.

There are two links on every search result page that you will find handy when you want to review and refine your searches:

"Search History

"Rephrase My Search

### Search History

The Search History tool shows you a list of all the searches you've done in the past two hours, from most recent to oldest. It lists the search criteria, and the search result size, as shown in the example below. You can click to bring a search result back (the "resubmit" button), or modify the search criteria (the "rephrase" button).

### Rephrase My Search

The Rephrase tool will take the criteria you used in a search and fill in the Advanced Search form with those criteria. You can then change the criteria—by adding or removing keywords, by changing date ranges, etc.—to refine your search after seeing what result you get. You might, for example, decide to change from the "all words" option to the "phrase" option, requiring that articles have a phrase exactly matching your criteria. Or you might see your result has a lot of 'chaff' in it and add a "NOT" on the search terms.

Give these simple tools a try as you explore subject/topic searches. We hope that the results will be helpful and interesting.

Figure 1.

The screenshot displays the HighWire 'My Search History' interface. At the top, there is a navigation bar with links for Home, Search, My Email Alerts, For Institutions, For Publishers, About, Contact, and Help. Below this is a search bar with fields for Author and Keyword(s), and a 'go' button. The main content area is titled 'My Search History' and includes a note: 'Maximum of 100 items stored' and 'Items expire in 120 minutes'. Three search entries are listed:

Search ID	Search Criteria	Search Date	Citations Found	Buttons
Search 3	telomerase "telomere length" (all words anywhere in article)	12:02 PM PST	947	rephrase, resubmit
Search 2	telomerase (all words anywhere in article)	12:02 PM PST	2645	rephrase, resubmit
Search 1	"telomere length" (all words anywhere in article)	12:01 PM PST	1353	rephrase, resubmit

A note at the bottom of the search history section states: 'Note: all times are listed according to Pacific Standard Time, UTC-8 hours'. The footer contains copyright information: '© 2001 - 2003 by the Board of Trustees of the Leland Stanford Junior University.' and links for contact, link to HighWire, and privacy policy.

## House Proposes 2.6% Increase for NIH New Grants Would Decrease by 460

NIH would receive an increase of 2.6% in FY 2005 under the proposal approved July 8 by the House Appropriations Subcommittee on Labor-HHS-Education. The \$727 million increase in the Labor-HHS-Education proposal for the fiscal year that begins October 1 would bring the NIH budget to \$28.5 billion, the level proposed by President Bush.

According to the NIH, with a 2.6% increase the agency would have to make significant reductions in its activities. For example, NIH could fund about 460 fewer new and competing grants than in the current fiscal year, or else it would have to reduce grant size below the level needed to keep pace with biomedical inflation.

The subcommittee's recommendation was expected to be ratified the following week by the full House Appropriations Committee. The Senate Appropriations Subcommittee had also originally planned to mark up its bill on July 8, but that timetable has slipped.

It was recognized from the outset that this would be a difficult funding year for medical research funding. The President's announced budget priorities were to provide the US military with the funds needed for the wars in Iraq and Afghanistan and to fund programs needed to enhance homeland security. Other domestic spending programs were given a lower priority, and the President, as well as the Republican leadership in Congress, made clear they intended to keep domestic spending tightly in check.

Federal funding decisions are made in a two-stage process that begins with Congressional approval of a broad budget plan, followed by the actual appropriations bills. This year the effort to agree on a congressional budget plan dragged on until mid-May, and the final version allowed a total increase of only \$3.1 billion for all domestic discretionary programs unrelated to homeland security. This resulted in very low spending "allocations" for the appropriations committees.

In this environment the House could do no better than to adopt the President's budget plan for the NIH. Biomedical research advocates are hopeful that Senate Labor-HHS-Education Appropriations Subcommittee Chairman Arlen Specter (R-PA) will take advantage of the greater legislative flexibility allowed in the Senate and can do better. Specter, a long-time NIH champion, has indicated that he will try to provide additional funds.

In late June and early July FASEB sought to bolster Congressional support by asking scientists who lived in the districts of key Members of Congress to urge their Representatives to provide the highest possible funding allocation for the NIH. FASEB legislative alerts may be found at <http://capwiz.com/faseb/home/>.

## USDA Reviews Status of Rats, Mice and Birds Not Bred for Research

The USDA announced June 4, 2004 that it has revised its regulatory definition of animal to exclude rats, mice, and birds bred for research. This change was mandated in 2002 by the Helms amendment to the Animal Welfare Act (AWA). The agency also announced that it will extend AWA coverage to all other birds and that it is considering whether to develop new regulatory standards for non-purpose-bred rats and mice.

Researchers who use wild, caught, or other non-purpose bred rats, mice, or birds may wish to provide comments to the USDA on how these changes could affect their work.

The AWA is the law that requires the USDA to regulate the breeding, transportation and care of warm-blooded animals used in research, teaching, testing, and exhibition. However, there are a number of exceptions. The definition provided in the law lists certain species and activities that are specifically included or excluded from coverage, and the Secretary of Agriculture also has the authority to decide whether to regulate other species.

Starting in the early 1970s, the USDA used its administrative discre-

tion to exclude rats and mice bred for research from the purview of the AWA. It also excluded all birds. In 1999, the Alternatives Research and Development Foundation and several other plaintiffs filed suit against the USDA to end these exclusions. However, before the suit went to trial, the USDA reached an out of court settlement in which it agreed to go through a formal rule-making process to determine whether and to what extent the agency should regulate these species.

When the USDA-ARDF settlement agreement was announced in October 2000, many in the research community objected. Concerns were expressed that USDA regulations would add unnecessary bureaucratic red tape to the oversight protection that the vast majority of these animals already receive. Congress intervened in 2000 by placing a one-year moratorium on USDA rulemaking to revise the AWA definition of "animal." In 2002 Congress went further by passing an amendment to the AWA sponsored by Sen. Jesse Helms (R-NC) that changed the definition of animal in the AWA to exclude rats, mice, and birds bred for research. The eventual result of this was the notice that the USDA published in the Federal Register on June 4, 2004, amending the regulatory definition of "animal."

On June 4 the USDA also published an Advance Notice of Proposed Rulemaking (ANPRM) requesting comments on two sets of issues related to revising AWA regulations and standards for birds, rats, and mice. USDA said in the notice that it intends to "extend enforcement of the AWA to birds other than birds bred for use in research" and asked for comments on what standards should be applied. In addition, APHIS asked for comments on whether the agency should develop specific standards for the handling, care, treatment and transportation of non-purpose bred rats and mice. These animals were already covered under the AWA, but their care has been governed by the general standards that apply to warm blooded animals not otherwise covered in one of the species-specific sections of the regulations.

USDA acknowledged that oversight mechanisms are already in place for

the vast majority of rats, mice, and birds—whether purpose-bred or not—that are used in research. The agency noted in the ANPRM that in addition to the “protections afforded by the standards and regulations” of the AWA, “the vast majority of animals used in biomedical research, including birds, rats, and mice, are provided with oversight by [the] Public Health Service (PHS) of the US Department of Health and Human Services, through voluntary accreditation by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC), or both.”

When Congress changed the AWA definition of animal in 2002, the rationale offered was to avoid burdensome and duplicative regulation of purpose-bred rats and mice. However, USDA remains bound by its settlement agreement with the ARDF. Jerry DePoyster, a Senior Veterinary Medical Officer with the USDA's Animal and Plant Health Inspection Service (APHIS) confirmed that the June 4 proposals were developed as a result of that agreement even though the proposals now involve only rats, mice, and birds that were not bred for research.

Researchers who use wild-caught or other non-purpose bred rats, mice, or birds are encouraged to provide comments to the USDA concerning the numbers of animals used, and what standards should be applied concerning their care, handling, transporta-

tion, and use. Anecdotal evidence suggests that while relatively few non-purpose-bred rats, mice, and birds are used in research, they come from a wide variety of orders, families, genera, and species. If data can be provided demonstrating that this is the case, it may affect the USDA's decisions about whether to promulgate species-specific standards.

The June 4 notice entitled “Regulations and Standards for Birds, Rats, and Mice” is available on the USDA website at <http://www.aphis.usda.gov/ac/> under “Federal Register Notices.” The notice includes background information and a list of topics for which comments are sought. Responses may be submitted via postal mail, through a web form or by email. Although the end of the comments period was announced as August 3, 2004, the USDA is expected to grant a 90 day extension of the comment period until approximately November 1, 2004.

## Society for Neuroscience Signs onto DC Principles

In June, the Society for Neuroscience (SfN) became the 52nd non-profit publisher to sign onto the DC Principles for Free Access to Science, a declaration of “free access” publishing principles launched in March and backed by APS, FASEB, the American Academy of Pediatrics,

American Cancer Society, and the American Diabetes Association, among other not-for-profit medical and scientific publishers.

Other recent signatories include the International & American Associations for Dental Research, the American Society of Tropical Medicine and Hygiene, and the Anthropology Review Database.

“The fact that large societies like SfN are signing on even after the initial announcement in March is proof positive that the scientific community realizes the value of our model,” DC Principles spokesman and APS Executive Director **Martin Frank** said. “They recognize it is one that is worth speaking out for.”

At the time of the launch, then-FASEB president Robert D. Wells noted that, “during the past several years scientific journals have been extraordinarily innovative, and as a result access to the research literature is greater today than ever.”

