

THE PHYSIOLOGIST



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K-12 Science Education: Current Status and Future Standards

This background paper was developed initially for use by the APS Council in preparation for the November 1993 Council Retreat, focusing on APS' role in science education.

What is the Current Status of Science Education Reform?

To discuss current key issues in K-12 science education, it is important to understand the status and potential impact of the national reform effort. In the 1980's, the mathematics education and research communities banded together to revamp and revitalize K-12 mathematics education in the United States. Because their efforts had broad endorsement from the education and research communities and were widely disseminated at the state and local levels, the new mathematics standards have had a strong impact on how mathematics is being taught across the nation and an even stronger impact on the expectations held for mathematics teachers and schools.

Currently, similar efforts are underway in science education, led primarily by the activities of the National Committee on Science Education Standards and Assessment (SESA) at the National Research Council (NRC) of the National Academy of Sciences. The SESA has the backing (and funding) of most federal science and education agencies as well as many private foundations; it also has the endorsement of a broad spectrum of professional associations in education and the sciences. Ultimately, the standards developed by the SESA have the potential to impact the science education of the majority of K-12 students in the United States. Similarly, the American Association for the Advancement of Science's Project 2061 is working to develop benchmarks for excellence in science education. Their recently released publication, *Benchmarks for Science Literacy* (1), outlines fundamental concepts by grade level in science and technology and the interactions between science and society. In the immediate future, these two projects will have impacts on two key areas in science education:

1. The focus and content of all science education projects funded by federal agencies and by many state agencies and private foundations will have to fall in line with these standards set by these projects, especially the SESA standards.
2. In effect, school systems, schools, and individual teachers will be held responsible for meeting these standards in curricula and teaching methods, regardless of whether they have had the time or access to the resources and training needed to implement them.

These impacts will be especially strong if the plans for a national "science test" are implemented.

Obviously, these standards will have important implications for the scientific research community, particularly in APS' efforts to improve K-12 science education. Several pre-

(continued on p. 38)

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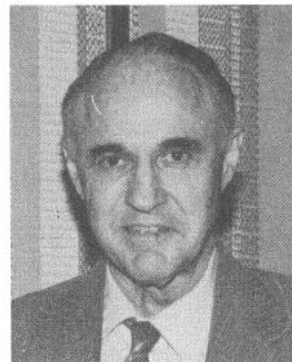
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APS Receives Donation to Honor Arthur C. Guyton



The American Physiological Society is pleased to announce the receipt of a large donation from a donor who wishes to remain anonymous. Consistent with the request, the donation will be used to establish an award/fellowship program named after Arthur C. Guyton, 47th APS President.

While the Council has not yet considered how to use the funds provided, the donor has suggested that the donation be used:

- "For the purpose of supporting a promising individual(s) with demonstrated interest, aptitude, and/or experience to follow a career in the study of feedback principles in physiological processes. . . ."

- "Or under similar conditions to study the genetic factors determining anatomical and physiological organization (i.e., design, in the engineering sense, which includes feedback). A part of such a study might well involve the differences rather than the similarities in genetic makeup, or the genetic factors determining the organization of the nervous system. Although it appears even more improbable now, embryology would fit into this category."

- "For the support of related or other programs at the discretion of the APS."

The APS Council is excited about the donation and the opportunity it provides the Society to recognize the contributions of Arthur C. Guyton. As soon as the program is finalized, an announcement will appear in *The Physiologist*.

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Deadline for submission of material for publication: Jan. 1, February issue; March 1, April issue; May 1, June issue; July 1, August issue; Sept. 1, October issue; Nov. 1, December issue. **If you change your address or telephone number, please notify the central office as soon as possible. Printed in the USA.**

Headquarters phone: 301-530-7118. Fax: 301-571-8305.

Council Meets in San Francisco

Taking advantage of the APS Conference on "Signal Transduction and Gene Regulation," the APS Council held their meeting in San Francisco after the culmination of the Conference. The meeting was designed to deal with Society business and to focus on the new education initiatives arising from the Strategic Plan.

During the meeting, Council reviewed a report submitted by Peter Lauf's Task Force on Chapters. Established in response to a recommendation arising from the strategic plan, the Task Force reviewed the chapter structure of other societies and talked to officers of existing regional physiology societies. Based on their discussions, the Task Force recommended the implementation of a chapter program. Council accepted their recommendation and approved a bylaw amendment designed to encourage interdisciplinary contacts among research workers interested in the physiological sciences and education of the general public and future physiologists.

The Council also finalized the criteria for the new Research Career Enhancement Awards for members in good standing. With two deadlines annually (February 15 and August 15), the awards are designed to assist APS members in their efforts to learn new methodologies through a visit to a laboratory or enrollment in a special course. Council also accepted a donation from Genentech, Inc. in support of a joint APS-Genentech Postdoctoral Fellowship in Mammalian Organ System Physiology. Faced with a shortage of candidates with experience in systems physiology and molecular biology, Genentech is seeking to stimulate interest in systems physiology through the development of the fellowship program.

With the continuing expansion of the electronic information highway, Council approved two new publication projects designed to take advantage of new technologies. The APS "Gopher"

Information Server will be expanded to include the publication of abstracts of accepted manuscripts. The new electronic journal *APStracts* will be initiated with the publication of abstracts from the *American Journal of Physiology: Cell Physiology* and will be expanded to include the other APS journals. Council also approved the participation of the APS in "Red Sage," a pilot project of the University of California, San Francisco. In conjunction with ATT/Bell Laboratories, Springer-Verlag, and approximately 20 other publishers, APS will be participating in a three-year project to develop an electronic library that will provide users with searchable images of the printed page at a keystroke. The utilization data developed from the project should assist the Society in its efforts to develop a cost effective electronic journal program.

As part of its review of Society finances, Council considered the current dues structure and noted that there had not been an increase since 1982. Because of inflationary pressures and the need for additional staff to coordinate new program activities, Council approved a \$5.00 dues increase in 1994-1995. Regular/Corresponding member dues will be increased from \$80 to \$85 per year. Council also

added a new benefit for Regular members without cost to the Society. Eugene Garfield offered *The Scientist* to APS for distribution to our US Regular members at no cost to the Society and the Council accepted the offer.

During the portion of the meeting focusing on education, the Council discussed their concerns about the state of physiology education, both at the pre-college level and at the graduate/medical school level. During the meeting, Council reviewed the Society's existing programs and identified areas in which APS could influence the educational process. Additionally, Council discussed how the APS can enhance the participation of underrepresented minorities in the physiological sciences. As part of the discussion, the Council reviewed several existing APS programs including:

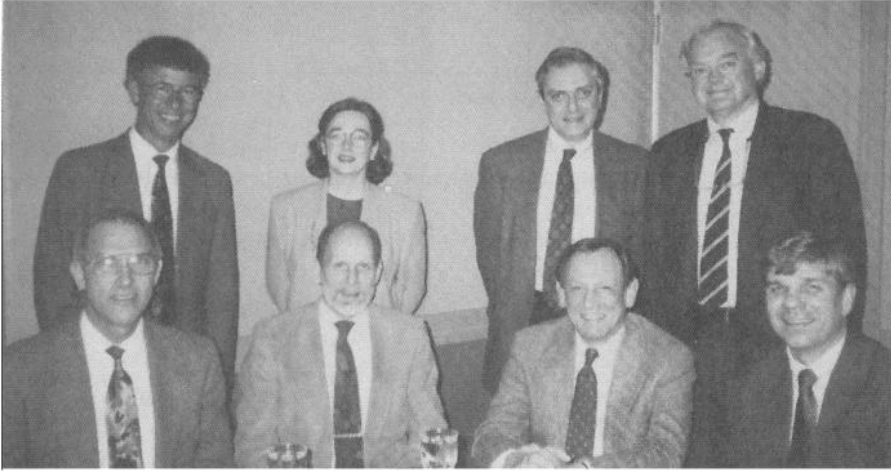
1) The APS High School Science Teachers Summer Research Program designed to introduce teachers to scientific research;

2) The Porter Physiology Development Program designed to provide fellowship support for underrepresented minority students pursuing a doctoral degree in the physiological sciences;

3) The Women's Mentoring Program designed to provide women with mentors to counsel them in areas of



L-r, seated: L. H. Tucker, S. G. Schultz, H. J. Cooke, and L. R. Johnson. *L-r, standing:* L. G. Navar, J. C. Liakos, D. N. Granger, and B. B. Rauner.



L-r, seated: B. R. Duling, G. A. Hedge, H. Valtin, and J. A. Schafer. *L-r, standing:* L. S. Jefferson, P. A. Hansen, M. P. Blaustein, and D. J. Ramsay.

personal and professional development; and

4) The NIDDK Minority Travel Fellowship Program designed to bring underrepresented minority pre- and postdoctoral students to the Society's meeting.

These programs were all favorably reviewed by the Council, and Marsha Lakes Matyas, Education Officer, and Frank L. Powell, Education Committee Chairman, were encouraged to identify other initiatives that would strengthen the Society's education efforts.

Council also reviewed the status of several pending NSF proposals that will enable the Society to initiate several new programs. These include the development of educational materials for the K-12 classroom and in-service programs for teachers. Council also expressed an interest in the development of an illustrated informational brochure designed to focus on the importance of animals in physiological research and on career opportunities in physiology. Efforts are currently underway to identify corporate sources to cost-share the production of the brochure.

Part of the Council's education agenda involved discussions with Donald Kassebaum, Vice President for Educational Research and Assessment, AAMC. Kassebaum provided the Council with an overview of the structure and function of the LCME, indicating that the LCME standards were rewritten in 1985 in response to the

GPEP report. According to Kassebaum, when the LCME accreditation teams visit an institution, they are looking for an integrated institutional response describing the curriculum. Accreditors try to stay clear of dictating content but the curriculum must be coordinated over the four year period. Also, educational objectives must be student- and learning-centered. Kassebaum stressed that nothing in LCME standards mandates a particular structure or pedagogy.

Kassebaum also addressed one of the concerns of APS Council members—the lack of representation on LCME review panels of basic scientists. Kassebaum stated that there is

currently at least one basic scientist on the LCME Board. He also stated that it is his (Kassebaum's) responsibility to make appointments to the accreditation panels. He is looking for people who would be interested and have a broad view of the issues. Kassebaum indicated that he would be receptive to receiving a list of APS basic scientists to serve on review panels. In response to his invitation, the Council has sent a list of candidates for service on LCME accreditation committees. Finally, Kassebaum encouraged APS members to call if they have a concern about something in their LCME report.

He also discussed the role of basic scientists in curriculum committees, stating that there is little representation of basic scientists on curriculum committees. He recommended that basic scientists become involved in their school's curriculum committees and observed that it is often difficult to get basic scientists to serve on these committees.

Additional details of the Council's actions during the San Francisco meeting will be communicated to the membership at the next Business Meeting and in *The Physiologist*. In addition, Donald Kassebaum has promised to provide the Society with a report on the LCME for publication in *The Physiologist*.



L-r, seated: F. G. Knox, F. L. Powell, Jr., and M. L. Matyas. *L-r, standing:* W. H. Dantzler, D. G. Kassebaum, R. Thies, and B. A. Horwitz.

Awards and Fellowships

Statement of Purpose: The APS Research Career Enhancement Awards are designed to enhance the career potential of our members. The awards will provide up to \$4,000 to allow individuals in the early phases of their careers to obtain special training and in later phases of their careers to develop new skills and to retrain in areas of developing interests.

The Awards can be used to support

- short-term visits to other laboratories to acquire new scientific skills
- attendance at special courses devoted primarily to methodologies appropriate for both new investigators and more senior investigators entering a new field of research.

Application Procedure: Candi-

dates, who are members in good standing, may submit an application form including a curriculum vitae, justification for requesting an award, description of enhancement activity and current research program (not to exceed 2 pages), and anticipated budget for the proposed program of enhancement. The applicant must also include a letter of support either from his/her department chair, host laboratory or other appropriate individual.

Application Deadlines: February 15 and August 15.

Additional Information and Application Material: Martin Frank, Executive Director, American Physiological Society, 9650 Rockville Pike, Bethesda, MD 20814-3991. Tel: (301) 530-7118; fax: (301) 571-8305.

APS Research Career Enhancement Awards

The American Physiological Society, in collaboration with Genentech, Inc., is pleased to announce the creation of a new fellowship program designed to promote careers in mammalian organ system physiology. The APS-Genentech Postdoctoral Fellowship has been established in recognition of the fact that many advances in cell and molecular biology will ultimately require an understanding in the context of the organism, and special training will be needed to conduct this type of research.

The ideal candidate is one who did an outstanding job in a top-flight graduate program (e.g., physiology, pharmacology, molecular biology, genetics, etc.) and who has the intention of enlarging or learning organ system approaches during their postdoctoral training. Alternatively, a well-trained

graduate in integrative physiology might wish to expand his/her work through the use of molecular biological tools. A central criterion is that the postdoctoral project uses the tools of cellular and molecular biology in the setting of the whole animal.

Candidates for this program should identify a laboratory and sponsor under whose supervision a project in mammalian organ system physiology and molecular biology can be combined. The award is for a two-year period (annual stipend \$32,000 plus a \$3,500 trainee allowance).

Application Deadline: May 15. For more information and application materials, contact Martin Frank, APS-Genentech Postdoctoral Fellowship Program, American Physiological Society, 9650 Rockville Pike, Bethesda, MD 20814-3991.

APS-Genentech Postdoctoral Fellowship in Mammalian Organ System Physiology

Meetings and Conferences

Experimental Biology '94 Anaheim, CA April 24-28, 1994

APS Distinguished Lectureships

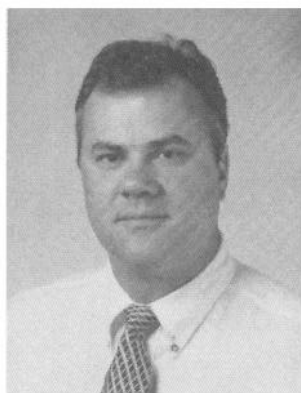
Experimental Biology '94 will witness the expansion of the Society's Distinguished Lectureships from 2 to 14. For many years, the spring meeting was noted for the presentation of the Bowditch Lecture and the Walter B. Cannon "Physiology in Perspective" Lecture. The former was established in 1956 in honor of the first elected President of the APS, Henry Pickering Bowditch. The lecturer, who is a regular member under 40 years of age, is selected for his/her original and outstanding accomplishments in the field of physiology. The Cannon Lecture was established in 1982 and is designed to recognize the long-term and outstanding contributions of a physiologist.