The DC Principles outline the commitment of not-for-profit publishers to work in partnership with scholarly communities such as libraries to ensure that these communities are sustained, science is advanced, research meets the highest standards, and patient care is enhanced with accurate and timely information. For more information on the DC Principles, go to <http://www.dcpinciples.org>.

## APS Awards

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

### *Award*

### *Next Deadline*

Research Career Enhancement Awards	October 15
Teaching Career Enhancement Awards	October 15
Shih-Chun Wang Young Investigator Award	November 1
Arthur C. Guyton Awards in Integrative Physiology	November 1
Giles F. Filley Memorial Awards for Excellence in Respiratory Physiology and Medicine	November 1
Lazaro J. Mandel Young Investigator Award	November 1
Procter & Gamble Professional Opportunity Awards	November 6
Caroline tum Suden/Francis A. Hellebrandt Professional Opportunity Awards	November 6

## Letter to Donald C. Marsh

**Paul Bach-y-Rita** writes: "I am responding to your letter of June 5. For many years I have enjoyed reading letters from Senior Physiologists, and now I have become one! I am pleased to state that I am still a full-time Professor of Orthopedics and Rehabilitation, and of Biomedical Engineering at the University of Wisconsin, Madison. Your letter came at an interesting moment. This April I celebrated my 70th birthday, shortly after I was diagnosed with stage 4 lung cancer. Both of these events are inducements to reviewing my life's work.

"Within the last few years, my federal funding has increased dramatically. Within the last year my group has received approximately 4 million dollars, including my five year NEI RO1 for 2.1 million that will begin this Summer, and we are expecting another 2 million within the next few weeks. Our results have been extraordinary (e.g., <http://www.wicab.com>), and particularly satisfying is that my work in nonsynaptic diffusin neurotransmission, late brain plasticity and sensory substitution for losses such as blindness and vestibular loss, all of which were first published approximately 40 years ago, are now becoming accepted. In particular, tactile vision substitution, which we first absolutely proved in a *Nature* paper in 1969, is now getting a lot of support, not only in this country, but in several European countries, as well as Canada and Mexico.

"Several years ago, with NIH sponsorship, a major advance in the human-machine interface (HMI) technology was developed and patented by the University of Wisconsin (WARF), which assisted me in developing a company to commercialize devices based on our tongue HMI, and much of the new federal funds have been to the company (including two NIH phase 2 SBIRs) for this purpose.

"So in summary I am continuing both my theoretical and practical research and development activities, while trying to overcome a major illness. The web page mentioned above has many of my publications."



## Letter to G. Edgar Folk, Jr.

**Howard Jacobson** writes: "I apologize in advance for taking so long to get back to you to thank you for your kind invitation. As you may have guessed, I have been alarmed at your health care system for a long time. Maybe the time has come for some beginning steps. Physiology is so crucial that it needs to be involved. I hope I gave it a little shove."

## Letter to Alan Hofmann

**Sid Ochs** writes: "Thank you for your letter asking 'what are you doing now?' Since my retirement in 1994 I have continued working on problems relating to nerve functions, in particular on axoplasmic transport, though increasingly writing on the history of nerve. This has resulted in a book titled, *A History of Nerve Functions: From Animal Spirits to Molecular Mechanisms* published by Cambridge University Press this July. When the Cambridge University Press asked for a book on nerve back in 1983, I thought that one dealing mainly with the history of transport in the last half of the century would suffice. It would show how the mechanistic theory of transport advanced by Paul Weiss in mid-20th century, the dominant view at the time, holding that the axoplasm produced in the cell body was the force for its movement down within the fibers, much as lead is propelled in an automatic pencil, at a rate estimated at several mm per day, a continual 'axonal flow,' was replaced by the recognition of an energy driven fast transport mechanism moving materials down at a rate of more than 400 mm per day. Its nature was revealed when the necessary research tools were made available in the last half of the 20th century; isotopes to trace the

path of transport of newly synthesized materials in the fibers, biochemical processes and micro-assay techniques to show the flow of energy needed for transport, the revelation of protein structure, the role of DNA and RNA in protein synthesis in the cell body, electron microscopy revealing the molecular structures in the nerve fiber underlying transport, etc. The story shows how transport underlies other basic nerve functions; by the supply of ion channels and pumps to the membrane underlying conduction of the action potential, metabolic components to supply energy locally to the transport mechanism, turnover of structural elements, and neurotransmitters and transmitter-associated components carried down to the terminals. Further, in the brain transport in the dendrites of neurons appears to underlie learning and memory. The story of such a protean process could well be of interest not only to the neuroscientist but as well to those in other sciences and medicine.

"In the course of writing, I soon saw that for a full appreciation of transport a more extended examination of its history, the concepts of transport given by Gerard, Young and in the earlier decades of the century Goldscheider and Ramon y Cajal. Their concepts in turn were based on fundamental advances made in the 19th century, in particular the work of Waller in the middle of the 19th century which pointed to the influence of the cell body on the viability of the nerve fiber, an influence that he inferred from the degeneration of fibers amputated from their cell bodies and the recognition of the neuron. Though considered to be a concept recognized toward the end of the 19th century, it made an early appearance in the 1830's when Remak showed nerve fibers emerging from cell bodies. Of interest were theories of transport in nerve that were advanced before then, theories that had their beginning in the belief of animal spirits, a concept that arose in ancient Greece when science itself first originated. This then resulted in my book *A History of Nerve Functions: From Animal Spirits to Molecular Mechanisms*. I am now in the course of extending studies described in the book which relate

transport in neurons in the cortex and brain centers to higher cognitive functions.

"In your letter you ask 'which of your contributions do you think most important?' These would be the recognition and the characterization of fast axoplasmic transport with a fast rate of 410 mm per day, the process present in all types of nerve fibers, in a wide range of mammalian species. We showed that transport is dependent on oxidative metabolism supplying ~P in ATP to its mechanism. Other contributions were the recognition and the analysis of the form change of fibers seen as beading, studies of the direct cortical responses and spreading depression of Leão in the cerebral cortex. I hope that my text, *The Element of Neurophysiology* published in 1965 by Wiley, my monograph "Axoplasmic Transport and its Relation to Other Nerve Functions" published by Wiley in 1982, the founding and editing of the *Journal of Neurobiology*, and my new book on *History of Nerve Functions* will also be considered useful contributions.

"You ask 'do you have a choice anecdote involving your career or an eminent physiologist?' While I was a PhD graduate student of Ralph Gerard at the University of Chicago in the late 1940's and early 1950's, the dominant theory of neural activity in the central nervous system at the time was that the electrical discharge in presynaptic nerve fibers was the agent exciting neurons they end on, the concept

advanced by John Eccles that was widely accepted at the time. Eccles, using fine microelectrodes based on those originally developed by Gilbert Ling in Gerard's laboratory, found that the electrical impulse invading the presynaptic nerve terminals ending on spinal cord motoneurons was followed by a response in the motoneurons only after a delay of a millisecond or two. This finding decisively falsified the concept of electrical transmission. When Eccles visited Gerard at the University, Gerard asked me to come into the office where Eccles recounted his new discovery in that my doctoral studies were on the effect of current flow in the spinal cord of cats based on Eccles' electrical theory. Gerard, who had theorized that electrical fields in the brain integrated neuron activity on the basis of Eccles' theory was visibly discomfited and attempted to protect the electrical theory. This impressed me with how emotional the supposed unperturbedly analytic mind of the scientist can be where fundamental beliefs were at issue, something I saw repeated many times over the years."

"Eccles' finding using microelectrodes showed the value of a new technique to answer a basic problem. However, too great an attachment to a new technique could also be a hindrance. When I later was a postgraduate student with van Harreveld at the California Institute of Technology, we worked on the problem of the profound shut down of brain activity seen as a

slow spreading wave of depression of the cortex, the phenomenon discovered by Leão. We found the spreading depression to be due to the movement of ions and water from the intercellular space of the cortex into neurons and glia, from an intercellular space of some 20-25%, one much larger than the 5% determined from electron micrographs. The smaller space was shown due to the shift of ions and water into the cells that incurred in the preparation of cortical tissue for electron microscopy. This was indicated by an increase in the electrical impedance of brain tissue and by freeze-substitution. Such a larger space in the normal cortex was violently opposed by the electron microscopists at the time who felt that because of the superior view of fine structure afforded by the new electron microscope and their indication of the smaller space was therefore inherently better.

"You ask 'do you have any words of wisdom to pass on to your younger colleagues?' I would like to say to work on some important fundamental problem that really interests you. But this is not as easy to do today as it was in the earlier decades after WWII when grants were easier to get. Hopefully, the present tendency to award grants for 'safe' research projects with the lure of commercial drug products in the offing, may change and more grants given to projects where taking a chance on a possible fundamental advance is encouraged."

## Get Involved With APS Committees!

The American Physiological Society provides its membership with opportunities to be involved with the Society through service on its various committees. Committees and committee members are appointed by the Council of APS at the recommendation of the Committee on Committees.

Members are appointed to a three-year term commencing on January 1. Committee appointments are staggered so that only a limited number of the members rotate off a committee at the end of each year.

Members interested in committee service should complete the nomina-

tion form and submit it for consideration by the Committee on Committees and Council. The form is available to be downloaded at <http://www.the-aps.org/committees>.

Deadline for receipt of Candidate Information and Endorsement Forms is January 14, 2005.

## Physiology, 5th Edition

Robert M. Berne, Matthew N. Levy, Bruce M. Koepfen, and Bruce A. Stanton. St. Louis, MO: Mosby, 2004, 1024 pp, illus., index, \$74.95. ISBN: 0-323-02225-1.

Those given the responsibility of teaching first year medical students about human physiology have a number of excellent texts from which to choose. Berne and Levy's classic text has been a standard for many years. Readers familiar with the previous editions will find this one very similar.

*Physiology* covers, in six sections, the nervous, the cardiovascular, pulmonary, gastrointestinal, renal, and endocrine/reproduction systems. It begins in the standard way with the basics of cellular physiology, including transport, osmotic equilibrium, bioelectricity and signal transduction, with a section by Howard Kutchai, who also has written the gastrointestinal chapters.

These introductory chapters are followed by compact, but thorough, chapters on the somatosensory, the somatic motor, and the autonomic motor systems. Also covered are the special senses, sight, hearing, balance and, briefly, smell and taste, provided by William Willis.

James Watras has provided a concise and authoritative section on skeletal and smooth muscle, which serves as an introduction to Mathew Levy's portion on cardiac muscle and the heart. The cardiovascular portion has remained a standard since the first edition of this textbook. In addition to those previously mentioned, we were impressed by the other authors, including Stanton and Koepfen on renal physiology, Cloutier and Thrall on respiratory physiology, and Saul Genuth's outstanding coverage of endocrinology and reproduction.

One feature particularly appealing was the highlighted clinical issues that are interspersed throughout and used to illustrate basic physiological concepts. These blend seamlessly with the text. Clinical issues always seem to help motivate first year medical students eager to learn about "medicine" and thirsty for relevance at this early stage of their careers, which traditionally has been devoted to basic science.

Although it seems unlikely that

anyone would make a decision of textbook selection based on these reviewers' comments, we have used two criteria on which comparisons might be made. *a)* Can the text be easily used as an authoritative reference for medical students (and residents) later in their careers? *b)* Is it an effective teaching device for beginning students, i.e., would first year medical students, who have little time for browsing or digging for information, find the organization of topics, clarity of exposition, and use of illustrations an efficient aid in learning physiology? Obviously these criteria are somewhat overlapping, as students who find a textbook clear and easy to use will be more likely to refer back to it in their later clinical years. However, textbook (and chapter) authors are pulled in two directions with respect to these two demands. Making a section authoritative requires inclusion of a vast amount of the biomedical information that is developing at an increasingly rapid pace. Yet students require a guided, less detailed view of this landscape to find their way through the many facts.

*a) Use as a reference.* There is a 35-page index, which, though not as extensive as in some texts, was quite good in directing us to any topic that we sought. To guide a review of physiology, each chapter ends with a concise summary emphasizing ten or more main points. Much of the text is adapted from the earlier editions, and occasionally the vocabulary seems older. For example, the terms symporter, antiporter, and multiporter are not developed in the cell physiology sections, although they are used in later portions of the book. Also, there appeared to us to be occasional ambiguities. For example, the development of osmotic concepts blurs the distinction between osmolarity and osmolality (which is not defined). In spite of minor areas where individual preferences may differ, the text overall seemed to us authoritative and thorough.

*b) Organization of topics and teaching effectiveness.* Physiology is traditionally taught one organ system at a time. Although the sequence of the organs is somewhat arbitrary, it has become standard over the years to arrange the topics similarly to that of this text. In a few cases authors could have, for brevity, referred to earlier

chapters. For example, the descriptions of the resting potential of cardiac cells and of phase 0 of the cardiac action potential could have simply referred to chapters 2 and 3. A minor point, but one possible area of confusion, is in the relationship between the ventricular action potential and the contractile force shown in Figure 15-2. This suggests that the contractile force lasts twice as long as the cardiac electrical activity, which to the student may appear to conflict with the temporal relationship shown in the basic Wiggers diagram of Figure 16-10. In the description of the electrocardiogram, some students might benefit from a statement that the "mean electrical axis" of the heart actually represents the orientation of the cardiac electrical vector at a *single* instant in time. A more detailed description of the unipolar and precordial leads would be useful.

In modern science textbooks, much of the clarity is provided with illustrations. This book averages roughly an illustration per page. The editors have chosen to use two color tones, and two colors quite adequately illustrate the concepts. Most of the illustrations are schematic rather than representational; they focus attention to the points discussed within the text and are clean and uncluttered in appearance.

The authors have made a reasonable compromise between the competing goals of clarity and completeness. The writing in the forty-six chapters is quite good overall: although we noticed an occasional misprint (or figure error), students should find this text relatively easy to read. Assuming that a course is given in one semester of fifteen-sixteen weeks, three chapters per week would need to be covered. The average chapter is twenty-one pages, though some are half this and the longest, nearly sixty pages. This book could be the basis for an intense semester-long course, although if all the material is covered, a year would be more realistic.

In summary, this physiology textbook will continue to be one of the standards for medical education for the foreseeable future and is a lasting tribute to, and one of the legacies of, the late Professor Robert Byrne, to whom it has been dedicated.

Ron Abercrombie and John Pooler  
Emory University Medical School

*Animal Physiology.*

Richard W. Hill, Gordon A. Wyse, and Margaret Anderson.  
Sunderland, MA: Sinauer Associates, Inc., 2004, 770 pp., illus., index, \$104.95.  
ISBN: 0-87893-315-8.

*Biopac Laboratory Exercises.*

Richard G. Pflanzner.  
Dubuque, IA: Kendall/Hunt Publishing Co., 2004, 181 pp., illus., table of contents, \$39.95.  
ISBN: 0-7575-0386-1.

*Human Physiology: The Basis of Medicine, Second Edition.*

Gillian Pocock and Christopher D. Richards.  
New York: Oxford University Press, 2004, 714 pp., illus., index, \$59.50.  
ISBN: 0-19-858527-6.

*ORI Introduction to the Responsible Conduct of Research.*

Nicholas H. Steneck.  
Rockville, MD: Office of Research Integrity, 164 pp., illus., table of contents, \$12.00.  
ISBN: 0-16-072285-3.

*Primer on the Autonomic Nervous System, Second Edition.*

David Robertson, Italo Biaggioni, Geoffrey Burnstock, and Phillip A. Low (Editors).  
New York: Elsevier Academic Press, 2004, 459 pp., illus., index, \$79.95.  
ISBN: 0-12-589762-6.

*Principles of Gender-Specific Medicine, Vol. 1. & Vol. 2.*

Marianne J. Legato (Editor).  
New York: Elsevier Academic Press, 2004, 625 pp., illus., index, \$279.95.  
ISBN: 0-12-440906-7.

*Space and Life: An Introduction to Space Biology and Medicine.*

Hubert Planel.  
Boca Raton, FL: CRC Press, 2004, 186 pp., illus., index, \$74.95.  
ISBN: 0-415-31759-2.

## People & Places

**Ahmed Ally** has accepted a position with the Department of Pharmaceutical Sciences, Palm Beach Atlantic University, Palm Beach, FL. Previously, Ally was associated with the Department of Pharmaceutical Sciences, North Dakota State University, Fargo, ND.

**Robert J. Alpern** has been appointed Dean, Yale School of Medicine, New Haven, CT. Prior to his new position, Alpern was Professor of Medicine and Dean, Department of Internal Medicine, University of Texas Southwestern Medical Center, Dallas, TX.

**Johnnie Bremholm Andersen** is presently affiliated with the Department of Ecology and Evolutionary Biology, University of California, Irvine. Andersen was formerly associated with the Department of Zoophysiology, Institute of Biological Sciences, University of Aarhus, Aarhus, Denmark.

**Gregory Allen Brown** joined the Health, Physical Education,

Recreation, and Leisure Studies Department, University of Nebraska at Kearney, NE. Prior to his new position, Brown was associated with the Jiann-Ping Hsu School of Public Health, Georgia Southern University, Statesboro, GA.

**Carlos Raul Cassanello** recently affiliated with the Centre for Neurobiology and Behavior, Columbia University, NY. Cassanello was previously associated with the Department of Physiology, Sloan Center Theoretical Neurobiology, University of California, San Francisco, CA.

**Amanda L. Chancey** has accepted a position with Winter's Center for Heart Failure Research, Baylor College of Medicine, Houston, TX. Chancey had been previously associated with the Department of Anatomy, Physiology, and Pharmacology, Auburn University, Auburn, AL.

**Michael H. Chase**, Emeritus Professor, is a Senior Researcher with Web Sciences International, Los

Angeles, CA. Previously, Chase had been affiliated with the Department of Physiology, UCLA School of Medicine, Los Angeles, CA.

**Kenneth D. Cohen** is currently with the Kennedy Space Center, Life Sciences Support Contract, Kennedy Space Center, FL. Formerly, Cohen was affiliated with the Department of Biological Science, Western Michigan University, Kalamazoo, MI.

**Leslie Anne Cornick** accepted a position with the Department of Environmental Science, Alaska Pacific University, Fairbanks, AK. Prior to her new position, Cornick had been associated with Connecticut College, New London, CT.

**Allen Dale Everett** has moved to the Department of Pediatric Cardiology, Johns Hopkins Hospital, Baltimore, MD. Prior to his new position, Everett was associated with the Department of Pediatrics, University of Virginia Health System, Charlottesville, VA.

**Yuqing Huo** is currently associated with the Cardiovascular Division, University of Minnesota, Minneapolis, MN. Prior to his new position, Huo was affiliated with the Department of Biomedical Engineering and Health Science Center, University of Virginia, Charlottesville, VA.