This year, the Council is pleased to announce the addition of 12 Distinguished Lectureships, named after outstanding contributors to the disciplinary areas of physiology represented by the 12 APS sections. The Lectureships were established as part of the Society's continuing efforts to strengthen the scientific content of the spring meeting. In addition, by providing each of the APS sections with a Distinguished Lectureship, the Society provides additional focus on the activities of the sections.

In establishing the Distinguished Lectureships, the Council expects that each Lecturer will become an integral and active part of the whole meeting. To accomplish this, each section will involve the Lecturer in other activities including the section dinner, serving as a session chair, meetings with pre- and postdoctoral students, etc.

The complete listing of the 1994 Distinguished Lecturers follows.

HENRY PICKERING BOWDITCH LECTURE

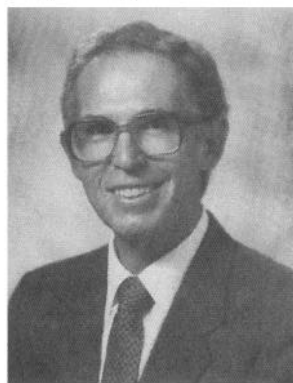


W. James Nelson, Stanford
University Medical Center

"Regulation of Epithelial Cell
Polarity"

Tuesday, April 26, 5:15 pm
Marriott, North East Hall

PHYSIOLOGY IN PERSPECTIVE: WALTER B. CANNON MEMORIAL LECTURE (supported by The Grass Foundation)



Maurice B. Burg, National
Institutes of Health

"Molecular Basis of Osmotic
Regulation"

Wednesday, April 27, 5:15 pm
Convention Center, Room A1

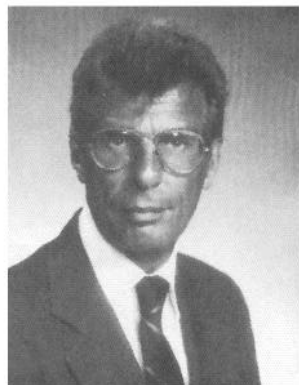
Now Appearing on the APS "Gopher" Information Server:

APStracts

an on-line publication of the abstracts of manuscripts accepted for publication in the APS journals. This pilot project will start with the publication of abstracts from the *American Journal of Physiology: Cell Physiology*.

Cardiovascular Section

ROBERT M. BERNE DISTINGUISHED LECTURE



Arthur M. Brown, Baylor College of Medicine

"Context and Content: How a Physiologist uses Molecular Biology to Understand the Heart"

Monday, April 25, 8:30 am
Convention Center, Room C6

Cell & General Physiology Section (Plenary Session)

HUGH DAVSON DISTINGUISHED LECTURE



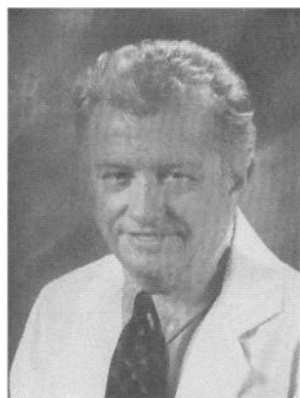
Hugh E. Huxley, Brandeis University

"40 Years of Sliding Filaments—What Have We Learned?"

Tuesday, April 26, 1:00 pm
Marriott, Grand Ballroom Salon E

Central Nervous System Section (Plenary Session)

JOSEPH ERLANGER DISTINGUISHED LECTURE



Donald L. Price, Johns Hopkins University

"Models of Neurodegenerative Disease: Mechanisms and Potential Therapies"

Monday, April 25, 1:00 pm
Convention Center, Room B3

Comparative Physiology Section

AUGUST KROGH DISTINGUISHED LECTURE



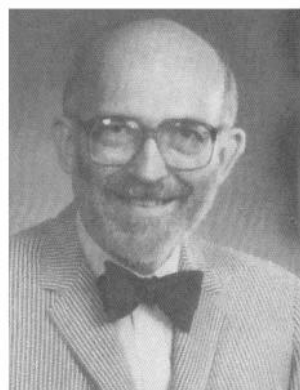
Bodil Schmidt-Nielsen, Salisbury Cove, Maine

"Renal Concentrating Mechanism: Insights from Comparative Physiology and Anatomy"

Monday, April 25, 8:30 am
Marriott, Grand Ballroom Salon F

Endocrinology & Metabolism Section

SOLOMON A. BERSON DISTINGUISHED LECTURE



Jean D. Wilson, University of Texas Southwestern Medical Center

"The Use of Single Gene Mutations for the Analysis of Phenotypic Sex Differentiation"

Tuesday, April 26, 2:00 pm
Marriott, NorthWest Hall

Environmental & Exercise Physiology Section

EDWARD F. ADOLPH DISTINGUISHED LECTURE



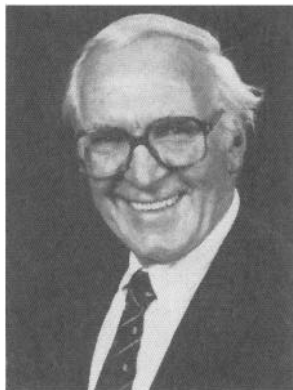
Bengt Saltin, University of Copenhagen

"Matching Oxygen Delivery to Energy Demand During Exercise in Man"

Wednesday, April 27, 2:00 pm
Marriott, Grand Ballroom Salon F

Gastrointestinal Section (Plenary Session)

HORACE W. DAVENPORT DISTINGUISHED LECTURE



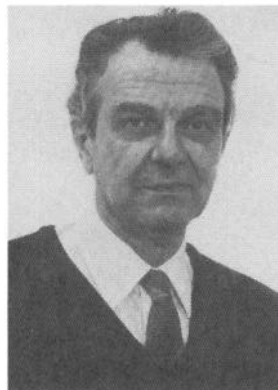
Sir James Black, James Black Foundation, King's College

"Gastrin and Gastric Acid Secretion"

Wednesday, April 27, 11:45 am
Convention Center, Room C6

Neural Control & Autonomic Regulation Section

CARL LUDWIG DISTINGUISHED LECTURE



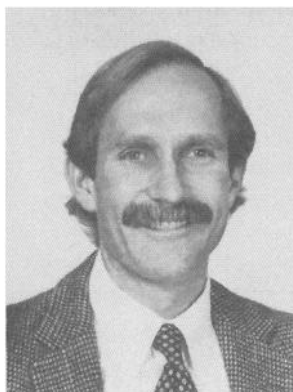
Bjorn Folkow, University of Goteborg

"Reflex and Central Nervous Control in the Aging Cardiovascular System"

Monday, April 25, 2:00 pm
Convention Center, Room B3

Renal Physiology Section

CARL W. GOTTSCHALK DISTINGUISHED LECTURE



Peter Agre, Johns Hopkins University

"Aquaporin CHIP, the Archetypal Molecular Water Channel"

Wednesday, April 27, 8:30 am
Marriott, Grand Ballroom
Salon F

Respiration Section (Plenary Session)

JULIUS H. COMROE, JR. DISTINGUISHED LECTURE



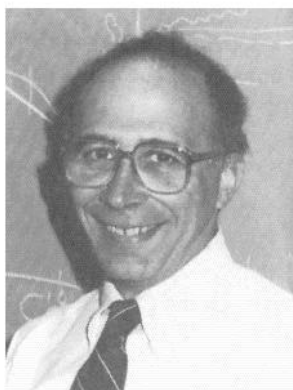
Jeffrey A. Whitsett, University of Cincinnati

"Transgenic Models of Lung Development and Disease"

Wednesday, April 27, 1:00 pm
Convention Center, Room A10

Teaching of Physiology Section

CLAUDE BERNARD DISTINGUISHED LECTURE



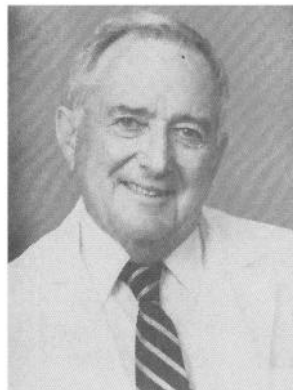
Arthur J. Vander, University of Michigan

"The Excitement and Challenge of Teaching Physiology: Shaping Ourselves and the Future"

Wednesday, April 27, 8:30 am
Marriott, Grand Ballroom
Salon E

Water & Electrolyte Homeostasis Section

DISTINGUISHED LECTURE



John H. Laragh, Cornell University Medical Center

"The Endocrine Basis for Human Hypertension and Its Cardiovascular Sequellae: Containment of the Renin System as a Strategy for Prevention of Heart Attack and Stroke"

Tuesday, April 26, 3:00 pm
Marriott, Grand Ballroom
Salon F

Experimental Biology '94 Anaheim, CA April 24–28, 1994

Symposia

Inflammation Theme

Cytokine Mediated Signal Transduction Pathways: Effects on Cellular Gene Expression and Function

Sponsor: APS Cell & General Physiology Section
Chairs: E.N. Benveniste and D.J. Benos

- Effects of cytokines non Na⁺/H⁺ exchange in mammalian astrocytes. D.J. Benos (University of Alabama, Birmingham)
- Cytokine regulation of ion transport in phagocytes. S. Grinstein (Hospital for Sick Children, Toronto)
- Mechanisms of transcriptional control in cytokine stimulated mononuclear phagocytes. T.A. Hamilton (Cleveland Clinic Foundation)
- Involvement of protein kinase C and tyrosine kinase activity in cytokine induced gene expression in astrocytes. E.N. Benveniste (University of Alabama, Birmingham)
- Transcriptional activation and repression of IFN α / β stimulated genes. N.C. Reich (SUNY at Stony Brook)

Respiratory Biology Theme

Cellular Regulation of the Endothelial Barrier

Sponsor: APS Respiration Section
Chair: J. Bhattacharya

- Albumin binding proteins: docking molecules and/or transcytotic receptors? D. Popova (Inst. Cell. Biol. & Pathol., Bucharest, Rumania)
- Molecular organization of endothelial cell-to-cell junctions. E. Dejana. Mario Negri (Inst. of Pharmacol. Res., Milan, Italy)
- Control of cytoskeletal mechanics and cell shape. D. Ingber (Harvard Medical School)
- Second messenger regulation of endothelial barrier. A.B. Malik (Rush Medical College)
- Cellular receptors for advanced glycation end-products: implications for endothelial cell dysfunction. A-M. Schmidt (Columbia University College of P&S)
- Barrier regulation in lung capillary endothelium. J. Bhattacharya (Columbia University College of P&S)

Neurobiology Theme

What Happens to Cardiovascular and Renal Homeostasis During Pregnancy?

Sponsors: APS Cardiovascular, Water & Electrolyte Homeostasis, and Neural Control & Autonomic Regulation Sections
Chairs: V.L. Brooks and S. Jacobs-Kaufman

- Failure to regulate arterial pressure during hemorrhage in pregnant animals. V.L. Brooks (Oregon Health Sciences University)
- Reflex regulation of hormonal responses during pregnancy. M. Keller-Wood (University of Florida)
- Atrial control of cardio-renal homeostasis during pregnancy. S. Jacobs-Kaufman. (University of Alberta)
- Regulation of the sympathetic nervous system during pregnancy. C.M. Heesch (Ohio State University)
- Increased NO biosynthesis during pregnancy: implications for circulatory changes. K.P. Conrad (University of New Mexico)
- Alterations in resistance artery function during pregnancy. M.K. McLaughlin (Magee's Women's Hospital, Pittsburgh)
- Summary and conclusions. S. Jacobs-Kaufman (University of Alberta)

Molecular Processes Theme

Molecular Advances in the Study of Hibernation

Sponsor: APS Comparative Physiology Section
Chairs: H.V. Carey and G.L. Florant

- Liver gene expression in hibernators. S.L. Martin (University of Colorado)
- Molecular studies of lipid metabolism in marmots. G.L. Florant (Temple University)
- Cellular and molecular aspects of brown fat metabolism in hibernators. J. Nedergaard (Stockholm University, Sweden)
- Early gene expression in the CNS across the hibernation cycle. T.S. Kilduff (Stanford University)
- Intestinal gene expression in hibernators. H.V. Carey (University of Wisconsin)

Epithelial Cell Biology Theme

Epithelia as Components of the Common Mucosal Immune System

Sponsor: APS Gastrointestinal Section
Supported by: Clintec Technologies, Inc.
Chairs: G.A. Castro and H. Cooke

Antigen presentation by epithelial cells. L.F. Mayer (Mt. Sinai Medical Center, New York City)
Antigen delivery and the development of mucosal immunity and immunological tolerance. C. Elson (University of Alabama, Birmingham)
Current views on secretory immunoglobulins relative to mucosal immunity. M. Lamm (Case Western Reserve University)
Enteric nerves in the adaptive response to antigenic challenge. J. Wood (Ohio State University)
Transduction of antigenic signals by enteric nerves into altered epithelial functions. H. Cooke (Ohio State University)
Neutrophil-epithelial cell interactions. J. Madara (Harvard Medical School)
Cytokine-mediated responses in airway epithelium. J. Gauldie (McMaster University, Hamilton, Ontario)
The common mucosal immune system: gut reproductive tract axis. C. Wira (Dartmouth Medical School)
Driving forces and future directions: transgenic plants, "edible" vaccines and mucosal immunity. C. Arntzen (Texas A&M University, Houston)

Molecular Processes Theme

Multiple Signaling Pathways in Steroid/Thyroid Hormone Action

Sponsor: APS Endocrinology & Metabolism Section
Chairs: W.W. Chin and N.L. Weigel

Glucocorticoid receptor phosphorylation and cycling. A. Munck (Dartmouth Medical School)
Phosphorylation regulates progesterone receptor function. N.L. Weigel (Baylor College of Medicine)
Control of thyroid hormone receptor function by phosphorylation. W.W. Chin (Harvard Medical School and HHMI)
Phosphorylation of the vitamin D receptor: modulation of DNA binding and transcriptional activation. M.R. Haussler (University of Arizona College of Medicine)
Multiple signalling pathways in hormonal regulation of the estrogen receptor. B.S. Katzenellenbogen (University of Illinois)

Cardiovascular Biology Theme

Mechanisms of Contractile Dysfunction of the Hypertrophied Adult Cardiocyte

Sponsor: APS Cardiovascular Section
Chairs: G. Cooper IV and J.S. Ingwall

Energetic basis for cardiocyte contractile dysfunction. J.S. Ingwall (Harvard University)
Altered calcium metabolism of the hypertrophied cardiocyte. J.K. Gwathmey (Harvard University)
The striated muscle cell cytoskeleton. J.C. Bulinski (Columbia University)
Cytoskeletal changes in the hypertrophied cardiocyte. G. Cooper IV (Medical University of South Carolina)
Stiffness and viscosity of the hypertrophied cardiocyte. M.R. Zile (Medical University of South Carolina)

Epithelial Cell Biology Theme

Epithelial Cl⁻ Channels

Sponsors: APS Epithelial Transport Group, Cell & General and Renal Sections
Chair: J. Cuppoletti

Properties of the expressed Cystic fibrosis transmembrane regulator (CFTR). J.J. Wine (Stanford University)
CFTR. J.W. Hanrahan (McGill University)
Molecular biology of cAMP-dependent Cl⁻ channels in heart. B. Horowitz (University of Nevada, Reno)
CFTR and other airway Cl⁻ channels. S.E. Gabriel (University of North Carolina)
H⁺ and voltage activated Cl⁻ channels. J. Cuppoletti (University of Cincinnati)
CFTR. M.J. Welsh (Howard Hughes Medical Institute, University of Iowa)

Neurobiology Theme

Spinal Mechanisms of Autonomic Regulation

Sponsor: APS Neural Control & Autonomic Regulation Section
Chair: F.J. Gordon

Amino acid, monoamine- and neuropeptide-containing synaptic inputs to sympathetic preganglionic neurons. I.J. Llewellyn-Smith (Flinders University, Australia)

APS Business Meeting

Tuesday, April 26, 5:15 pm

Marriott, Grand Ballroom Salon F

Role of spinal NMDA receptors in the regulation of sympathetic nerve activity and control of arterial pressure. F.J. Gordon (Emory University)

Determinants of tonic and reflex sympathetic activity after spinal cord transection and their relationship to spinal afferents. L.P. Schramm (Johns Hopkins University)

Reactions of preganglionic neurons to spinal cord injury: cellular mechanisms responsible for dysreflexia. L.C. Weaver (Robarts Research Institute, London, Ontario)

Physiological Functions of Atrial Natriuretic Factor Prohormone Peptides

Sponsor: APS Water & Electrolyte Homeostasis Section
Chairs: J.R. Dietz and D. Villarreal

Overview of ANF prohormone peptides. D.L. Vesely (University of South Florida and James A. Haley Veterans Hospital, Tampa)

Renal tubular actions of ANF prohormone peptides. M.L. Zeidel (University of Pittsburgh)

Secretion and renal effects of ANF prohormone peptides. J.R. Dietz (University of South Florida)

Effects of ANF prohormone peptides in conscious primates. B.A. Benjamin (Duke University)

ANF prohormone peptides in experimental heart failure. D. Villarreal (University of Missouri)

Cardiovascular Biology Theme

Physiology and Pathobiology of Postcapillary Venules

Sponsor: APS Cardiovascular Section
Chair: H. Granger

Ultrastructure of postcapillary venules. R. Wagner (University of Delaware)

Intracellular signalling mechanisms and venular hyperpermeability. H. Granger (Texas A&M University Health Sciences Center)

Dynamics of endothelial cell-matrix interaction. P. Davies (University of Chicago)

Molecular control of coronary angiogenesis. J. Hawker (Baylor College of Medicine)

Leukocyte-venular wall interactions. N. Granger (LSU Medical Center, Shreveport)

Adhesion of tumor cells to microvascular endothelium. B. Paull (Cornell University)

Cell Injury Theme

Pathophysiological Role of Endothelin in Renal/Cardiovascular Disease

Sponsors: APS Renal and Water & Electrolyte Homeostasis Sections
Chairs: J.P. Granger & T.J. Opgenorth

Endothelins: biosynthesis, receptors, and mechanisms of action. T.J. Opgenorth (Abbott Laboratories)

Renal actions of endothelin. D.M. Pollock (Abbott Laboratories)

Renal and cardiovascular function during long-term elevation in circulating endothelin levels. J.P. Granger (University of Mississippi Medical Center)

Role of endothelin in renal disease. J.A. Keiser (Parke-Davis Pharmaceuticals)

Role of endothelin in cardiovascular disease. J.C. Burnett Jr. (Mayo Clinic)

Adaptive Responses of Muscle to Microgravity: From Terrestrial Models to Spaceflight Experiments

Sponsors: APS MyoBio Group and Environmental & Exercise Physiology Section
Chair: E.J. Henriksen

Historical perspectives and overview of space biology. M.E. Tischler (University of Arizona)

Regulation of skeletal muscle protein metabolism during non-weight-bearing. F.W. Booth (University of Texas Medical School, Houston)

Mechanical and enzymatic responses of skeletal muscle to chronic unloading. R.R. Roy (UCLA)

Gene expression of excitation-contraction coupling components during biomechanical unloading. S.C. Kandarian (Boston University)

Regulation of skeletal muscle carbohydrate metabolism during non-weight-bearing. E.J. Henriksen (University of Arizona)

Future directions: mechanisms and countermeasures. K.M. Baldwin (University of California, Irvine)

Respiratory Biology Theme

Multiple Physiological and Biochemical Roles of Carbonic Anhydrase

Sponsor: APS Comparative Physiology Section
Chairs: R.P. Henry and T.A. Heming

Multiple physiological and biochemical functions of carbonic anhydrase: an overview. R.P. Henry (Auburn University)

The evolution and comparative function of carbonic anhydrase in vertebrate respiratory epithelia. T.A. Heming (University of Texas Medical Branch, Galveston)

Carbonic anhydrase and CO₂ transport in symbiotic associations. R.E. Kochevar (Monterey Bay Aquarium Research Institute, Monterey, CA)

Carbonic anhydrase as an enzyme of intermediary metabolism: bicarbonate supply for ureagenesis and gluconeogenesis. P.J. Walsh (Rosenstiel School of Marine & Atmospheric Sciences, University of Miami)

Comparative function of carbonic anhydrase in calcified skeletal structures. C.V. Gay (Pennsylvania State University)

Subcellular localization and physiological roles of skeletal muscle carbonic anhydrase. G. Gros (Hannover University, Germany)

Comparative Adaptations to Environmental Hypoxia: New Perspectives on Accommodations and Compensations

Sponsors: APS Hypoxia Group, Comparative and Respiration Sections

Chairs: J.W. Hicks and P. Lutz

Habitat, behavioral and physiological interactions affecting tuna metabolic capacity. J.B. Graham (Scripps Institute of Oceanography, UCSD)

Towards the ends of the spectrum: adaptations to the extremes of oxygen regimes in the intertidal environment. C.R. Bridges (Heinrich-Heine University Düsseldorf, Germany)

Behavioral hypothermia in response to hypoxia: from protozoans to mammals. S.C. Wood (Lovelace Medical Foundation)

Biochemical mechanisms of metabolic arrest in response to limiting oxygen availability. K.B. Storey (Carleton University, Ottawa)

Maintenance of cardiac function during anoxia: from cell to organism. J. Wasser (Texas A&M University, College Station)

Hypoxia tolerance mechanisms in the brain: lessons from mammalian neonates, carps and turtles. P. Lutz (Florida Atlantic University)

Metabolic Processes Theme

Adipocytes and Adiposity: Regulation by Hormones and Cytokines

Sponsor: APS Endocrinology & Metabolism Section

Chairs: C. Hofmann and J. Schwartz

Regulation of the insulin-responsive glucose transporter gene in 3T3-L1 adipocytes. M.D. Lane (Johns Hopkins University)

3T3-F442A preadipocytes and Adipocytes: model systems for studying signal transduction and cellular actions of growth hormone. J. Schwartz (University of Michigan)

Adipose expression of TNF- α : mediator of insulin resistance. B. Spiegelman (Dana Farber Cancer Institute and Harvard)

Regulation of adipocyte gene expression by TNF- α . P. Pekala (East Carolina University)

Hormonal regulation of regional adipocyte metabolism. S.K. Fried (Rutgers University)

Etiology and pathogenesis of obesity in Pima Indians. C. Bogardus (NIDDK, NIH)

Epithelial Cell Biology Theme

Workshop: Strategies for Developing Differentiated Epithelial Cell Lines

Sponsors: APS Epithelial Transport Group and Renal Section

Chairs: U. Hopfer and J.W. Jacobberger

Molecular genetic approaches towards senescence and immortalization. P.S. Jat (Ludwig Institute of Cancer Research, London)

Airway epithelial cell transformation: maintenance of differentiated function. D.C. Gruenert (UCSF)

Phenotypic effects of SV40 T antigen expression. J.W. Jacobberger (Case Western Reserve University)

Immortalization of human cervical cells: effects on cell differentiation. R.L. Eckert (Case Western Reserve University)

Immortalization of lung epithelial cells through transgenic mice. J.A. Whitsett (University of Cincinnati)

Cytoskeletal Regulation of Membrane Transport Events

Sponsor: APS Cell & General Physiology Section

Chairs: L. Mandel and J.W. Mills

Introduction: the cytoskeleton as a potential regulator of membrane transport events. J.W. Mills (Clarkson University)

The cytoskeleton and exocytosis in the kidney. R. Hays (Albert Einstein College of Medicine)

Role of actin in regulation of swelling-activated chloride channels in cultured renal cells. B. Stanton (Dartmouth Medical School)

Cytoskeletal regulation of membrane transport processes involved in cell volume control. E. Hoffmann (August Krogh Institute, Copenhagen, Denmark)

Role of cortical cytoskeleton in regulation of stretch-activated ion channels. F. Sachs (SUNY at Buffalo)

Cytoskeletal influences in ion transport in intestinal epithelia. J. Madara (Brigham & Women's Hospital)

Summary and conclusion. L. Mandel (Duke University Medical School)

Annual Teaching Section Dinner

Arthur C. Guyton Teacher of the Year Award

The annual dinner of the Teaching Section will feature the second annual Arthur C. Guyton Teacher of the Year Award, sponsored by the W.B. Saunders Company. In addition, Michael Johnson of the West Virginia Medical School will give us his insights on "Teaching Physiology to Nonscience Majors." Plan to attend this informal gathering and mix with your colleagues.

The dinner is Tuesday, April 26 at 7:00 pm at the Anaheim Marriott. The buffet dinner will include dips, spread, fajitas, pasta, and turkey breast. For tickets, send a check (made out to APS Teaching Section) for \$30 to Allen Rovick, Department of Physiology, Rush Medical College, 1750 W. Harrison Street, Chicago, IL 60612.

Neurobiology Theme

Molecular Basis of Fever and Related Host Responses

Sponsors: APS Environmental & Exercise and Comparative Sections

Chair: M.J. Kluger

Role of cytokines, peptides, and glucocorticoids in fever. M.J. Kluger (University of Michigan)

The role of central cytokines and their receptors in the development of sickness. K. Kelley (University of Illinois)

Entry of pyrogens into the brain. J. Stitt (J.B. Pierce Foundation Laboratory)

Cytokines, lipocortins and CRF in fever. N. Rothwell (University of Manchester, UK)

Arginine vasopressin as an endogenous antipyretic. Q. Pittman (University of Calgary)

α -MSH: endogenous anti-cytokine peptide in inflammation and fever. J. Lipton (UT Southwestern Medical School, Dallas)

Molecular Communication and Structural Biology Theme

Molecular Physiology of Major Sodium Transporters

Sponsors: APS Epithelial Transport Group, Cell & General Physiology and Renal Sections

Chair: J.H. Kaplan

Na,KCl₂ cotransporter and secretion. B. Forbush III (Yale University)

Na/Ca exchanger. K.D. Phillipson (UCLA)

Na-dependent neurotransmitter transport. S. Amara (VIABR, Portland)

Na-dependent glucose cotransporter. E.M. Wright (UCLA)

Na pump structure and function. J.H. Kaplan (University of Pennsylvania)

Workshop: Transgenic Animals in Physiological Research

Sponsor: APS Education Committee

Chairs: C.D. Sigmund and L.E. Olson

Introduction to transgenic and embryonic stem cell technology. C.D. Sigmund (University of Iowa)

Molecular physiology of transgenic mice—past, present and future. K.R. Chien (UCSD)

Alterations in cardiac development in transgenic mice. L.J. Field (Indiana University)

Cystic fibrosis in mice containing a cystic fibrosis transmembrane regulator (CFTR) gene deletion. B.H. Koller (University of North Carolina)

Epithelial Cell Biology

Cell Volume Signaling and Regulation in Vertebrate Cells

Sponsor: APS Cell & General Physiology Section

Chair: N.K. Wills and R.G. O'Neil

Phosphorylation-dependent control of ion transport and cell volume in *Amphiuma* red blood cells. P.M. Cala (University of California, Davis)

cAMP-dependent regulation of cell volume in heart cells. M. Lieberman (Duke University Medical Center)

Volume-sensitive calcium channels control calcium signaling and cell volume regulation in renal tubule cells. R.G. O'Neil (University of Texas Medical School, Houston)

Volume-sensitive regulation of sodium channels in epithelial A6 cells. N.K. Wills (University of Texas Medical Branch, Galveston)

Volume-sensitive gating of mechanosensitive ion channels in *Xenopus* oocyte. O.P. Hamill (University of Texas Medical Branch, Galveston)

Regulation of a shrinking-induced cation channel during cell volume regulation in tracheal epithelial cells. D.J. Nelson (University of Chicago)

Structural-functional properties of swelling-activated chloride channels in epithelial cells. T.J. Jentsch (Hamburg University, Germany)

Workshop: Magnetic Resonance Techniques for In Vivo Physiology

Sponsor: APS Cardiovascular Section

Chair: N.J. Pelc

Contribution of NMR spectroscopy to in vivo physiology. R.S. Balaban (NIH)

In vivo histology. G.A. Johnson (Duke University)

MR imaging of flow and motion. N.J. Pelc (Stanford University)

MR imaging of cerebral hemodynamics. B.R. Rosen (Massachusetts General Hospital)

Cell Injury Theme

Molecular and Cellular Mechanisms of Endothelin in the Kidney

Sponsors: APS Renal and Water & Electrolyte Homeostasis Sections and Liaison with Industry Committee