**James D. Marsh** is now affiliated with the Department of Medicine, University of Arkansas for Medical Science, Little Rock, AR. Prior to his new position, Marsh had been associated with the Department of Medicine, Wayne State University School of Medicine, Detroit, MI.

**Benjamin F. Miller** accepted a position with the Department of Exercise and Sport Science, Tamaki Campus, University of Auckland, Auckland, New Zealand. Miller was previously associated with the Sports Medicine Research Group, Bispebjerg Hospital, Copenhagen, Denmark.

**Marshall H. Montrose** is currently Professor and Chair, Department of Molecular and Cellular Physiology, University of Cincinnati, Cincinnati, OH. Prior to his new assignment, Montrose had been affiliated with the Department of Cellular and Integrative Physiology, Indiana University, Indianapolis, IN.

**Xiang Qian** recently affiliated with Howard Hughes Medical Institute, University of California at San Francisco, CA. Qian's former association was with the Department of Physiology and Biophysics, University of Miami School of Medicine, Miami, FL.

**Harrell Lester Reed, II**, has moved to Whitford, Auckland, New Zealand. Reed was formerly Association Medical Director, MultiCare Medical Group, MultiCare Health System, Tacoma, WA.

**Pietro Scotto** has recently associated with the Department of Pharmacology, Section of Physiology, University of Naples, Naples, Italy. Formerly, Scotto was with the Department of Physiology, University of Catanzaro, Catanzaro, Italy.

**Charles L. Seidel** accepted the position as Professor and Chair, Ross University School of Medicine, Edison, NJ. Seidel was formerly with the Department of Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, TX.

**Neal J. Smatresk** has accepted the position of Vice Chancellor for Academic Affairs, University of Hawaii, Manoa, Honolulu, HI. Smatresk previously was affiliated with the College of Science, University of Texas at Arlington, Arlington, TX.

**Patrick K. Stanton** has affiliated with the Department of Cell Biology & Anatomy, New York Medical College, Valhalla, NY. Professor Stanton was formerly with the Department of Neurosciences, Albert Einstein College of Medicine, Bronx, NY.

**Michael Sturek** recently joined the Department of Cellular & Integrative Physiology, Indiana University School of Medicine, Indianapolis, IN. Sturek was formerly associated with the Department of Pharmacology & Physiology, University of Missouri School of Medicine, Columbia, MO.

**Todd A. Trappe** has affiliated with the Human Performance Lab, Ball State University, Muncie, IN. Prior to his new position, Trappe was associated with the Donald W. Reynolds Department of Geriatrics, Nutrition, Metabolism, and Exercise Lab, University of Arkansas Medical Science, Little Rock, AR.

**Robert J. Unwin** is currently associated with the Department of Physiology, Royal Free and University College Medical School, London, United Kingdom. Unwin had been affiliated with the Department of Nephrology & Physiology, University College London, United Kingdom.

**Serge P. von Duvillard** is presently affiliated with the Department of Health, Kinesiology, and Sports Studies, Texas A&M University, Commerce, TX. von Duvillard had been affiliated with the Human Performance Laboratory, Department KHP, California State Polytechnic, Pomona, CA.

**Brian J. Whipp** recently joined the School of Sport and Exercise Sciences, University of Leeds, United Kingdom. Whipp was formerly with the Division of Respiratory and Critical Care Physiology and Medicine, Harbor-UCLA Medical Center, Torrance, CA.

**Christopher J. Wingard** accepted a position with the Department of Physiology, Brody School of Medicine, East Carolina University, Greenville, NC. Wingard was previously with the Department of Physiology, Medical College of Georgia, Augusta, GA.

**Scott Jonathan Wood**, Senior Research Scientist, recently affiliated with Universities Space Research Association, NASA Johnson Space Center, Houston, TX. Wood was formerly associated with the Department of Spatial Orientation, Naval Aerospace Medical Research Lab, Pensacola, FL.

## Postdoctoral Positions

**Postdoctoral Position:** A postdoctoral position is available in the Department of Physiology at the Louisiana State University Health Sciences Center in New Orleans. The fellow will be involved with studies investigating mechanisms of coronary dysfunction in the prediabetic metabolic syndrome. In particular, the fellow will be responsible for conducting experiments in conscious, chronically instrumented and anesthetized dogs, performing functional isolated coronary microvessel studies, and for biochemical and molecular assays. This research opportunity offers an integrative approach to study coronary and cardiovascular regulation in developing diabetes mellitus. The position is available immediately and is funded by NIH/NHLBI. The initial appointment will be for two years and may be extended depending on mutual agreement. The ideal candidate for this position will have a strong background in cardiovascular physiology and mechanisms of vascular control. Experience with in vitro microvascular studies is preferred. Applicants should email their curriculum vitae and at least two references to: Johnathan D. Tune, PhD, Assistant Professor, Department of Physiology, LSU Health Sciences Center, 1901 Perdido Street, New Orleans, LA 70112; Office Tel.: 504-568-6182; Lab Tel.: 504-568-2619; Fax: 504-568-6158; Email: [jtune@lsuhsc.edu](mailto:jtune@lsuhsc.edu). Web sites: <http://www.lsuhs.edu/no/>; <http://www.physiology.lsuhs.edu/AA/EEO>

**Postdoctoral Fellowship:** Postdoctoral fellowship studying synaptic plasticity in brainstem circuits. Technical support and training is offered in a modern neurophysiology lab for an energetic electrophysiologist with 2+ years experience in intracellular recordings using sharp electrodes and whole-cell methods, preferably in vivo. A flexible one or two-year commitment is available. Interested applicants should send curriculum vitae and reference letters to: [rogers@ece.udel.edu](mailto:rogers@ece.udel.edu); or Dr. Robert F.

Rogers, Dept. of Electrical & Computer Engineering, University of Delaware, 140 Evans Hall, Newark, DE 19716. The University of Delaware is an equal opportunity employer, with a beautiful suburban campus that is less than one hour from Philadelphia and Baltimore.

**Postdoctoral Positions:** Postdoctoral positions are available in heart failure research for Experienced Cellular Electrophysiologists and Molecular Biologists. Positions are NIH-funded and involve, but are not limited to, Ca signaling in cardiac muscle, novel Ca permeable Na current, and in vivo gene transfer. Tenure-track faculty positions possible pending independent research funding after three years of support. Requirements: PhD and/or MD with strong background in cellular electrophysiology and/or Molecular Biology as demonstrated by publication record. Send: curriculum vitae, statement of research interests, and names of three references to: C. William Balke, MD, c/o Ms. June Clopein, University of Maryland School of Medicine, 660 W. Redwood Street, 570C, Baltimore, MD 21201; email: [cvrg@medicine.umaryland.edu](mailto:cvrg@medicine.umaryland.edu); Website: <http://medschool.umaryland.edu/cvrg>.

**Pre- And Postdoctoral Fellowships:** Funded by an NIH training grant, providing interdisciplinary training in cardiac and vascular cell biology, emphasizing the functional properties of cardiac and vascular smooth muscle, trainees completing this program will be prepared to bring a wide range of methodological approaches to bear on basic questions in normal cardiac and vascular cell biology, on the underlying mechanisms responsible for a variety of cardiac and vascular pathologies, and on their possible cure and prevention. Requirements: Predoctoral trainees have a solid background in biology, chemistry and/or physics, excellent GRE scores, research experience and strong letters of recommendation. Postdoctoral trainees have completed a solid PhD thesis and have strong letters of recommendation. Send curricu-

lum vitae, statement of research interests, names of three references and GRE scores (for Predoctoral Trainees) to: C. William Balke, MD, c/o Ms. June Clopein University of Maryland School of Medicine, 660 W. Redwood Street, 570C, Baltimore, MD 21201; email: [cvrg@medicine.umaryland.edu](mailto:cvrg@medicine.umaryland.edu); <http://medschool.umaryland.edu/cvrg>.

**Postdoctoral Position:** An NSF-funded postdoctoral position is immediately available for an individual interested in examining the respiratory physiology of terrestrial insects. The project is broadly comparative and will include, at a minimum, beetles from Arizona and southern Africa. The study will be conducted in collaboration with Dr. Michael Quinlan (Midwestern University) and Dr. Allen Gibbs (University of Nevada at Las Vegas). Dr. Steven Chown (University of Stellenbosch, South Africa) is a collaborator on this grant and will provide access to the African species. The successful candidate will be based primarily in the Phoenix area, though he or she will be expected to travel to UNLV on occasion. Money is available for some travel to the Chown lab at the University of Stellenbosch. Candidates having experience in one or more of the following areas will be given preference: (1) respiratory physiology, especially of terrestrial invertebrates, (2) phylogenetic comparisons of physiological traits, and (3) insect metabolism and water balance. A PhD in biology or a related discipline is required. Initial appointment will be for one year and is renewable upon satisfactory performance. Applicants must submit a complete curriculum vitae and names and contact information for two references to Michael Quinlan, Department of Basic Science, Midwestern University, 19555 N. 59th Ave, Glendale, AZ 85308 (email [mquinlan@midwestern.edu](mailto:mquinlan@midwestern.edu)). Review of applications will begin immediately.