Supported by: SmithKline Beecham Pharmaceuticals

Chairs: R.F. Highsmith and D.M. Pollock

Historical perspectives. R.F. Highsmith (University of Cincinnati)

Endothelin and ion regulation in vascular smooth muscle. R.F. Highsmith (University of Cincinnati)

Regulation of endothelin-1 expression in the kidney. P.A. Marsden (University of Toronto)
Tubular actions of endothelin. E.P. Nord (SUNY at Stony Brook)
Endothelin in the renal microcirculation. R.M. Edwards (SmithKline Beecham)

Neurobiology Theme

Brain Aging

Sponsor: APS Central Nervous System Section
Chairs: R.J. Reiter and C.E. Finch

Mechanisms of free radical damage in the nervous system. B. Halliwell (University of California, Davis)
Free radical theory of aging: a hypothesis on the pathogenesis of Alzheimer's disease. D. Harman (University of Nebraska)
The pineal hormone melatonin as an antioxidant. R.J. Reiter (University of Texas Health Sciences Center, San Antonio)
Inflammatory mechanisms in brain aging. C.E. Finch (University of Southern California)
Probable role of neural/endocrine functions in the antiaging action of dietary restriction. E.J. Masoro (University of Texas Health Sciences Center, San Antonio)
Effects of aging on neural rhythmicity. P.M. Wise (University of Kentucky)

Role of Natriuretic Peptides in Cardiorenal Regulation

Sponsor: APS Liaison with Industry Committee
Chair: A.A. Seymour

Historical perspective of cardiorenal integration. J.P. Henry (Drew Medical School, Los Angeles)
Molecular biology and biochemistry of natriuretic peptides and their receptors. K. Nakao (Kyoto University, Japan)

Role of natriuretic peptides in volume homeostasis. T.E. Lohmeier (University of Mississippi)
Natriuretic peptides in cardiovascular disorders. R.J. Cody (Ohio State University)
Potentiation of natriuretic peptides by neutral endopeptidase inhibitors. A.A. Seymour (Bristol-Myers Squibb Pharmaceutical Research Institute)

Respiratory Biology Theme

Biology of Alveolar Epithelial Fluid and Solute Transport

Sponsor: APS Respiration Section
Chairs: J.I. Sznajder and E. Crandall

Structure and function of the epithelial Na⁺ channels. B. Rossier (University of Lausanne, Switzerland)
The characterization of Na⁺ channels in the alveolar epithelium. S. Matalon (University of Alabama)
The role of Na⁺-K⁺-ATPase in edema clearance during lung injury. J.I. Sznajder (Michael Reese Hospital, University of Illinois)
Hydrogen ion transport in the alveolar epithelium. R. Lubman (University of Southern California)
The mechanisms of alveolar epithelial fluid transport in vivo. M. Matthay (UCSF)
Structure and function of the Na⁺-K⁺-ATPase. J. Lingrell (University of Cincinnati)

Epithelial Cell Biology Theme

Cytokines in Epithelial Cell Biology

Sponsor: APS Gastrointestinal Section
Chairs: A. Stadnyk and F. Shanahan

Introductory remarks: the epithelial cell comes of age. A. Stadnyk (Dalhousie University)

Second Annual Women in Physiology Mentoring Program and Reception

Anaheim Marriott Hotel, Sunday, April 24, 1994, 5:00 pm

Featuring
Bodil Schmidt-Nielson
48th President, American Physiological Society

"Perspectives on Women in Physiology: Past Achievement and Future Opportunities"

To be followed by information and a brief update on the APS Women's Mentoring Program

Selective cytokine production by bladder epithelial cells following infection. S. Hedges (Lund University, Sweden)
 Reversible effect of TNF on epithelial barrier permeability. J. Mullin (Lankenau Medical Research Center, Wynnewood, PA)
 Cytokines and eosinophil/epithelial cell interaction in the lung. J. Elias (Yale School of Medicine)
 An immune suppressive factor derived from esophageal squamous carcinoma. G. O'Sullivan (University College, Cork, Ireland)
 Regulation of epithelial keratinocyte and breast epithelial cell function by IL-6 and IGF-1. J. Krucger (Rockefeller University)
 The IL-1/IL-1ra balance in the intestine during inflammation. B. Sartor (University of North Carolina)
 Modulation of colonic epithelial cell function by cytokines. F. Shanahan (Cork Regional Hospital, Cork, Ireland)

Molecular Processes Theme

The Importance of Lavoisier's Work for Physiology and Nutritional Science

Sponsors: APS History of Physiology Group and American Institute of Nutrition

Chairs: J.B. West and K.J. Carpenter

Life of Lavoisier, a scholar of the scientific enlightenment. P. Dejours (CNRS, Strasbourg, France)
 Concepts of respiration and combustion before Lavoisier's time. R.G. Frank, Jr. (UCLA)
 Lavoisier's work on combustion and the discrediting of the phlogiston theory. D.L. Gilbert (NIH)
 Lavoisier's work on respiratory exchange and calorimetry. R.H. Kellogg (UCSF)
 Lavoisier's last years of public service and the background to his condemnation. R. Hahn (University of California, Berkeley)
 Lavoisier's legacy as the foundation for a science of nutrition. A.E. Harper (Seattle)

Cardiovascular Biology Theme

BMES Symposium: Leukocyte-Microvascular Interactions in Cerebral Ischemia

Sponsor: Biomedical Engineering Society

Chairs: G.J. del Zoppo and G.W. Schmid-Schoenbein

Oxygen radicals in cerebral microvascular response to ischemia and reperfusion. H. Kontos (Medical College of Virginia)
 Involvement of cytokines in leukocyte activation during cerebral ischemia and reperfusion. R. Tuma (Temple University)
 Periovascular macrophage signalling of endothelium via cytokines on cerebral microvascular injury. J. Hallenbeck (NIH)
 Interaction of leukocytes, platelets, and endothelium in cerebral blood vessels. D. Heistad (University of Iowa)
 PMN leukocyte/microvascular endothelial interactions in focal cerebral ischemia/reperfusion. G.J. del Zoppo (Scripps Research Institute)

Society Mixer

The APS Mixer (cash bar) will be held in the Marriott, Grand Ballroom Salon E, on Sunday, April 24, beginning at 9:00 pm. Come and enjoy the delicious desserts and dance the evening away.

Relationship of microvascular and parenchyme events under normal and ischemic conditions. J.H. Garcia (Henry Ford Hospital)
 The activated leukocyte in microvascular injury. G.W. Schmid-Schoenbein (UCSD)

BMES Symposium: Indicator Dilution Theory: In Vivo Cell Biology

Sponsor: Biomedical Engineering Society

Chairs: J.H. Linehan and J.B. Bassingthwaite

The uptake and processing of materials by the liver. C.A. Goresky (McGill University)
 Role of cytoplasmic binding proteins in intracellular transport of amphipathic ligands: indicator dilution and FRAP studies. R.A. Weisiger (UCSF)
 Tracer kinetic analysis of endothelial transport in the living human brain by positron emission tomography. A. Gjedde (McGill University)
 Kinetics of pulmonary endothelial metabolism: indicator dilution studies. J.H. Linehan (Marquette University)
 Revealing the kinetics of intraendothelial purine metabolism using high resolution tracer studies and integrated systems analysis. J.B. Bassingthwaite (University of Washington)

Cardiovascular Biology Theme

NASB Symposium: Mechanical Stresses and Cell Function

Sponsor: North American Society for Biorheology

Chair: J.A. Frangos

Mechanochemical transduction across extracellular matrix and through the cytoskeleton. D. Ingber (Children's Hospital, Harvard Medical School, and Brigham & Women's Hospital)
 Mechanical strain and cell function. L. Thibault (University of Pennsylvania)
 Hemodynamic forces in relation to mechanosensitive ion channels in endothelial cells. P.F. Davies (University of Chicago)
 G-protein-mediation of mechanochemical signal. J.A. Frangos (Pennsylvania State University)
 Fluid stress effects on suspended cells. L.V. McIntire (Rice University)

Flow effects on endothelial cell growth program. B. Berk (Emory University)
 Gene regulation by mechanical stimulation of cardiac myocytes. S. Izumo (Beth Israel Hospital, Harvard Medical School)
 Pressure effects on endothelial cell growth. R. Bizios (Rennselaer Polytech University)

Molecular Communication and Structural Biology Theme

SEBM Symposium: Signal Transduction and the Regulation of Hematopoietic Cell Growth

Sponsor: Society for Experimental Biology and Medicine
 Chairs: J.A. Adamson and E.R. Jaffé

The LIF/OSM/CNTF receptor complex. D. Gearing (Immunex)
 The IL-3 and GM-CSF receptors: structure, function, and expression. A. Miyajima (DNAX Research Institute)
 JAK kinases and signal transduction by cytokine receptors. J.N. Ihle (St. Jude Children's Research Hospital)
 Biological and molecular consequences of signaling through the Kit receptor. A. Bernstein (University of Toronto)
 Signaling mechanisms in the TNF cytokine family: apoptosis, cytotoxicity and proliferation. C. Smith (Immunex)
 Retinoid receptors and their role in acute promyelocytic leukemia. J. Dyck (The Salk Institute)

Growth and Development Theme

BMES Symposium: Biophysical Regulation of Metabolism, Growth, and Remodeling in Musculoskeletal Tissues

Sponsor: Biomedical Engineering Society
 Chairs: R.L. Sah and K.G. Vogel

Physical effects on intervertebral disc metabolism. J.P.G. Urban (Oxford University)
 Differential effects of static and dynamic compression on cartilage explants and chondrocyte/agarose cultures. A.J. Grodzinsky (MIT)
 Alterations in chondrocyte/matrix structure and biosynthesis in adult articular cartilage under compression. M. Wong (M.E. Mueller Institute for Biomechanics)

Chondrocyte response to mechanical compression. F. Guilak (SUNY at Stony Brook)
 The development of cartilage in tendon. K.G. Vogel (University of New Mexico)
 Effect of mechanical forces on bone formation. S.A. Goldstein (University of Michigan)

Workshop: Prerogatives and Commitments Pertaining to Foreign Nationals—The U.S. Institutions and Individual Sponsors

Sponsor: APS International Physiology Committee
 Chair: C. Blatteis

Presentation of the topic and introduction of panel members. C.M. Blatteis (University of Tennessee)
 The McCarran-Walker Act of 1952, as amended by the Immigration Act of 1990. C. Rogers (USINS, Los Angeles District)
 The prerogatives and commitments of U.S. institutions and individual sponsors pertaining to foreign trainees. R.A. Palazzolo (University of Tennessee)
 Immigration law issues from the perspective of a foreign trainee. C. Najib (California State University, Long Beach)

Career Opportunities in Physiology

Sponsor: APS Career Opportunities Committee
 Chair: J.P. Granger

Career opportunities in a medical school basic sciences department. A. Haramati (Georgetown University)
 Career opportunities in a college biological sciences department. W. Jackson (Western Michigan University)
 Career opportunities in the pharmaceutical industry. J. Keiser (Parke Davis)
 Career opportunities in a clinical department. D. Dzielak (University of Mississippi Medical Center)
 Career opportunities in a government laboratory. C. Wade (NASA-Ames Research Center)

1995 APS Conferences

Understanding the Biological Clock: From Genetics to Physiology
 Organized by Jay C. Dunlap and Jennifer J. Loros (Dartmouth)

New Discoveries Within the Pancreatic Polypeptide Family: Molecules to Medicine
 Organized by William Zipf (Children's Hospital, Columbus), Ian Taylor (Duke), Claes R. Wahlestedt (Cornell), Richard Rogers (Ohio State), and Helen J. Cooke (Ohio State)

Experimental Biology '94 Anaheim, CA April 24–28, 1994

Sections Special Functions

Cardiovascular

Steering Committee
Tuesday, April 26, Noon
Marriott, Grand Ballroom Salon B

Dinner
Tuesday, April 26, 6:30 pm
Hilton, Capistrano A/B

Cell and General Physiology

Steering Committee
Monday, April 25, Noon
Marriott, Newport Beach Room

Dinner
Tuesday, April 26, 6:30 pm
The Catch Restaurant

Central Nervous System

Reception
Monday, April 25, 6:00 pm
Marriott, Grand Ballroom Salon D

Comparative Physiology

Steering Committee
Tuesday, April 26, 7:30 am
Marriott, Rancho Las Palmas Room

Social, Scholander Award,
Business Meeting
Monday, April 25, 5:30 pm
Hilton, El Capitan B

Endocrinology and Metabolism

Steering Committee
Monday, April 25, 11:00 am
Marriott, Grand Ballroom Salon C

Business Meeting
Tuesday, April 26, 6:30 pm
Marriott, Orange County Ballroom
Salon 3/4

Social

Tuesday, April 26, 7:30 pm
Marriott, Orange County Ballroom
Salon 5

Environmental and Exercise Physiology

Steering Committee
Monday, April 25, 4:00 pm
Marriott, Grand Ballroom Salon B

Meeting, Dinner
Tuesday, April 26, 6:30 pm
Convention Center, Room A6

Epithelial Transport

Lecture
Monday, April 25, 6:30 pm
Marriott, Orange County Ballroom
Salon 5

Gastrointestinal

Steering Committee
Monday, April 25, 7:30 am
Marriott, Grand Ballroom Salon A

Dinner, Research Prize, Lecture
Tuesday, April 26, 6:30 pm
Marriott, Grand Ballroom Salon G/H