**Postdoctoral Fellow Position.** Scott & White Memorial Hospital is seeking a candidate for a 2-year postdoctoral research fellow position to investigate molecular and cell signaling pathways involved in cholangiocarcinoma

(tumors of biliary origin) proliferation and apoptosis. Our NIH and VA funded laboratory is involved in studies of the signaling mechanisms of cholangiocyte proliferation in cholestatic liver and cancer models. In addition, the fellow will have opportunities to collaborate with other on-going laboratory projects involving the intracellular signaling mechanisms of cholangiocyte proliferation and apoptosis in cholestatic liver diseases. Experience in molecular biology and cell-signaling techniques are preferred. A background in immunology is desirable. Potential opportunity to apply for intramural and extramural funding and develop independent research program. Salary will be based on NIH pay-scales dependent upon relevant experience. Our laboratory is located in Temple, Texas on the Scott and White/Texas A&M University campus in central Texas. Please email CV and names of three references to: trschiller@swmail.sw.org. [EEO]

**Postdoctoral Research Award:** The Thermal and Mountain Medicine Division of the US Army Research Institute of Environmental Medicine, Natick, MA invites applications for a National Research Council (NRC) postdoctoral research award. Successful applicants will use biotelemetry (body temperature, ECG, EMG) to study rodent thermoregulation and pathophysiology as it relates to thermal extremes (heat, cold). The primary research goal is to identify markers of tolerance and methods of thermal injury prevention and treatment employing mouse (wild-type and gene knockout) and rat models. Proposals of particular interest will examine the mechanisms of heat injury. Qualified applicants must be US citizens and should have experience in physiology at the human, animal or cellular level. Knowledge of rodent modeling, biotelemetry, thermoregulation, fluid balance and/or stress mediators (cytokines, eicosanoids, caspases, heat shock proteins, etc) is desirable. The competitive award is for one year initially, with the possibility for renewal for a second year. Annual stipend is \$50,000 for recent PhDs, with additional funds for

relocation, conference travel, and health insurance. Interested applicants should send a CV with a cover letter addressing their qualifications and proposal ideas to: Lisa R. Leon, PhD, Research Physiologist, Thermal and Mountain Medicine Division, US Army Research Institute of Environmental Medicine, Natick, MA 01760-5007 or email to [lisa.leon@na.amedd.army.mil](mailto:lisa.leon@na.amedd.army.mil), Tel.: 508-233-4862. Applicants are encouraged to contact Dr. Lisa Leon to discuss their proposal ideas prior to submission to the NRC for peer review. Applications must be submitted directly to the NRC by **August 1** or **November 1, 2004**. Detailed program information, including instructions on how to apply, are at <http://www.national-academies.org/rap>.

**Postdoctoral Position,** Evolutionary Physiology, College of William and Mary (Available September 2004 until filled). A research/teaching postdoctoral position is available, renewable annually for up to five years, to investigate the evolution of complex neuroendocrine pathways. Applicants should have a PhD prior to September 2004 and experience in one or more of these areas: neuroendocrinology, behavior, evolutionary biology, physiology, or cell and molecular biology. The successful candidate will conduct collaborative research, assist in managing a research laboratory of undergraduate and master's level research students, and teach one course annually, probably animal physiology, each spring semester. The research focus is on the contribution of genetic variation and phenotypic plasticity to the evolution of a complex neuroendocrine pathway. This pathway integrates photoperiod and other environmental information to regulate reproductive, physiological and behavioral responses to seasons. More details on the research are available at: <http://faculty.wm.edu/pdheid>. The College of William and Mary is a "Public Ivy" with 5500 undergraduate enrollment, nationally competitive undergraduates, and a strong research tradition. This postdoctoral position is particularly good experience for individuals wanting to develop skill at balancing teaching and research while working

at a selective undergraduate institution. Starting salary is \$35,000 plus benefits. Please send curriculum vitae, a brief description of research interests/experience, and the names and contact information of three references to: Dr. Paul Heideman, Chair, Department of Biology, P.O. Box 8795, College of William and Mary, Williamsburg, VA 23187-8795; email: [pdheid@wm.edu](mailto:pdheid@wm.edu). Applications from minorities, women, or non-US citizens are encouraged. [AA/EEO]

**Postdoctoral Position:** An NIH-funded postdoctoral position is immediately available in the laboratory of Dr. Robert H. Cox to study the regulation of expression and function of voltage gated K<sup>+</sup> channels in vascular smooth muscle. A variety of experimental approaches are employed in these studies including mechanical studies of isolated, pressurized small mesenteric arteries; electrophysiology of K<sub>v</sub> channels in native smooth muscle myocytes and heterologously expressed in mammalian cells; analysis of gene and protein expression; analysis of promoter function; and immunolocalization of K<sub>v</sub> proteins. Salary is based upon experience and current NIH postdoctoral levels. Applicants must have a PhD or MD degree and experience in one or more of the above areas. Interested applicants should send a cover letter, curriculum vitae, and names of three references to: Robert H. Cox, PhD, Ion Channel Laboratory, Lankeau Institute for Medical Research, 100 E. Lancaster Avenue, Wynnnewood, PA 19096; Email: [cox@mlhs.org](mailto:cox@mlhs.org); Home Page: <http://www.limr.org>.

**Postdoctoral Position.** Calcium Signaling in Smooth Muscle. Postdoctoral position immediately available to study calcium signaling, including sparks and waves, and potassium channels in arterial smooth muscle cells. Particular emphasis will be placed on regulation by mitochondria and carbon monoxide. Experience with cardiovascular physiology, electrophysiology, confocal microscopy and/or calcium imaging preferred. Required qualifications include a PhD

or MD in Physiology or a related field. Send curriculum vitae and names and addresses of 3 references to Jonathan H. Jaggar PhD, Department of Physiology, University of Tennessee Health, Science Center, 894 Union Avenue, Memphis, TN 38163, USA; [jjaggar@physio1.utmem.edu](mailto:jjaggar@physio1.utmem.edu). [AA/EEO/VI/Title IX/Section 504/ADA/ADEA]

**Postdoctoral Fellow:** A postdoctoral position is available at the University of Iowa to study endothelial cell stem and progenitor cells. The laboratory's emphasis is on the study of these cells in the context of diabetes and aging. The successful candidate will 1) have a record of publications in peer-reviewed international journals; 2) hold a PhD in a basic science or be an MD with extensive laboratory experience; and 3) have less than five years postdoctoral experience. Experience in vascular biology or stem cell biology is desirable but not required. Please submit a cover letter with a brief description of research experience, curriculum vitae including bibliography, and the names and contact information of three references to: Dr. Gina C. Schatteman, Exercise Science, 412 Field House, University of Iowa, Iowa City, IA 52242; Email: [gina-schatteman@uiowa.edu](mailto:gina-schatteman@uiowa.edu). Electronic applications are preferred. Applications will be accepted until the position is filled. Minorities, women and disabled individuals are strongly encouraged to apply. [AA/EEO]

## Research Positions

**Cardiovascular/Renal Pharmacologist:** We are seeking a talented cardiovascular/renal pharmacologist to be part of the Abbott Discovery research team. This person should be an independent, creative thinker willing to support multiple therapeutic areas including Metabolic Disease Research, Neurological Disease, Cancer, Infectious Disease, and Immunoscience. The successful candidate will possess a PhD in pharmacology/physiology and at least two years of postdoctoral training. Extensive experience with in vivo animal models is essential. Experience in the areas of renal pharmacology, molecular biology, and/or platelet function would be a distinct advantage. Strong written and oral communication skills and the ability to work in a dynamic, fast-paced environment are key attributes. Follow your aspirations to Abbott for diverse opportunities, competitive salaries, great benefits, a 401(k) retirement savings plan, a company paid pension plan and profit sharing, all with a company providing the growth and strength to build your future. For more information and to apply online, please visit <http://www.abbott.com>. Click Career Center, Job Search, Job Opportunities, Search Openings, Enter 24086BR into the Keyword field. [EEO]

**Research Biologist, Molecular Neurology Department.** Enhancing and preserving the quality of life: this is the commitment that Merck & Co., Inc. stands by, and it is what has distinguished us as the world's leading research-driven health products company. Consistently ranked by Fortune as one of the "100 Best Companies to Work for in America," we discover,

develop and manufacture a wide range of innovative products. Research is the foundation of Merck's success and the heart of our company's overall strategy. We are currently seeking a Research Biologist to join the Merck Research Laboratories (MRL) team in West Point, PA. With an emphasis on movement disorders research, you will plan and execute in vitro brain slice electrophysiological experiments. You will also organize and analyze data, perform statistical analysis, summarize and interpret data, and present findings at team meetings. To qualify, you must have a bachelor's, master's, or equivalent degree. Experience with tissue slice or cultured cell recording methods, including field recording, whole cell patch clamp, or intracellular recording is required, as is the ability to work independently in a team-oriented drug discovery environment. Experience with in vivo studies is beneficial. We offer a competitive salary, an outstanding benefits package, a professional work environment and opportunities for professional growth. To apply, please visit <http://www.merck.com/careers> and search for job number BIO000580, or create a profile to be notified of future opportunities. [EEO/M/F/D/V]

**Physician or Science Administrator, Respiratory Sciences/Asthma:** The Department of Health and Human Services and the National Institutes of Health is seeking a pulmonary researcher, cell/molecular biologist, physiologist, biochemist, immunologist or geneticist to provide administrative scientific support in the management and development of the extramural grant program in the Airways Diseases Program, Division of Lung Diseases. Essential qualifications are an MD or PhD and a desire

## Advertise your job vacancy to over 10,000 members and subscribers!

Ads are accepted for either positions available or positions wanted under all categories. The charge is only \$75. All ads are also posted on the APS Career Opportunity Web page upon receipt for a three month period.