History of Physiology

Luncheon
Wednesday, April 27, Noon
Hilton, El Capitan A

Neural Control and Autonomic Regulation

Social
Tuesday, April 26, 5:30 pm
Marriott, Grand Ballroom Salon C

Renal Physiology

Steering Committee
Tuesday, April 26, 7:30 am
Marriott, Grand Ballroom Salon D

Dinner
Wednesday, April 27, 7:00 pm
The Catch Restaurant

Respiration

Steering Committee
Wednesday, April 27, 7:30 am
Marriott, Grand Ballroom Salon A

Dinner
Wednesday, April 27, 6:00 pm
Hyatt Regency Alicante

Teaching of Physiology

Steering Committee
Monday, April 25, 7:30 am
Marriott, San Diego Room

Dinner
Tuesday, April 26, 7:00 pm
Marriott, Grand Ballroom Salon J

Business Meeting
Wednesday, April 27, 6:15 pm
Marriott, Grand Ballroom Salon G/H

Water and Electrolyte Homeostasis

Steering Committee
Monday, April 25, 7:30 am
Marriott, Grand Ballroom Salon D

Luncheon, Meeting
Tuesday, April 26, 11:30 am
The White House Restaurant

Experimental Biology '94 Anaheim, CA April 24–28, 1994

Committee Meetings

Animal Care and Experimentation

Monday, April 25, 7:30 am
Marriott, Grand Ballroom Salon C

Committee on Committees

Sunday, April 24, Noon
Marriott, Grand Ballroom Salon H

Education

Tuesday, April 26, Noon
Marriott, Grand Ballroom Salon C

International Physiology

Monday, April 25, 7:30 am
Marriott, Grand Ballroom Salon B

Liaison With Industry

Tuesday, April 26, 7:30 am
Marriott, Grand Ballroom Salon C

Long Range Planning

Tuesday, April 26, 7:30 am
Marriott, Grand Ballroom Salon B

Membership

Sunday, April 24, 2:00 pm
Marriott, Grand Ballroom Salon G

Porter Physiology Development

Monday, April 25, Noon
Marriott, Grand Ballroom Salon A

Program

Tuesday, April 26, Noon
Marriott, Grand Ballroom Salon A

Program Advisory

Sunday, April 24, 12:30 pm
Marriott, Grand Ballroom Salon B/C/D

Program Advisory

Wednesday, April 27, Noon
Marriott, Grand Ballroom Salon B/C/D

Public Affairs

Monday, April 25, 4:00 pm
Marriott, Grand Ballroom Salon C

Section Advisory

Sunday, April 24, Noon
Marriott, Grand Ballroom Salon K

Women in Physiology

Wednesday, April 27, 7:30 am
Marriott, Desert Springs Room

Publications Special Functions

Journal Editorial Boards

Sunday, April 24, 4:00 pm
Marriott, Orange County Ballroom
Salon 1/2

Journal Editorial Boards Breakout

Sunday, April 24, 4:45 pm
Marriott, Orange County Ballroom
Salons 1/2, 3/4, 5

Advances in Physiology Education

Editor and Associate Editors
Wednesday, April 27, Noon
Marriott, Desert Springs Room

AJP: Cell Physiology

Editor and Associate Editors
Tuesday, April 26, 7:30 am
Marriott, Desert Springs Room

AJP: Endocrinology and Metabolism

Editor and Associate Editors
Monday, April 25, Noon
Marriott, Grand Ballroom Salon B

AJP: Gastrointestinal and Liver Physiology

Editor and Associate Editors
Tuesday, April 26, 7:30 am
Marriott, Los Angeles Room

AJP: Heart and Circulatory Physiology

Editor and Associate Editors
Monday, April 25, 7:30 am
Marriott, Newport Beach Room

AJP: Lung Cellular and Molecular Physiology

Editor and Associate Editors
Tuesday, April 26, Noon
Marriott, Grand Ballroom Salon D

AJP: Regulatory, Integrative and Comparative Physiology

Editor and Associate Editors
Tuesday, April 26, 7:30 am
Marriott, Grand Ballroom Salon A

AJP: Renal, Fluid and Electrolyte Physiology

Editor and Associate Editors
Wednesday, April 27, 7:30 am
Marriott, San Diego Room

Journal of Applied Physiology

Editor and Associate Editors
Sunday, April 24, Noon
Marriott, Grand Ballroom Salon A

Clinical Physiology Series Book Committee

Editor and Associate Editors
Monday, April 25, 7:30 am
Marriott, Desert Springs Room

Handbooks Committee

Wednesday, April 27, Noon
Marriott, Los Angeles Room

History of Physiology Book Committee

Monday, April 25, Noon
Marriott, San Diego Room

Technical Series Book Committee

Wednesday, April 27, 7:30 am
Marriott, Los Angeles Room

APStracts - Abstracts on-line

American Journal of Physiology: Cell Physiology
a pilot program by the American Physiological Society

APStracts Information Sheet

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APS Conference

Physiology of the Release and Activity of Cytokines

June 25–28, 1994
Yale University, New Haven CT

| Saturday, June 25 | Sunday, June 26 | Monday, June 27 | Tuesday, June 28 |
|--|---|--|---|
| Noon–6:00 pm Alpha Room, Holiday Inn Hotel Registration | 7:30–8:30 am Commons Dining Hall Breakfast | 7:30–8:30 am Commons Dining Hall Breakfast | 7:30–8:30 am Commons Dining Hall Breakfast |
| 6:30–8:30 pm Mezzanine, Sterling Hall of Medicine Registration | 8:30 am–Noon Harkness Auditorium <i>Symposium: Cytokines and Homeostatic Mechanisms</i> Chair: Joseph G. Cannon | 8:30 am–Noon Harkness Auditorium <i>Symposium: Cytokines in Stress, Trauma and Disease</i> Chair: Alan J. Lewis | 8:30 am–Noon Harkness Auditorium <i>Symposium: Cytokine Networks in the Body</i> Chair: Matthew J. Kluger |
| 6:30–8:30 pm Sterling Hall of Medicine Welcoming Remarks and Buffet Dinner | 12:30–1:30 pm Sterling Hall of Medicine Lunch | 12:30–1:30 pm Sterling Hall of Medicine Lunch | 12:30–1:30 pm Sterling Hall of Medicine Lunch |
| 8:30–9:30 pm Harkness Auditorium <i>Plenary Lecture: The Ubiquity and Diversity of Cytokines in the Body</i> Chair: John T. Stitt Speaker: C. A. Dinarello | 1:30–5:00 pm Harkness Auditorium <i>Symposium: Mechanisms of Cytokine Regulation</i> Chair: Gordon W. Duff | 1:30–3:30 pm Harkness Auditorium Poster presentations at Harkness Hall followed by panel discussion | 1:30–5:00 pm Harkness Auditorium <i>Symposium: Inhibitors of the Actions of Cytokines</i> Chair: Ivan G. Otteerness |
| | 5:30–7:00 pm Commons Dining Hall Dinner | 3:30–5:30 pm Harkness Auditorium <i>Workshop: Measurement of Cytokines in Tissues and Fluids</i> Chair: Joe Cannon | 6:00–10:00 pm Sterling Hall of Medicine Barbeque Dinner |
| | 7:30–9:30 pm Sterling Hall of Medicine Poster presentations | 7:00–10:00 pm Sterling Hall of Medicine Conference Banquet | |

Abstract Deadline: February 28, 1994

APS Conference

Mechanotransduction and the Regulation of Growth and Differentiation

October 5–8, 1994
Sarasota, Florida

| Wednesday, October 5 | Thursday, October 6 | Friday, October 7 | Saturday, October 8 |
|---|--|---|---|
| <i>Evening Lecture:</i> Historical Perspective Regarding Studies into Mechanotransduction A. James Hudspeth (U Texas Med. School) | <i>Morning Symposium:</i> Musculoskeletal Responses to Mechanical Stimuli Herman Vandeburgh (Brown U) | <i>Morning Symposium:</i> Cardiovascular Adaptations to Mechanical Stimuli I Peter F. Davies (U Chicago) | <i>Morning Symposium:</i> Mechanisms of Mechan- ochemical Signal Transduction Fred Sachs (SUNY, Buff- alo) and Peter A. Watson (Weis Ctr Res/Geisinger Clin) |
| | <i>Evening Symposium:</i> Pulmonary Responses to Mechanical Stimuli D. Eugene Rannels (Penn State) | <i>Evening Symposium:</i> Cardiovascular Adaptations to Mechanical Stimuli II Howard E. Morgan (Weis Ctr Res/Geisinger Clin) | <i>Afternoon Symposium:</i> Regulation of Cell Shape and Function by the Extracellular Matrix Martin A. Schwartz (Scripps Res Inst) |
| | | | <i>Evening Lecture:</i> Complex Mechanochemical Signal Transduction Involved in the Regulation of Development David R. McClay (Duke U.) |

Abstract Deadline: June 10, 1994

APS Intersociety Meeting

Regulation, Integration, Adaptation:

October 30–November 2, 1994

| Sunday, October 30 AM | Sunday, October 30 PM | Monday, October 31 AM | Monday, October 31 PM |
|--|--|--|--|
| 8:15–9:15 am <i>Plenary Lecture</i> J. Diamond | 1:00–3:00 pm <i>Poster Defending and Exhibit Viewing</i> | 8:15–9:15 am <i>Plenary Lecture</i> B. Block | 1:00–3:00 pm <i>Poster Defending and Exhibit Viewing</i> |
| 9:30 am–12:30 pm <i>Symposium: Excretion of nitrogen-containing compounds: comparative aspects</i> W. H. Dantzler | 2:00–5:30 pm <i>Workshop: Phylogenetic approaches in comparative physiology</i> T. Garland, Jr. and R. Huey | 9:30 am–12:30 pm <i>Symposium: Comparative respiratory neurobiology I</i> N. Smatresk | 2:00–5:30 pm <i>Discussion: Contributions of comparative systemic physiology to theoretical biology</i> F. Powell |
| 9:30 am–12:30 pm <i>Symposium: Biomedical applications of marine mammal physiology: adaptation to an aquatic world</i> M. A. Castellini | 5:30–8:00 pm <i>Free Time</i> | 9:30 am–12:30 pm <i>Symposium: Anhydrobiosis</i> J. Crowe | 5:30–8:00 pm <i>Free Time</i> |
| 9:30 am–12:30 pm <i>Symposium: Evolution of endothermic metabolism</i> A. J. Hulbert | 8:00–9:00 pm <i>Plenary Lecture</i> G. Somero | 9:30 am–12:30 pm <i>Symposium: From myxine to man: the physiology of the blood volume regulation</i> K. Olson | 8:00–9:00 pm <i>Plenary Lecture</i> C. R. Taylor |
| 9:30 am–12:30 pm <i>Symposium: Calcium regulation: mechanisms and control I: Calcium regulation in crustaceans</i> M. Wheatly and P. Greenway | | 9:30 am–12:30 pm <i>Symposium: Calcium regulation: mechanisms and control II: Calcium regulation in lower vertebrates</i> M. Wheatly and P. Greenaway | |
| 9:30 am–12:30 pm <i>Symposium: Advances in reptilian and amphibian osmoregulation</i> S. Yokota and S. Benyajati | | 9:30 am–12:30 pm <i>Symposium: Neural modulation of muscle properties</i> E. Arbas | |

Poster boards are on display Sunday through Wednesday from 8:00 am to 9:00 pm.

Abstract Deadline: July 11, 1994

A Species Approach

San Diego, California

This meeting is a collaborative effort of The American Physiological Society, American Society of Zoologists (Comparative Physiology & Biochemistry Division), The Canadian Society of Zoologists (Comparative Physiology & Biochemistry Division), German Society of Zoologists, and Society of Experimental Biology

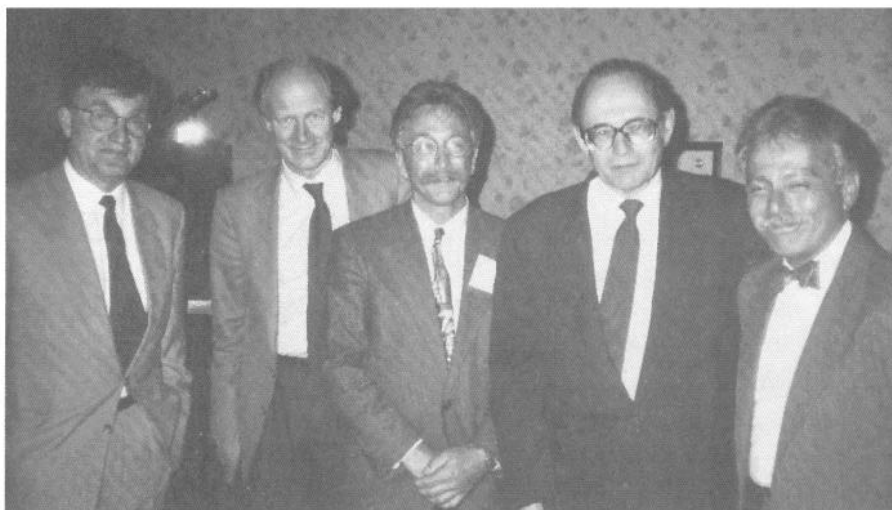
| Tuesday, November 1 AM | Tuesday, November 1 PM | Wednesday, November 2 AM | Wednesday, November 2 PM |
|---|---|--|---|
| 8:15–9:15 am <i>Plenary Lecture</i> M. Koehl | 1:00–3:00 pm <i>Poster Defending and Exhibit Viewing</i> | 8:15–9:15 am <i>Plenary Lecture</i> A. Bennett | 1:00–3:00 pm <i>Poster Defending and Exhibit Viewing</i> |
| 9:30 am–12:30 pm <i>Symposium: Comparative respiratory neurobiology II</i> N. J. Smatresk | 2:00–5:30 pm <i>Discussion: Evolutionary design of functional capabilities: How much is enough but not too much?</i> P. Suarez | 9:30 am–12:30 pm <i>Symposium: Subzero temperature adaptations of poikilothermic organisms</i> J. Duman | 3:00–6:00 pm <i>Free Time</i> |
| 9:30 am–12:30 pm <i>Symposium: Environmental and physiological determinants of muscle performance capacities</i> H. Guderley | 5:30–8:00 pm <i>Free Time</i> | 9:30–12:30 pm <i>Symposium: Neurohormonal peptides in invertebrates—A model approach</i> M. C. Thorndyke | 6:00–8:00 pm <i>Banquet, Awards Presentation, and Lecture</i> |
| 9:30 am–12:30 pm <i>Symposium: Ontogeny of cardiovascular systems I: Mechanisms</i> W. Burggren | 8:00–9:00 pm <i>Plenary Lecture: Hormonal control of insect metamorphosis: juvenile hormone</i> L. Riddiford | 9:30 am–12:30 pm <i>Symposium: Ontogeny of cardiovascular systems II: Diversity in developmental patterns</i> W. Burggren | 8:00–9:00 pm <i>Scholander Award Lecture</i> P. W. Hochachka |
| 9:30 am–12:30 pm <i>Symposium: New insights into the function of the vertebrate kidney: Lessons from jawless, cartilaginous and bony fish I</i> K. Beyenbach | | 9:30 am–12:30 pm <i>Symposium: New insights into the function of the vertebrate kidney: Lessons from jawless, cartilaginous and bony fish II</i> K. Beyenbach | |
| 9:30 am–12:30 pm <i>Symposium: Ecological physiology of endangered animals: Physiological contributions to the preservation of biodiversity</i> M. S. Gordon | | 9:30 am–12:30 pm <i>Symposium: Adaptations to hypoxia: Regulatory mechanisms on the systemic and metabolic levels</i> M. Grieshaber | |
| 9:30 am–12:30 pm <i>Symposium: Adaptations to extreme environments</i> N. Hazon | | | |

1993 APS Conference

Physiology and Pharmacology of Motor Control
San Diego

The Town and Country Hotel and Conference Center served as the venue for the APS Conference on the "Physiology and Pharmacology of Motor Control", held October 2-5, 1993. The Conference was organized by a committee chaired by Jack L. Feldman, University of California, Los Angeles, and consisting of Floyd E. Bloom, Scripps Institute, San Diego, Sten Grillner, Karolinska Institute, Stockholm, and Tomas Hokfelt, Karolinska Institute, Stockholm.