If you would like to have your ad listed in *The Physiologist* or on the APS Career Opportunities Web page (<http://www.the-aps.org/careers/careers1/posavail.htm>),

the following items are needed: a copy of the ad, the name of a contact person, and either a purchase order number, credit card number (with expiration date and name of cardholder) or billing address. Send the information to Linda Dresser (Email: [ldresser@the-aps.org](mailto:ldresser@the-aps.org); Tel: 301-634-7165; Fax: 301-634-7241).

to pursue an administrative non-laboratory career track. The candidate selected will provide leadership for established national programs and develop new programs. Area of primary interest would be asthma. Other program areas to which the candidate may contribute include obstructive lung disease, cystic fibrosis, genetics, respiratory neurobiology and sleep. For the basic qualification requirements, refer to the NIH guidance for Health Scientist Administrators or Medical Officers, <http://www.nhlbi.nih.gov/about/jobs/hsaguide.htm> <http://www.opm.gov/qualifications/SEC-IV/B/GS0600/0602.HTM>. US citizenship is required. Appointment will be made at GS-12/13/14 grade level (\$60,638 to \$110,775) depending on qualifications. A Physician Comparability Allowance may be paid up to \$30,000 per year. In addition, a recruitment bonus may also be considered. Excellent health, life, investment, and personal leave benefits. Position requirements and detailed application procedures are provided in two separate vacancy announcements. Please access <http://www.careerhere.nih.gov> and refer to HL-04-0028 for Science Administrators and HL-04-0029 for Physicians. How to apply: submit a resume, OF-612 (Optional Application for Federal Employment), CV/bibliography or other format to: Jill Beklik/Susan McPherson, Human Resources Specialist, Two Democracy Plaza, Suite 700N, 6707 Democracy Blvd., Bethesda, MD 20817. All applications must be postmarked by the closing date 09/01/04. For additional information contact Susan McPherson or Jill Beklik at (301) 496-6477. [EEO]

**Assistant Research Scientist.** The University of Iowa Carver College of Medicine, Department of Internal Medicine, Division of Pulmonary, Critical Care and Occupational Medicine. The Department of Internal Medicine, Division of Pulmonary, Critical Care and Occupational Medicine, is seeking an Assistant Research Scientist to perform basic research in understanding the function and biochemistry of the receptor for adenovirus (CAR). The work will include an understanding of the theo-

ries and methods required to address important problems in the function and cell biology of this protein in epithelial and nonepithelial cells. The work will involve a combination of electrophysiologic, biochemical and recombinant DNA techniques. Requires a person in this classification has the academic knowledge of a discipline that is generally associated with a Doctoral degree, or an equivalent professional degree, i.e., MD, DDS or DVM. In addition, the person will have demonstrated the ability to plan and execute a research study through some progressively responsible independent research work. Requires completion of postdoctoral training. Desires postdoctoral experience in gene transfer and adenovirus vectors generation. Highly desires research experience in biochemical analysis of structure function and in the biochemistry of membrane proteins and recombinant DNA techniques. Desires the ability of the person to obtain funding for their demonstrated work. Please send resume and cover letter indicating #50417 to: Carol Wehby, Human Resources, Internal Medicine, E400 GH, 200 Hawkins Drive, Iowa City, IA, 52242-1081. [AA/EEO]

**Assistant Research Scientist.** The University of Iowa Carver College of Medicine, Department of Internal Medicine, Division of Cardiovascular Diseases. The Department of Internal Medicine, Division of Cardiovascular Diseases, is seeking an Assistant Research Scientist to perform basic or applied research on the autonomic, cardiovascular and neurobiologic aspects of obesity in which existing theory or methods may be limited or lacking with responsibility for identifying and selecting the problems to be studied, the approach to them and the results obtained. Requires a person in this classification has the academic knowledge of a discipline that is generally associated with a Doctoral degree in biomedical science (PhD) in Biomedical Science, or an equivalent professional degree, i.e., MD, DDS or DVM. In addition, the person will have had postdoctoral research training and demonstrated the ability to plan and execute a research study through

some progressively responsible independent research work. Requires completion of postdoctoral training. Requires experience with neurophysiologic techniques in rodents, such as sympathetic nerve recording and central neural cannulation, as evidenced by published works. Requires research experience with molecular biologic techniques including assays of mRNA and proteins for the study of molecular mechanisms and their abnormalities in rodent models of obesity. Desires research experience with genetically engineered rodent models including transgenic and knockout models. Desires research experience with neuropeptides and their antagonists for study of the molecular pathways involved in the regulation of appetite and metabolism. Please send resume and cover letter indicating #50367 to: Carol Wehby, Human Resources, Internal Medicine, E400 GH, 200 Hawkins Drive, Iowa City, Iowa, 52242-1081. [AA/EEO]

**Director, Animal Reproduction and Biotechnology Laboratory and Professor:** The Department of Biomedical Sciences at Colorado State University seeks a scientist to provide leadership and oversight as Director of the Animal Reproduction and Biotechnology Laboratory (ARBL) at the rank of Professor. Candidates with expertise in reproductive biology that enhances or complements existing ARBL strengths are encouraged to apply. ARBL is one of sixteen University Programs of Research and Scholarly Excellence, which are priority areas for enhancement. Research programs in ARBL broadly address regulatory mechanisms that underlie mammalian reproduction. Current faculty interests include neuroendocrinology, ovarian function, gamete biology, preimplantation embryology, assisted reproductive technologies, uterine function, placental-fetal interactions and fetal development, molecular signaling, and reproductive disease and toxicology. Excellent laboratory space and facilities for both large and small animals are available, as are several core facilities within the University. Currently, 10 tenure-track faculty members within the

Department of Biomedical Sciences are associated with ARBL; a faculty member from the Department of Clinical Sciences and a faculty member from the Department of Animal Sciences are also integral members of ARBL. The Department also has major strengths in neurobiology and ion channel physiology. A significant number of Departmental faculty members are involved in the University Program of Research and Scholarly Excellence in Molecular, Cellular and Integrative Neurobiology (MCIN). Faculty members in the Department are committed to teaching undergraduate, graduate and professional veterinary medical students, and have a strong reputation for innovation in instructional technology. Some ARBL faculty also teach numerous specialized short courses in equine reproductive techniques for veterinarians and farm managers and are responsible for a large clinical service program in equine reproduction. The individual selected for this position will be expected to provide leadership and oversight for ARBL programs. The ARBL Director must have a strong record of publication and extramural funding, and an active research program in reproductive biology that complements or enhances existing programs. The Director is expected to participate in the teaching program. A major responsibility will be to focus future directions of ARBL via recruitment of new faculty, fostering innovative educational activities, and enhancing research collaborations within the Department, across the University and with other institutions. The Director of ARBL also will serve as a spokesperson for ARBL within and external to the University, and will oversee management of all experimental large animals at the Foothills Campus of the College of Veterinary Medicine and Biomedical Sciences. Applicants must have a PhD, DVM, MD, or equivalent degree. The successful candidate will be eligible to be considered for an endowed professorship. Some administrative experience or evidence of administrative capabilities is essential. The position requires US citizenship or permanent resident status. Additional information about ARBL and associated facul-

ty can be found at <http://www.cvmb.colostate.edu/bms/arbl.htm>. A letter of application, curriculum vitae, statements of research and teaching interests, and list of three references who may be contacted when appropriate, should be sent to the chair of the search committee: Dr. George Seidel, Search Committee Chair, ARBL, Campus Delivery 1683, Department of Biomedical Sciences, Colorado State University, Fort Collins, CO 80523-1683; [George.Seidel@colostate.edu](mailto:George.Seidel@colostate.edu). Review of applications will begin August 16, 2004, and continue until a suitable candidate is found. Applications received after August 16 may or may not be considered. Salary will be commensurate with qualifications and experience. [EEO/AA]

## Faculty Positions

**Professor and Chairperson**, Texas Tech University School of Medicine, Department of Physiology. Texas Tech University School of Medicine invites applicants for the position of Professor and Chairperson of The Department of Physiology. The School of Medicine, which is primarily based in Lubbock Texas, has many outstanding professional and academic opportunities along with a growing research focus and is committed to expanding its research funding and infrastructure. The Department of Physiology is well equipped and has state-of-the-art imaging facilities. Chair candidates must possess a PhD and/or MD degree. The chair must be dedicated to directing, promoting and developing the research and teaching missions of the department. Preferred candidates will have a current senior level rank in an accredited medical school with qualifications for appointment as a full professor. In addition, national and preferably international recognition in the field of Physiology is important. Knowledge and understanding of the organizational complexities of major academic institutions are highly desirable. The chairperson must possess excellent interpersonal skills and leadership qualities. Further information concerning the Department of Physiology can be accessed at

<http://www.ttuhsu.edu/som/physiology/>. Interested individuals should submit letters of application, C.V., and the names of three references either by regular mail or email to: Mr. Bryce McGregor, Assistant Dean of the Medical School, Texas Tech University Health Sciences Center, Lubbock, Texas 79430; email: [bryce.mcgregor@ttuhsu.edu](mailto:bryce.mcgregor@ttuhsu.edu) [EEO]

**Assistant Professor-Physiology Educator Faculty Position:** The Department of Pharmacology & Physiology, Drexel University College of Medicine, invites applications from individuals with a PhD or MD degree for a tenure-track faculty position at the Assistant Professor level. We seek an individual to serve as a full-time educator involved in the teaching of physiology to medical and graduate students. In addition to participating in team-taught courses, the successful individual will be expected to serve as director of the graduate student course and co-director of the medical student course and assume the administrative functions associated with those roles. We are particularly interested in an individual who has experience in the development of web-based teaching material. For more information on the Department, please visit our web site at [http://www.drexel.edu/med/pharmacology\\_physiology/](http://www.drexel.edu/med/pharmacology_physiology/), and for further information on the medical school curriculum, please visit <http://webcampus.med.drexel.edu/ifm/>. Applicants should submit a curriculum vitae, a statement of teaching experience and interests, and the names of three references to Ms. Carmen Cruz-Adames, Department of Pharmacology & Physiology MS #488, Drexel University College of Medicine, 245 N. 15th Street, Philadelphia, PA 19102. Review of applications will begin July 1, 2004, and continue until the position is filled.