The San Diego Conference was designed to bring together neuroscientists with special interests in neuropharmacology and/or control of movement to explore the frontiers of their respective specialties and the possibilities of applying what is known about the neuropharmacology of single neurons to the complex problems of motor control. The scientific program for the San Diego Conference consisted of six symposia, a banquet lecture, and 98 abstracts programmed into nine



L-r: S. Grillner, T. Hokfelt, J. Feldman, G. Edelman, and F. Bloom.

poster sessions. The Conference started with an Opening Reception on the evening of October 2, followed by an Overview Lecture presented by Floyd Bloom and then the first symposium session.

Table 1 provides the distribution

of abstracts based on submitting department. A total of 25 abstracts or 35.3% of the abstracts identifying a department were derived from departments of physiology. Departments of Psychology were responsible for 9 (12.0%) abstracts and departments of Biology for 7 (9.3%) abstracts. More striking was the distribution of abstracts based on submitting society (Table 2). A total of 27 abstracts or



J. Feldman (left) with recipients of APS student awards: V. VanderHorst, G. A. Kinney, and J. M. Delfs.

Table 1. Departmental Distribution of Submitted Abstracts

| Department | Number | Percent |
|----------------------|--------|---------|
| Physiology | 25 | 33.3 |
| Psychology | 9 | 12.0 |
| Biology | 7 | 9.3 |
| Pharmacology | 6 | 8.0 |
| Neurophysiology | 6 | 8.0 |
| Anatomy/Cell Biology | 5 | 6.6 |
| Other | 17 | 22.6 |
| Total | 75 | |

27.8% were submitted by members of the APS. Members of the Society for Neurosciences submitted 56 or 57.7% of the abstracts.

Women were first authors on 28 (28.6 %) abstracts, and scientists residing outside of the Americas accounted for 20 (20.4 %) abstracts. Scientists from industry submitted 1 abstract, and those from government laboratories submitted 5 (5.1%) abstracts. The Conference attracted a large number of nonmembers, accounting for 41.3% of the 230 attendees (Table 3).

The APS Conference Banquet Lecture was presented by Gerald M. Edelman, Scripps Research Institute, San Diego, who presented a talk entitled "Synthetic Neural Modeling: Perceptual Categorization and Motor Behavior." Prior to his presentation, the organizing committee recognized the achievements of three graduate students for their outstanding work. The recipients of the APS student awards were Jill M. Delfs, University of Pennsylvania, Gregory A. Kinney, Northwestern University Medical School,

and Veronique VanderHorst, University of Groningen, The Netherlands.

The Society also continued the APS/NIDDK Minority Travel Fellowship Program for underrepresented minorities. Three Fellows attended as guests of the APS and NIDDK, receiving complimentary registration and reimbursement for travel and per diem expenses. The awardees for this Conference included Denise Jackson, University of California, San Diego, John H. Lawrence, Emory University School of Medicine, and Keith A. Williams, New York University.

Overall, the APS Conference on "Physiology and Pharmacology of Motor Control" was an outstanding success thanks to the efforts of Jack Feldman and the Organizing Committee. In addition, the American Physiological Society gratefully acknowledges the contributions in support of this Conference that were provided by the Fundamental Neurosciences Division, National Institute of Neurological Diseases and Stroke, NIH.

Table 2. Society Affiliation of Submitted Abstracts

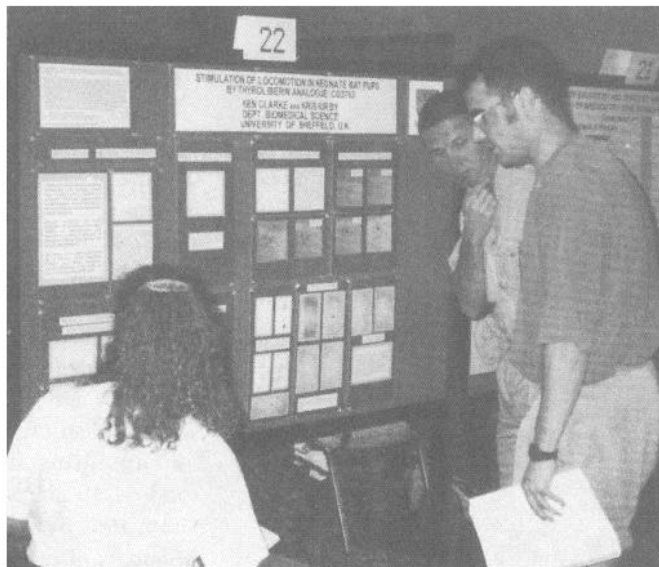
| Society | Number | Percent |
|-------------------------|--------|---------|
| APS | 27 | 27.8 |
| Soc. Neuroscience | 56 | 57.7 |
| ASPET | 2 | 2.0 |
| Physiological Soc. (UK) | 2 | 2.0 |
| AAN | 2 | 2.0 |
| Other | 8 | 8.2 |
| Total | 97 | |

Table 3. Registration Statistics

| | |
|-------------------------|-----|
| Members | 60 |
| Nonmembers | 95 |
| Students | 66 |
| Emeritus | 1 |
| Scientific Registration | 222 |
| Guests | 8 |
| Total Registration | 230 |



Opening reception.



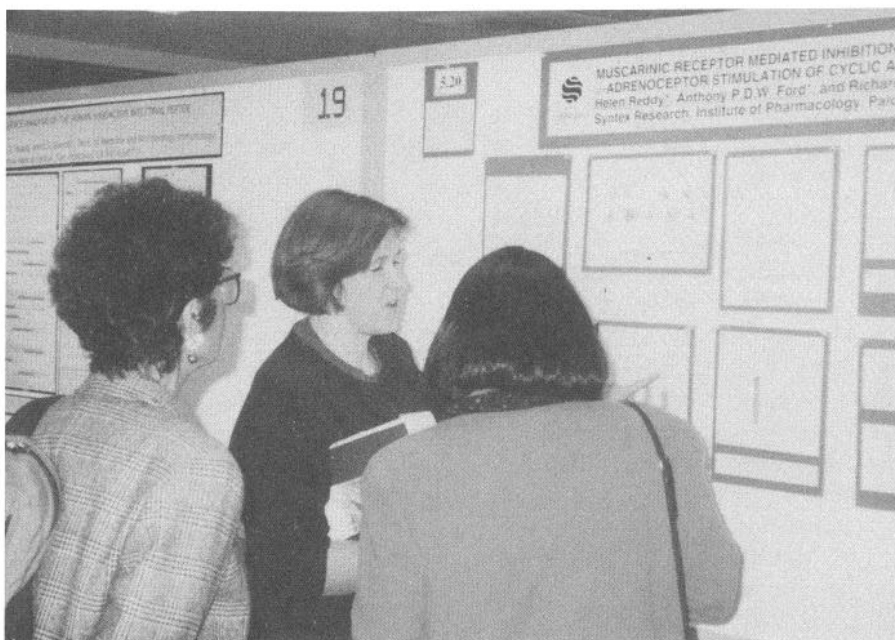
Poster session.

1993 APS Conference

Signal Transduction and Gene Regulation
San Francisco

Attendees at the APS Conference on "Signal Transduction and Gene Regulation" arrived in San Francisco expecting to experience both an outstanding meeting and a predicted earthquake along the Palmdale fault. Fortunately, no one was disappointed as the quake did not appear and the science presented was excellent. Not even the attractions of San Francisco could draw the attendees away from the meeting rooms at the Hyatt Regency.

Organized by Craig C. Malbon and Gary L. Johnson, the San Francisco Conference focused on defining how signaling is propagated from the proximal elements to orchestrated control of gene expression. The scientific program for the November 17 - 20, 1993 Conference consisted of six symposia, two evening lectures and a banquet lecture, and 122 abstracts programmed into seven poster sessions. The evening lectures were presented by Henry R. Bourne, University of California, San Francisco, who spoke on "G Protein Structure versus Function," and Ronald M. Evans, Salk Institute, who spoke on "Molecular Genetics of Retinoid Receptors." The banquet lecture was presented by



Poster session.

James M. Wilson, University of Michigan, whose presentation was entitled "Gene Therapy of Inherited Diseases."

Table 1 provides the distribution of abstracts based on submitting department. A total of 8 abstracts or 12.3% of the abstracts identifying a department were derived from departments of physiology. A similar number were also submitted by individuals in departments of pharmacology, biochemistry and medicine. More striking was the distribution of abstracts based on submitting society (Table 2). A total of 40 abstracts or 33.8% were submitted by members of the APS. Members of the ASBMB submitted 23 or 19.4% of the abstracts and members of the ASCB submitted 21 or 17.8% of the abstracts.

Women were first authors on 39

(32.0 %) abstracts, and scientists residing outside of the Americas accounted for 15 (12.2 %) abstracts. Scientists from industry submitted 9 (7.4 %) abstracts, and those from government laboratories submitted 19 (15.6%) abstracts.

The Conference attracted a large number of nonmembers, accounting for 59.4% of the 350 attendees (Table 3). Interestingly, the location of the meeting in San Francisco helped to attract a large number of scientists from the local biotechnology companies with the result that 73 (20.8%) of the registrants were from industry. In addition, 26 (7.4%) of the Conference participants were scientists from outside the Americas.

The Conference started with Henry Bourne's evening lecture on "G Protein Structure versus Function,"

Table 1. Departmental Distribution of Submitted Abstracts

| Department | Number | Percent |
|--------------|--------|---------|
| Physiology | 8 | 12.3 |
| Pharmacology | 8 | 12.3 |
| Biochemistry | 8 | 12.3 |
| Medicine | 8 | 12.3 |
| Biology | 6 | 9.2 |
| Neurobiology | 4 | 6.2 |
| Other | 23 | 36.4 |
| Total | 65 | |

Table 2. Society Affiliation of Submitted Abstracts

| Society | Number | Percent |
|-------------------|--------|---------|
| APS | 40 | 33.8 |
| ASBMB | 23 | 19.4 |
| ASCB | 21 | 17.8 |
| ASPET | 7 | 5.9 |
| Soc. Neuroscience | 4 | 3.4 |
| Other | 23 | 19.4 |
| Total | 118 | |

which was followed by a welcome reception. The APS Conference Banquet Lecture was presented by James M. Wilson, University of Michigan, on "Gene Therapy of Inherited Diseases." Prior to his presentation, the organizing committee recognized the achievements of four graduate students for their outstanding work. The recipients of the APS student awards were Teresa L. Born, University of California, San Diego, Patricia Cuellar-Mata, Universidad de Guanajuato, Mexico, Vickie J. LaMorte, University of California, San Diego, and Martha S. Lundberg, Texas A&M University.

The Society also continued the APS/NIDDK Minority Travel Fellowship Program for underrepresented minorities. Six Fellows attended as guests of the APS and NIDDK, receiving complimentary registration and reimbursement for travel and per diem



G. Johnson (left) and C. Malbon (right) with student award winners.

expenses. The awardees for this Conference included George T. Blevis, Jr., University of Arkansas, Kish J. Golden, Wayne State University School of Medicine, Erik Kupperman, University of California, San Diego, Sheila A. Mathias, Meharry Medical College, Abraha Taddese, Oregon Health Sciences University, and Joseph B. Thompson, University of Michigan.

Overall, the APS Conference on "Signal Transduction and Gene Regulation" was an outstanding success thanks to the efforts of Craig Malbon and Gary Johnson. In addition, the American Physiological Society gratefully acknowledges the contribu-

Table 3. Registration Statistics

| | |
|-------------------------|-----|
| Members | 76 |
| Nonmembers | 208 |
| Students | 54 |
| Emeritus | 1 |
| Scientific Registration | 339 |
| Guests | 11 |
| Total Registration | 350 |

tions in support of this Conference that were provided by Ciba-Geigy Corp., Pfizer, Inc., and Sandoz Pharmaceuticals Corp.

Moving?

If you have moved or changed your phone, fax, or eMail number, please notify the APS office at

301-530-7171

or eMail to internet:

kristin@aps.mhs.compuserve.com

Be sure to include your name, degree(s), title, department, institution, complete mailing address, telephone and fax numbers, and eMail address.

International Physiology

Foreign Nationals in US Physiology Laboratories: Questions for Their Sponsors

The Institute of International Education reports that, as of the end of 1992, ~85% of postdoctoral trainees in Basic Sciences in US institutions were foreign nationals. Current data on foreign trainees specifically in physiology departments are not available, but the number is believed to be equally large. These numbers are likely to increase in the coming years (see *The New York Times*, November 29, 1990, p. A1; *Science* 261: 1769, 1993). Correspondingly large numbers of faculty members, consequently, are sponsoring such trainees. Since serious socio-political upheavals have lately occurred in many countries and are threatening to occur in various others, trainees from countries thus affected (e.g., Russia, Yugoslavia, China, Iraq, etc.) are finding that returning home is often out of the question for both professional and personal reasons. They therefore turn to their sponsors for help, asking to be retained in their laboratories or placed elsewhere beyond the terms and conditions of their original commitments. Indeed, sponsoring faculty are increasingly called on to support the foreign fellows in their charge for visa status changes and for jobs. As these requests often involve legal and ethical issues, they thus thrust the individual sponsors into areas for which they generally are ill prepared; and, in many instances, local institutions also may lack administrators competent in these areas. Although answers to these and other questions may be gotten from the Immigration and Naturalization Service (INS), many of those affected are often reluctant to seek them from that source, for various reasons. Yet practical answers are needed.