**Assistant/Associate Professor Neuropharmacology/Neurophysiology:** The Department of Pharmaceutical Sciences at North Dakota State University invites applications for a tenure-track faculty position at the rank of Assistant/Associate Professor,

with appointment beginning January 1, 2005. Candidates must hold a doctoral degree in pharmacology, physiology, or closely related field, have at least two years of postdoctoral experience with a strong record of scholarship, and possess good interpersonal skills and effective written and oral communication skills. Preference will be given to applicants with training and research expertise in electrophysiology or cellular imaging techniques. The successful candidate will be expected to establish an externally funded research program, teach and mentor graduate students, and participate in team-taught pharmacology courses offered to pharmacy students. Additional information about the Department and University can be obtained at <http://www.ndsu.edu/pharmsci/>. Application deadline is **August 31**, or thereafter until the position is filled. Submit curriculum vitae, statement of teaching philosophy, description of research interests and future plans, and three letters of reference to: Stephen O'Rourke, PhD, College of Pharmacy, North Dakota State University, Fargo, ND 58105.

**Faculty Appointment.** Caribbean location on the island of Dominica. Medical Physiologists position within the Department of Physiology are faculty appointments at a rank commensurate with applicant experience. Applicants must have a doctorate degree in physiology or medicine and experience teaching physiology to medical students in American medical schools. Preference will be given to those individuals with a strong track record of teaching excellence, especially in the area of endocrine physiology. Successful candidates for these positions will be forming the foundation of a group of medical physiologists dedicated to teaching medical students and interested in developing and implementing creative teaching techniques to improve medical student understanding and appreciation of physiology. Individuals are encouraged to explore, design, and deliver innovative medical physiology curricula. Excellent opportunities exist for medical education research including long-distance training, computer

based delivery and assessment of physiology curriculum, integration of clinical medicine with physiology basic science, and multiformat course design. Physiology Department is in a unique position to rapidly evaluate changes to its physiology curriculum as well as dramatically influence international education in medical physiology. Required is extensive knowledge of this program, excellent communicative and teaching skills and documented record of teaching effectiveness. Required Credentials and Education: PhD in relevant field of study or MD/PhD, Previous teaching position at a North American or United Kingdom medical school in the case of Associate and Full Professor levels. Ross University School of Medicine, founded in 1978, has placed more graduates into first year residency positions in 2002 than any other school in the world, including U.S. medical schools. Ross University School of Veterinary Medicine, founded in 1982, has promoted more students into clinical clerkships at affiliated US Colleges of Veterinary Medicine than any other school in the world. The mission of the schools is to prepare highly dedicated students to become effective, successful physicians/veterinarians in the United States. Together, Ross University School of Medicine and School of Veterinary Medicine are a subsidiary of DeVry, Inc., the second largest private university in the US. Ross University enrollment, registrar and financial aid services are located in Edison, NJ. To apply, please visit our website <http://www.rossmed.edu>, select Careers at Ross and complete our online application process. Ross University offers competitive annual salary potentially tax-free, relocation assistance to and from the island, deferred pension program, medical benefits, 25 days of paid annual leave along with opportunities for professional development. [EOE]

**Faculty Positions.** University of Missouri-Columbia, Department of Medical Pharmacology and Physiology. The Department of Medical Pharmacology and Physiology, University of Missouri-Columbia in-



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vites applications for two tenured or tenure-track positions (Assistant to Full Professor), particularly from investigators whose interests complement existing areas of research strength in cardiovascular function, diabetes, cellular signaling, and receptor or channel activity. The University is noted for interdisciplinary research programs, which will be enhanced by the opening of the Life Sciences Center September 2004. Position qualifications include a PhD in Pharmacology, Physiology, or a related field or an MD, and postdoctoral experience. Successful applicants will have or develop an outstanding research program and contribute to Departmental teaching activities. Involvement in campus-wide research initiatives relative to cardiovascular health and diabetes, cancer, nutrition, gender physiology and environmental adaptation, radiopharmaceuticals, neuroscience, exercise science, or proteomics is desirable. Please send a curriculum vitae, a narrative of research and educational interests, and the names and contact information of three references to: Chair, MPP Search Committee, Department of Medical Pharmacology and Physiology, MA415 Medical Sciences, School of Medicine, University of Missouri-Columbia, One Hospital Drive, Columbia, MO 65212; email (strongly preferred): UMHSMP@health.missouri.edu. Active review of applications will begin **August 9, 2004** and the search will continue until the positions are filled. Visit the University of Missouri-Columbia's website at <http://www.missouri.edu/>. Please direct ADA accommodation requests to our coordinator at (573) 884-7278 (V/TTY). [AA/EEO]

**Staff Biologist/Research Biologist:** Enhancing and preserving the quality of life. This is the commitment that Merck & Co., Inc. stands by, and it is what has distinguished us as the world's leading research-driven health products company. Consistently ranked by Fortune as one of the "100 Best Companies to Work for in America," we discover, develop and manufacture a wide range of innovative products. Research is the founda-

tion of Merck's success and the heart of our company's overall strategy. We are currently seeking a Staff Biologist/Research Biologist to join the Merck Research Laboratories (MRL) team in West Point, PA. In this role, you will be responsible for conducting in vivo electrophysiological and behavioral studies in support of novel therapeutic approaches in pain research. The successful candidate will have a BS or MS degree in biology, neurobiology, veterinary medicine, or a related field, experience with rodent surgical procedures, and in vivo electrophysiological recording. The ability to work independently, but in a team-oriented drug discovery environment, is required. You must also have the ability to independently organize and analyze data and possess excellent oral and written communication skills. Experience with rodent behavioral testing is desired. We offer a competitive salary, an outstanding benefits package, a professional work environment and opportunities for professional growth. To apply, please visit <http://www.merck.com/careers> and search for job number BIO000586, or create a profile to be notified of future opportunities. Visit us at <http://www.merck.com/careers>. [EEO/M/F/D/V]

**Open Rank.** Nora Eccles Harrison Cardiovascular Research and Training Institute (CVRTI), University of Utah seeks a qualified candidate at the junior or intermediate faculty level in cardiac electrophysiology. The applicant should have an advanced degree (PhD or MD), postdoctoral training, and proven success in independent research in the study of biophysical or molecular aspects of electrophysiology in the whole heart or myocardial tissue. Of special interest is a person with expertise in one or more of the following experimental techniques: optical based monitoring; surface and volume electrode measurements; in situ, isolated heart, or tissue preparations; and multicellular tissue culture. Relevant secondary expertise would be in image and signal processing and the application of mathematical simulation to experimental results. Examples of research areas of interest

include the molecular, cellular, or myocardial basis of cardiac arrhythmias; gap junction biology; ischemia and infarction; cardiac failure and hypertrophy; myocardial propagation and repolarization; and electrocardiography. For more information about CVRTI, please see our website at <http://www.cvrti.utah.edu/>. The position will be open until a suitable candidate is identified. Interested candidates should send their curriculum vitae to Dr. Kenneth W. Spitzer, Nora Eccles Harrison CVRTI, University of Utah, 95 South 2000 East, Salt Lake City, Utah 84112-5000 or electronically to [spitzer@cvrti.utah.edu](mailto:spitzer@cvrti.utah.edu). [EEO/AA]

## Equipment Wanted

**PDP-12 Computer Wanted.** I'm looking for a Digital Equipment Corporation PDP-12 lab computer, working or nonworking, to purchase for a computer restoration project. Do you know of one that's sitting somewhere idle and unused? If so, please contact O. Sharp at [ohh@drizzle.com](mailto:ohh@drizzle.com) and let me know more about the machine's location and condition. I'll be happy to pay a fair price, and it'll have a good home.



# Announcements

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## **Current Concepts in Cancer Pain Management A Multidisciplinary Case-Based Symposium**

October 14-15, 2004

Johns Hopkins University School of Medicine, Turner  
Bldg., Baltimore, MD

This two-day course is designed for physicians, nurses, pharmacists, social workers and health professionals who are interested in the management of cancer pain. The conference will focus on a multidisciplinary case-based approach to caring for patients with cancer pain. The topics include pain assessment, both pharmacological and non-pharmacological therapy and more advanced techniques in the treatment of cancer pain.

The Johns Hopkins University School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The Johns Hopkins University School of Medicine takes responsibility for the content, quality and scientific integrity of this CME activity.

The Johns Hopkins University School of Medicine designates this educational activity for a maximum of 12.5 category 1 credits toward the AMA Physician's Recognition Award. Each physician should claim only those credits that he/she actually spent in the activity.