In view of this, the International Physiology Committee of the American Physiological Society has organized a workshop entitled "Prerogatives and Commitments Pertaining to Foreign Nationals—The U.S., Institutions, and Individual Sponsors," in conjunction with the forthcoming Experimental Biology '94 meeting in Anaheim, CA. It will be held on Sunday, April 24 from 4:00 to 6:00 pm in Room C4, Convention Center. The workshop will address some of these issues within the framework of the prerogatives and commitments, under current US law, of the individual sponsor, the foreign visiting fellow, and the institution that hosts them both. The format of the meeting will be that of a panel discussion. The agenda will consist of a succinct review by an INS Officer of applicable laws, a description by an expert university official of the responsibilities of US institutions and individual sponsors, and comments by a foreign trainee based on his own good or bad experiences. These short, formal presentations will be followed by an open discussion,

based on follow-up and spontaneous questions by the audience.

This is a very timely topic that should be of considerable interest to all APS members who currently host foreign nationals in their laboratories, especially since the US government enacted in October 1991 new regulations that significantly impact on foreign fellows and their sponsors. While placing added responsibilities on foreign nationals attending US educational institutions, the regulations carry a mixed message for the sponsors: in some instances, their authority and responsibility are expanded; in others they are diminished.

If you are not certain whether attending this workshop will be worth your time, test your knowledge of the new rules and regulations by answering the following questions. Give yourself a 5 for every answer you deem complete and correct. If you score 75 or less, you should attend and ask for the answers to the questions that you could not handle.

Questions for Sponsors

1. Must you provide foreign nationals wishing to work with you with information regarding your institution's exchange program/travel/housing and cost?
2. Must you provide a detailed description of research projects in progress and the role the foreign national is expected to play in them?
3. Are you really expected to be conscious of the cultural differences and the work ethics of the foreign national?
4. Is it required under law that you discuss progress or shortcomings often with the foreign nationals in your lab so that they may correct deficiencies or feel good about themselves?
5. Do you know the maximum durations of the J-1 and H-1 visas? Do you know the differences between them and whether one can be changed into the other, or to a Permanent Resident visa?
6. Do you encourage your fellows to stay and work in the United States? Could they legally get a regular academic or industrial job here?
7. Are you aware of the factors to consider in sponsoring a foreign national for an H-1 visa or for a US Permanent Resident visa?
8. Do you know the responsibilities of the institution and your own to a foreign national's dependents?

9. What is a "skills list"?
10. Do you have a legal responsibility to a foreign national in your lab who does not wish to return to his/her own country?
11. Are you aware that the new INS requirements for insurance for J-1 visa holders affect you directly?
12. Do you know what to do if you do not get your expected grant renewal and your funds will run out this year, but you invited your fellow for two years?
13. Do you know your responsibilities and prerogatives under the law if your fellow's performance is unsatisfactory and it would be best if he left?
14. Are you aware of associations here that can help Chinese, or Kenyans, or Russians, etc. with their specific problems? To whom should you or they normally turn?
15. How can a deportation order be appealed? How much extra time will that allow the foreign fellow in the United States? Can he/she work during that time?
16. Do you know what to recommend if your fellow falls in love and wishes to get married to a US citizen? Will he/she have to leave the United States anyway when his/her visa expires?
17. Do you know why some J-1 visa holders have a two-year home country residency and others do not? How can one obtain a waiver of the two-year home country residency?
18. Do you know who pays income taxes and who doesn't, and how to get a waiver from paying these taxes?
19. What do you advise when your fellow, who is on a J-1 (or H-1) visa, would like to attend a professional meeting abroad, as to what he/she must do to be able to re-enter the United States without difficulty?
20. How do you handle this complaint: "My stipend is lower than that of my U.S. counterparts. I agreed to the terms before coming, but I did not know the salary range. This is unfair."? Do you have a liability, under law?

The moderator of the workshop will be Clark M. Blatteis, Department of Physiology and Biophysics, University of Tennessee, Memphis, 894 Union Avenue, Memphis, TN 38163 (Telephone: (901) 528-5822; FAX: (901) 528-7126; E-mail: blatteis@physiol.utm.edu), who can be contacted for further information, suggestions for additional questions, etc.

Future APS Conferences and Meetings

1994

Intersociety Meeting

Regulation, Integration, Adaptation: A Species Approach
Organizers: E. J. Braun, J. R. Hazel, and S. H. Wright

October 29–November 2
San Diego, CA

APS Conferences

Physiology of the Release and Activity of Cytokines
Organizers: J. T. Stitt, J. G. Cannon, G. W. Duff, M. J. Kluger,
A. J. Lewis, and I. G. Otterness

June 25–28
Yale University
New Haven, CT

Mechanotransduction and the Regulation of Growth and Differentiation
Organizers: H. E. Morgan, P. A. Watson, D. E. Rannels, F. Sachs,
M. Schwartz, and H. Vandenburgh

October 5–8
Sarasota, FL

1995

Understanding the Biological Clock: From Genetics to Physiology
Organizers: Jay C. Dunlap and Jennifer J. Loros

New Discoveries Within the Pancreatic Polypeptide Family: Molecules to Medicine
Organizers: William Zipf, Ian Taylor, Claes R. Wahlestedt, Richard Rogers, and Helen J. Cooke

Membership

Membership Committee Report

In 1993, the Membership Committee accepted 168 applications as regular members of APS and 54 applicants as corresponding members of the Society. On average, the new regular members were 42 years old, had 26 peer-reviewed publications, spent 15% of their time teaching and 70% of their time on research activities. Similarly corresponding members were on average 42 years old, had 23 peer-reviewed publications, spent a little more time teaching (21%) and a little less time doing research (69%).

Of the grand total, 50% of the applicants had an MD of combination MD/PhD, 48% had a PhD, and 2% had another advanced degree. Nineteen percent were women. The bulk of the new members completed a postdoctoral fellowship sometime during their career (79%), taught some physiology-related courses (77%), and attended some APS meetings (78%). Other statistics follow.

Those applicants from Departments of Physiology and Internal Medicine accounted for about half of all applicants (Table 1). About 26% of all applicants were from a Department of Physiology, while 23% of all applicants had their primary appointment from within a Department of Internal Medicine. Among the Regular membership applicants, those from Internal Medicine dominated the pool, while among the Corresponding applicants, those from a Department of Physiology dominated the pool.

What is interesting about Table 2 is that one-third of the applicants were either Instructors or Assistant Professors. Therefore the APS continues to attract a significant number of young investigators into the Society.

It is our hope that the recommended changes in the Bylaws on rules related to membership in the Society will increase both the numbers of applicants and the percent of those applicants that could be considered young investigators.

Finally, three of our committee members completed their term of office in 1993. They are Jahar Bhattacharaya, Suzanne Fortney, and Jay Nadel. We very much appreciate their fine service to this committee. The new committee members Hannah Carey, Lawrence Schramm, and Thomas Vary will join continuing members Michael Davis, Jack Rall, and Nancy Wills.

Diana Marver, Chair

Table 1. Departmental Origin of Applicants

| Department/Unit | Type of Membership | | | |
|--------------------------|--------------------|----------------------|-------|---------|
| | No. of Regular | No. of Corresponding | Total | % Total |
| Anesthesiology | 3 | 1 | 4 | 2 |
| Anatomy | 2 | 0 | 2 | 1 |
| Animal science-Vet | 1 | 3 | 4 | 2 |
| Biochemistry | 3 | 2 | 5 | 2 |
| Biology/Cell biology | 11 | 1 | 12 | 5 |
| Internal medicine | 43 | 9 | 52 | 23 |
| Ob/Gynecology | 1 | 0 | 1 | 0 |
| Pediatrics | 10 | 1 | 11 | 5 |
| Pharmacology | 12 | 3 | 15 | 7 |
| Physiology | 36 | 22 | 58 | 26 |
| Psychiatry | 2 | 0 | 2 | 1 |
| Sports/Exercise medicine | 6 | 1 | 7 | 3 |
| Surgery | 14 | 1 | 15 | 7 |
| Other | 14 | 9 | 23 | 10 |
| Industry | 7 | 0 | 7 | 3 |
| US/Other government | 3 | 1 | 4 | 2 |
| Total | 168 | 54 | 222 | 99 |

Table 2. Rank of Applicants

| Rank | Number | % Total |
|---------------------|--------|---------|
| Instructor | 6 | 3 |
| Assistant Professor | 67 | 30 |
| Associate Professor | 48 | 22 |
| Professor | 59 | 26 |
| Other titles | 42 | 19 |
| Total | 222 | 100 |

Correction

"Proposed Amendments to the APS Bylaws," *The Physiologist* 36: 234, 1993, first paragraph, line 3, should read: "Council appointed a Task Force on Membership chaired by L. Gabriel Navar".

News From Senior Physiologists

Letters to Helen M. Tepperman

Donald Scott, Jr. writes, "My career has mainly been in sensory neurophysiology, where I was concerned with the transducer function of sensory terminals in dentin as the best model for the arousal of pain. I was trained by Professor A. V. Hill in London and Professor Herbert Gasser in New York, and spent almost all of my research career in various departments at the University of Pennsylvania Medical School.

"When my basic research grant was terminated at the age of 65, I already had two other areas of great interest to me, outside the field of my career; one of these was in the field of theology, and the other was to study learning problems for high school students living in tribal areas of Zimbabwe. This latter aim has proved much more interesting and rewarding and had led me to make eleven visits to these schools.

". . . [S]ome 40 years ago I undertook to help a very capable young man from Zimbabwe through the undergraduate course at Penn and then the medical course at Edinburgh. From that I have expanded so that there are now four MDs who I have helped, and in the course of this interest I have increasingly been interested in the problems encountered by students from tribal areas who have difficulty understanding such concepts as numbers, electricity, light, etc. In recent years I have experimented with various 'teaching aids' used in the United States which could be made and used in Zimbabwe. I have looked at this problem from the point of the student and their family and, as a result, have been made a member of the greater family associated with the Munyama family. This has been very rewarding,

largely due to the very keen interest and initiate of the rural students."

Michael Barany wrote about his career in muscle research and his busy retirement life. As a Jew, he was denied a college education in Hungary before the second world war and was sent to Buchenwald subsequently. After liberation in 1945, he returned to Hungary, received his MD and PhD degrees, married and began his interest in muscle research. His wife, a physicist, became his collaborator. Together, they conducted research at the Weizmann Institute in Israel, the Max Planck Institute in Heidelberg, and in New York. Barany was head of the Department of Contractile Proteins at the Institute for Muscle Diseases in New York City from 1960 to 1974. Starting in 1974, he and his wife, both professors at the University of Illinois Medical School in Chicago, continued their muscle research, taking advantage of NMR techniques.

"My retirement did not change my scientific activities significantly. I am still working seven days a week and do most of the experiments with my own hands in the laboratory. I am fortunate to have a department head who did not take away my space and all that I have to worry about is finding the funds necessary for my research. I regularly exercise and eat a well-balanced diet to keep fit.

"A retirement automatically involves looking back into the past and forward into the future; soon it will be 50 years since I started research. Three years after that, I married and my wife also became my scientific collaborator. At any place we were working, we rented an apartment nearby. Our two sons were raised virtually in the laboratory and so they were in their early twenties when they received their PhDs. Now they are tenured professors

in biochemistry and molecular biology at prestigious universities. Recently, our grandchildren became visitors of our laboratory. They showed an interest in the use of the balance, autotopipettes, starting the centrifuge and freezing objects in dry ice. Thus we are optimistic about the future.

"Science and humanity filled my life along with my family of a devoted wife and two loving sons who have formed the basis of my happiness. If I could do it over, I would follow the same path."

Letter to Robert Grover

Leonard B. Kirschner writes, "Thanks for the letter to the natal class 1923. It reached me shortly before I made my annual summer trek to Copenhagen, hence the tardy reply. In fact, I did retire last May after 40 years on this faculty, and I'm still coming to grips with the new status. The years really tiptoed by unnoticed.

"I don't plan to teach beyond an occasional invited lecture, but the department allowed me to hold my lab space, and I will continue to do research. The pattern during the past 8 years has been to work at home during the academic year and in the August Krogh Institute, Copenhagen during the summer. I hope to continue this program as long as my department and my Danish friends will put up with me.

"'Words of wisdom' for beginners? I was fortunate in encountering Ladd Prosser (Illinois), Bill Stone (Wisconsin), and Hans Ussing (Copenhagen) during my training. They lighted a fire that still hasn't gone out. So my advice is choose mentor(s) who are able to light your fire (i.e., be lucky).

Ohio Physiological Society Meeting

The Department of Physiology of the Northeastern Ohio Universities College of Medicine (NEOUCOM) played host to the eighth annual meeting of the Ohio Physiological Society on October 29, 1993. The meeting was attended by 73 physiologists and students from throughout the state.

The theme of the meeting, "Cardiopulmonary Pathophysiology: Integrative Investigations," focused on how physiological investigations at multiple levels of organization can be integrated to provide insight into the pathophysiology of heart and lung disorders.

Odile Mathieu-Costello, Department of Medicine at the University of California at San Diego, presented the keynote address on stress failure of pulmonary capillaries. Her talk was followed by a mini-symposium titled, "Pulmonary and Cardiac Dysfunction

After Massive Sympathetic Nervous System (SNS) Activation."

Michael Maron (NEOUCOM) and Charles Pilati (NEOUCOM) discussed the production of SNS-induced pulmonary vascular barotrauma and cardiac dysfunction, and Nick Sperelakis (University of Cincinnati) explained how catecholamines modulate myocardial cell calcium influx.

The afternoon program consisted of a lively poster session and a mini-symposium titled, "Pathophysiology and Treatment of the Acute Respiratory Distress Syndrome (ARDS)," which consisted of discussions of the role of the mononuclear phagocyte system in the development of ARDS by Gary Niehaus (NEOUCOM), mechanisms of multiple organ failure in ARDS by Paul Dorinsky (Ohio State), and surfactant replacement in ARDS by Timothy Gregory (Ross Labs).

A special highlight of the meeting was the attendance of 18 undergraduate biology majors from Geneva, Westminster, and Kenyon Colleges.

In the business meeting, steps were discussed to increase Society involvement in the State Science Fair. The 1995 annual meeting was awarded to the Medical College of Ohio, and Patricia Metting was elected president for 1995.