**Fees:**

Physicians: \$325

Residents, Fellows and Allied Health Professionals: \$250

**Contact:**

Conference Coordinator, Johns Hopkins University School of Medicine, Office of Continuing Medical Education, Turner 20, 720 Rutland Ave, Baltimore, MD 21205-2195.

Tel.: 410-955-2959; Fax: 410-955-0807. Email:

cmenetA@jhmi.edu; Web: <http://www.hopkinscme.net>.

## International Course on Laboratory Animal Science Utrecht, The Netherlands

A two-week intensive course on laboratory animal science will be organized at the Division of Laboratory Animal Science, Utrecht, The Netherlands in June 2005. This course is organized once a year since 1993.

The objective of this course is to present basic facts and principles that are essential for the humane use and care of animals and for the quality of research.

The contents of the course are in

line with recommendations of the Federation of European Laboratory Animal Science Associations (FELASA) regarding the training of the young scientist whose research involves the use of vertebrate animals.

The course may also be of interest for those who intend to set up a similar course at their location. For this purpose, during the course the acquisition of teaching materials can be discussed with the course committee.

For more information and application forms, please contact: Stephan van Meulebrouck, MA, Division of Laboratory Animal Science, Faculty of Veterinary Medicine, PO Box 80.166, 3508 TD Utrecht, The Netherlands. Tel.: 31-30-2532033; Fax: 31-30-2537997; Email: [pdk@las.vet.uu.nl](mailto:pdk@las.vet.uu.nl); Internet: <http://las.vet.uu.nl> (click on Education and Training, International Course.)

## European Respiratory Society: Monitoring of Airway Diseases Lausanne, Switzerland; October 15-17, 2004

Organizing Committee:

Bruno Balbi (Gussago, Italy)  
Elisabeth Bel (Leiden, the Netherlands)  
Ildikó Horváth (Budapest, Hungary)

Program & Registration

### Course description

The aims are to provide a critical overview on different modes of monitoring airway diseases and associated inflammation and oxidative stress in research and clinical practice. The course gives methodological advice with information on the current guidelines for each method. Course participants will learn the most important steps in using these techniques and determine the most frequent pitfalls when using them together with poten-

tial interpreting data problems. Furthermore, they will learn the potential place of these techniques in monitoring airway diseases. The course is designed to form a bridge between basic science and clinical work.

### Topics

A comprehensive review of different ways of monitoring airway diseases, evaluating airway inflammation/oxidative stress and the value of each method when following patients with asthma, COPD or other, less frequent airway disorders including CF, PCD and post-lung transplant bronchiolitis obliterans; clinical education and skills enhancement; identification of areas where further research is required before clinical use.

For further details, please download the brochure at <http://www.ersnet.org>.

### Target audience

Whether you are a practicing pulmonologist, resident preparing for the pulmonology board, research fellow involved in research on airway inflammation/oxidative stress, or laboratory technician performing lung function test, methacholine challenge or exhaled breath tests, this course offers an exceptional learning opportunity.

In the USA, EACCME Credits are automatically converted into American Medical Association (AMA) credits upon presentation of the certificate of attendance including the EACCME formula to the AMA.

## European Respiratory Society: Cystic Fibrosis Vienna, Austria, November 11-13, 2004

Organizing Committee

Thomas Frischer (Vienna, Austria)  
Andrew Bush (London, UK)  
Harm Tiddens (Rotterdam, The Netherlands)

Program & Registration

### Course description

The course has the following goals:  
to give healthcare workers who are, or will be, working in a CF team a head start in the modern care of CF care;

to provide evidence-based information on both paediatric and adult aspects CF care;

to increase the number of healthcare workers with adequate knowledge and interest in CF;

to promote collaboration between CF care givers throughout Europe.

For further details, please download the Cystic Fibrosis brochure at <http://www.ersnet.org>.

### Background

CF is a complicated disease which management requires extensive expertise of a variety of healthcare workers operating in a CF team.

The lung is the organ which problems dominate morbidity, treatment and prognosis.

New members of a CF team should be able to be trained in a short period in the most important aspects of CF care.

An initiative for a CF course was taken by CF care givers in Vienna and by the CF group within the pediatric assembly. It was felt that both initiatives could be merged into one.

In the USA, EACCME Credits are automatically converted into American Medical Association (AMA) credits upon presentation of the certificate of attendance including the EACCME formula to the AMA.

## September 2-5

**Transporters 2004, Cambridge, United Kingdom.** *Information:* Tel.: +44 (0) 1382344276; Fax: +44 (0) 1382345507; Email: v.mcguire@dundee.ac.uk; Internet: <http://www.dundee.ac.uk/lifesciences/transporter/home.htm>.

## September 4-8

**European Respiratory Society Annual Congress, Glasgow, Scotland.** *Information:* ERS Headquarters, 4, av. Sainte-Luce, CH-1003 Lausanne, Switzerland. Fax: 41 21 213 01 00. Internet: <http://www.ersnet.org>.

## September 5-10

**The 15th International Chromosome Conference, London, England.** *Information:* 15th International Chromosome Conference Helpdesk. Tel.: ++44 (0) 1223 333438; Fax: ++44 (0) 1223 333438; Email: ICCXV@the-conference.com; Internet: <http://www.the-conference.com/2004/iccxv> or <http://www.brunel.ac.uk/iccxv>.

## September 8-11

**Immunological and Pathophysiological Mechanisms in Inflammatory Bowel Disease, Snowmass Resort, CO.** *Information:* The American Physiological Society, 9650 Rockville Pike, Bethesda, MD 20814. Phone: 301-634-7967; Fax: 301-634-7241; Email: meetings@the-aps.org; Internet: <http://www.the-aps.org/meetings/aps/>.

## September 9-12

**Functional Genomics of Host-Pathogen Interactions, Cambridge, United Kingdom.** *Information:* Internet: <http://meetings.cshl.edu/2004/2004pathuk.htm>.

## September 9-12, 2004

**Grover Conference on the Pulmonary Circulation: Genetic and Environmental Determinants of Pulmonary Endothelial Cell Function.** Lost Valley Ranch and Conference Center, Sedalia, CO. *Information:* <http://www.americanheart.org/presenter.jhtml?identifier=3020153>; Email: scientificconferences@heart.org.

## September 19-21

**15th International Symposium on Regulatory Peptides, Toulouse, France.** *Information:* Email: reg-pep@toulouse.inserm.fr; Internet: <http://ifr31w3.toulouse.inserm.fr/regpep2004/>.

## September 25-29

**Placenta Association of the Americas 2004 Conference - Signaling & the Placenta, Asilomar, CA** *Information:* Internet: <http://www.paa2004.org>.

## September 26-30

**Workshop on Techniques in Modeling Human Colon Cancer in Mice, Bar Harbor, ME.** *Information:* Judi Alexander, The Jackson Laboratory, 600 Main Street, Bar Harbor, ME 04609-1500. Tel.: 207-288-6326; Fax: 207-288-6080; Email: judih@jax.org; Internet: <http://www.jax.org/courses/events/coursedetails.do?id=37>.

## September 30-October 3

**Colon Cancer in Murine Models and Humans, Bar Harbor, ME.** *Information:* Judi Alexander, The Jackson Laboratory, 600 Main Street, Bar Harbor, ME 04609-1500. Tel.: 207-288-6326; Fax: 207-288-6080; Email: judih@jax.org; Internet: <http://www.jax.org/courses/events/coursedetails.do?id=38>.

## October 1-5

**American Society for Bone and Mineral Research 26th Annual Meeting, Washington State Convention & Trade Center, Seattle, WA.** *Information:* ASBMR Business Office, 2025 M Street, NW, Suite 800, Washington, DC 20036-3309; Tel.: 202-367-1161; Fax: 202-367-2161; Internet: <http://www.asbmr.org>.

## October 6-9

**The Integrative Biology of Exercise, Austin, TX.** *Information:* The American Physiological Society, 9650 Rockville Pike, Bethesda, MD 20814. Phone: 301-634-7967; Fax: 301-634-7241; Email: meetings@the-aps.org; Internet: <http://www.the-aps.org/meetings/aps/>.

## October 8-9

**5th Annual Conference on Case Study Teaching in Science, Buffalo, NY.** *Information:* Conference Coordinator, Rebecca Firth, rsfirth@acsu.buffalo.edu, (716) 645-2947 x268, or Nancy Schiller, Co-Director of the National Center for Case Study Teaching in Science, at schiller@buffalo.edu, 716-645-2947 x225. Internet: <http://ublib.buffalo.edu/libraries/projects/cases/conference/conference.html>.

## October 17-20

**European Society of Cardiology Working Group Conference on acute Cardiac Care, Rome, Italy.** *Information:* Meeting Secretariat: ESCWGACC2004 Secretariat, PO Box 574, Jerusalem 91004, Israel. Tel: ++972-2-6520574; Fax: ++972-2-6520-558; Email: seminars@isas.co.il; Internet: <http://www.isas.co.il/escwgacc2004>.

## October 21-25

**Cytokines in Cancer and Immunity—Joint Conference of ICS and ISICR, San Juan Puerto Rico.** *Information:* Sherwood Reichard, International Cytokine Society. Fax: 706-228-4685; Email: info@cytokines2004.org; Internet: <http://www.cytokines2004.org>.

## October 27-28

**New Paradigms in Vascular Biology, St. Louis, MO.** *Information:* Internet: [http://www.asn-online.org/application/omniconference/public/oc\\_public\\_pge\\_search.aspx?type=date](http://www.asn-online.org/application/omniconference/public/oc_public_pge_search.aspx?type=date).