The 1994 meeting will be held at Ohio State and will be organized by Jackie Wood.

Sponsorship of the 1993 meeting was provided by the NEOUCOM Division of Basic Medical Sciences, Ohio Academic Challenge Program, Gould, Inc., and the Fryer Company.

Michael B. Maron

Future Meetings

1994

Experimental Biology '94

April 24–28, Anaheim, CA

APS Conference

Physiology of the Release and Activity of Cytokines

June 25–28
New Haven, CT

APS Conference

Mechanotransduction and the Regulation of Growth and Differentiation

October 5–8
Sarasota, FL

Intersociety Meeting

Regulation, Integration, Adaptation:
A Species Approach

October 29–November 2
San Diego, CA

1995

Experimental Biology '95

April 9–14, Atlanta, GA

APS Conference

Understanding the Biological Clock:
From Genetics to Physiology

Date not set
Hanover, NH

APS Conference

New Discoveries Within the Pancreatic Polypeptide
Family: Molecules to Medicine

Date not set
Southern California

1996

Experimental Biology '96

April 14–18, Washington, DC

1993 IUPS Travel Award Program

The American Physiological Society administered a travel award program for attendees to the XXXII International Congress of Physiological Sciences, Glasgow, Scotland, August 1–6, 1993. Funds for the program were derived from an account established from the profits associated with the 1968 IUPS Congress in Boston. In addition, \$18,000 was received from NIH (NIDDK, NIAMS, NIGMS), \$10,000 from NASA, \$6,000 from NSF, and \$5,000 from ONR. APS members also contributed to the program through voluntary contributions made while paying their dues.

The US National Committee of the IUPS consists of representatives of the American Physiological Society, the Society for Neuroscience, the Society for General Physiologists, the Biomedical Engineering Society, the Microcirculatory Society, and the American Society of Zoologists, division of Comparative Physiology and Biochemistry. A subcommittee of the US National Committee was charged with reviewing all submitted applications and selecting the awardees. A total of 112 applications were received and 85 awards were made. Thirty-one applications were received from female scientists, with 24 receiving awards. Applications were received

from 5 scientists who were members of underrepresented minority groups and 2 awards were made. The societal affiliations of the applicants and awardees are listed in Table 1.

The awardees each were provided with an \$800 travel award to partially cover expenses associated with their attendance at the meeting. Many of the awardees also used the Glasgow Congress as an opportunity to visit research laboratories and develop collaborative research projects. Of those completing the Travel Award Program Recipients' Questionnaire, 64.2% (52 out of 81) visited research laboratories while in the United Kingdom; 51.2% (41 out of 80) used the meeting to recruit future graduate or postgraduate students; and 92.5% (74 out of 80) developed collaborative research projects with colleagues during the meeting.

The median year for receipt of the doctorate for the awardees was 1979 (Table 2). The median year of birth for the awardees was 1952 (Table 3). The awardees were also asked to rank the Congress (with 10 being the best). Over 71.4% (50 out of 70) gave the Congress a ranking of 8 or higher (Table 4). Overall, the attendees were enthusiastic about the scientific aspects of the XXXII International Congress of Physiological Sciences.

Table 1. Societal Affiliations of Applicants and Attendees

| | Applicants | Awardees |
|--------------------------------------|------------|----------|
| American Physiological Society | 71 | 56 |
| Society for General Physiologists | 15 | 15 |
| American Society of Zoologists, DCPB | 10 | 10 |
| Society for Neuroscience | 33 | 25 |
| Biomedical Engineering Society | 1 | 1 |
| Microcirculatory Society | 10 | 10 |
| Other | 0 | 0 |
| Total | 140 | 117 |

Table 2. Awardees's Year of Doctoral Degree

| Year | Number |
|-------|--------|
| 90-93 | 8 |
| 85-89 | 15 |
| 80-84 | 14 |
| 75-79 | 11 |
| 70-74 | 7 |
| 65-69 | 5 |
| 60-64 | 6 |
| 55-59 | 6 |
| 50-54 | 2 |
| 45-49 | 0 |
| 40-44 | 1 |
| Total | 75 |

Table 3. Applicant's and Awardee's Year of Birth

| Date of Birth | Applicants | Awardees |
|---------------|------------|----------|
| 1915-1919 | 1 | 1 |
| 1920-1924 | 0 | 0 |
| 1925-1929 | 6 | 4 |
| 1930-1934 | 5 | 5 |
| 1935-1939 | 8 | 7 |
| 1940-1944 | 11 | 8 |
| 1945-1949 | 13 | 9 |
| 1950-1954 | 31 | 23 |
| 1955-1959 | 21 | 17 |
| 1960-1964 | 14 | 10 |
| 1965-1969 | 2 | 1 |
| Totals | 112 | 85 |

Table 4. Awardees' Ranking of the XXXII Congress

| Ranking (10 best) | Number |
|-------------------|--------|
| 1 | 0 |
| 2 | 3 |
| 3 | 2 |
| 4 | 1 |
| 5 | 7 |
| 6 | 7 |
| 7 | 0 |
| 8 | 30 |
| 9 | 13 |
| 10 | 7 |

APS Joins in *Amicus* on AWA Case

The APS joined with other professional societies, the Association of American Medical Colleges, and several prominent research universities in filing an *amicus curiae* brief for the appeal to the US District Court decision that struck down key portions of the Animal Welfare Act regulations. Last February Judge Charles Richey ordered USDA to rewrite the performance-based standards contained in the final rules issued by the agency on the grounds that the 1985 Animal Welfare Act (AWA) amendments require it to produce more detailed and prescriptive regulations, such as those contained in USDA's first draft of the rule. The regulations affected are those regarding the exercise of dogs, psychological well-being of nonhuman primates, and innovative cage designs for various species.

The APS *amicus* brief argued first that the Plaintiffs, led by the Animal Legal Defense Fund, did not have the legal standing to sue the government because they had not suffered any injury from the AWA regulations. The brief expressed particular concern about the argument of one plaintiff, who claimed standing because he sits on an IACUC and the cur-

rent rules do not provide sufficient support for his views about animal care. IACUCs are "charged with enforcing the USDA's rules, not applying (the plaintiff's) or any one else's individual views on animal welfare issues," the brief stated.

The key contentions of the brief is that the regulations in question do comply with the AWA, and they are reasonable in light of the AWA's mandates and the scientific literature. Finally, the brief argued that the cause of improving animal welfare would not be well served by establishing rigid, engineering-type standards.

Briefs in the appeal were submitted late last year. The National Association for Biomedical Research (NABR) submitted its brief as a party to the case after being granted permission by the Court to join the USDA and the other affected government agencies in appealing Judge Richey's decision. NABR had asked for intervenor status to participate in the appeal on behalf of animal researchers who are regulated by the USDA. As of press time, oral arguments in the appeal had not yet been scheduled.

ILAR Panel Starts *Guide* Hearings

The Institute of Laboratory Animal Resources (ILAR) Committee to Revise the *NIH Guide for the Care and Use of Laboratory Animals* held its first public hearing December 1, 1993 in Washington, DC. The nine witnesses who testified on behalf of various organizations included a strong showing from animal advocacy groups such as the Society for Animal Protective Legislation, Animal Legal Defense Fund, Animal Welfare Institute, Humane Society of the United States, and Psychologists for the Ethical Treatment of Animals. Witnesses offering a more favorable critique of the *Guide* included a primatologist, the American Psychological Association's research ethics officer, and a retired scientist.

With respect to the prohibition on multiple major surgeries, primatologist Joseph Erwin of Diagon Corporation said that a more clear and focused definition of major surgery is needed to avoid "wasting" primates. Under the current guidelines, some routine procedures have been considered as major surgery, thus making it impossible to continue using the animals in research.

Several speakers addressed the psychological well-being of primates and the general issue of providing an enriched social environment for various species. Erwin cautioned

against generalizations across 200 known species of primates and urged that the *Guide* include some explanation and rationale to assist facilities in developing the environmental enrichment plans for primates required under USDA Animal Welfare Act regulations. Animal Legal Defense Fund attorney Valerie Stanley criticized the section of the *Guide* on environmental enrichment as vague, general, and unlikely to be helpful. American Psychological Association Research Ethics Officer Stacey Cunningham urged that the *Guide* take greater notice of the importance of animal behavior, which is often the first sign of disease or injury. Kenneth Shapiro of Psychologists for the Ethical Treatment of Animals recommended that the goal of animal housing be environmental enrichment rather than sanitation and that housing permit the natural expression of species-typical behaviors.

APS Animal Care and Experimentation Committee Chairman J. R. Haywood is scheduled to deliver testimony at the next public hearing, on February 2 in San Francisco. A third public hearing is to be held February 4 in St. Louis. Comments on the *Guide* may be sent to Thomas Wolfe, ILAR, National Research Council, 2101 Constitution Avenue NW, Washington, DC 20418.

FASEB Recommends \$11.9 Billion for NIH in FY 1995

Conferees representing FASEB's member Societies met in late October and early November to make recommendations for FY 1995 federal research funding in the biomedical and related life sciences. The conferees recommended that NIH be provided with \$11.9 billion in FY 1995, an 8.9% increase over FY 1994. The conferees recommended that the additional funds be used to build the agency's research portfolio to nearly 25,000 research project grants (RPGs), to increase pre- and postdoctoral trainee stipends, to add \$50 million to the budget for shared instrumentation, and to give newly confirmed NIH Director Harold Varmus a \$100 million discretionary fund.

NIH supported slightly more than 24,000 research grants in FYs 1992 and 1993. FASEB recommended that NIH increase that number so that it supports 24,932 RPGs in FY 1995, and approximately 25,000 per year thereafter. Accomplishing that goal in FY 1995 will require a one-year increase in new and competing grants because a sharp decrease in the number of non-competing awards is projected. In subsequent years FASEB recommends a steady level of about 7,000 new and competing grants each year for NIH, which now also encompasses the research institutes that were formerly a part of ADAMHA.

On other life sciences funding agencies, FASEB made the following FY 1995 recommendations

- National Science Foundation: \$363 million for the Biological Sciences Directorate, an increase of 25% over the FY 1994 level.

- Department of Veterans Affairs: \$325 million for Medical and Prosthetic Research. The conferees also endorsed pending legislation to codify the VA's Merit Review Boards to assure the continued independence and

integrity of the VA's peer-review system.

- National Aeronautics and Space Administration: \$53 million for Research and Analysis in the Life and Biomedical Sciences and Applications Division, plus an additional \$20 million for NASA-NIH collaboration. The conferees also urged that the Space Life Sciences-3 and Neurolab shuttle missions not be abandoned in favor of Space Station construction and called for expanded competition for in-flight life sciences research opportunities.

The consensus conference also made recommendations for biomedical and related life sciences research funding at the USDA, EPA, DOE, and DOD. The consensus conference report will be sent to all Members of Congress and will be used by FASEB member Societies and others as the basis for advocating FY 1995 funding levels. For a copy of the complete report, contact Alice Hellerstein at the APS office (301-530-7105).

New Stenholm Bill Would Expand Facilities Law

Just before Congress recessed last year, Rep. Charles Stenholm (D-Texas) introduced a bill to make blocking access to an animal enterprise a federal offense. H.R. 3575, the Animal Enterprise Protection Act of 1993, contains certain provisions from the original Stenholm animal facilities protection legislation that were removed by the House Judiciary Committee. These include giving private individuals and state attorneys general the right to bring civil suits against those who block access.

Stenholm introduced this bill after he and Rep. George Gekas (R-Pa.) were blocked from offering an amend-

ment to the abortion clinic access bill that would have extended the protection that measure offered to other categories of controversial facilities. Included were facilities where animal research is conducted and those engaged in the production, processing, manufacturing, or distribution of forest or agricultural commodities; chemical or toxic substances; nuclear energy; or biotechnology.

Rep. Gekas had earlier introduced a bill (H.R. 3064) to expand the Animal Enterprise Protection Act to cover individuals. Both H.R. 3575 and H.R. 3064 have been referred to the House Judiciary Committee.

Conflict of Interest Regulations

New conflict of interest regulations were expected to be published in January after NIH missed the December 10 deadline under the 1993 NIH reauthorization bill that had required the agency to promulgate new ethical guidelines within 6 months.

The regulations are expected to give universities primary responsibility for overseeing new rules requiring PIs and others responsible for the design and conduct of research on PHS grants, contracts, cooperative agreements to disclose potential financial conflicts of interest. The disclosure requirements, which cover salaries, stocks, and other financial interests of at least \$5,000 or ownership of 5% of total outstanding stock, would also apply to spouses and dependent children.

The regulations are expected to require institutions to define and enforce their own conflict of interest policies. However, the regulations are not expected to supply a uniform definition of conflict of interest. The comment period for the regulations is expected to be 60 days.

FBR Publishes *Research Helping Animals*

The Foundation for Biomedical Research has just published a 20-page brochure entitled *Research Helping Animals*. The book, which is intended for junior high school students, points out the importance of research with animals. It uses examples of how animal research has helped certain species such as whales, eagles, and elephants. It also explains how animal research helped such "celebrities" as the collie Lassie and the pony Stormy, whose mother was Misty of Chincoteague. The booklet also has personal messages from actor/horseowner Patrick Swayze and Debbye Turner, the 1990 Miss America who became a veterinarian. It costs \$3.00 and can be ordered from FBR, 818 Connecticut Avenue, NW, Suite 303, Washington, DC 20006.

Medical Trust Fund Proposed

Senator Tom Harkin held a hearing December 8 on his proposal to supplement NIH appropriations with a trust fund as part of health care reform. Although the trust fund is not part of the administration's health care reform proposal, HHS Assistant Secretary for Health Phillip Lee noted that the Clinton package does include authorization for an additional \$400 million for prevention research at NIH in FY 1995 and \$2.9 billion over the next 6 years. These amounts are intended to be in addition to the \$2.6 billion in prevention research NIH will sponsor in FY 1994.

Harkin responded that the issue is not authorization levels but whether the administration includes the funding in its budget proposal. Otherwise, Harkin said, "All your fine words are meaningless."

A National Fund for Medical Research is part of the Senate Republican health care reform package (S. 1770) introduced by Sen. John Chafee (R-R.I.). Sen. Mark Hatfield (R-Ore.), who has been advocating the trust fund along with Harkin since last spring, is a cosponsor of that bill. According to Hatfield, S. 1770 should raise \$500 million per year from income tax overpayments designated by taxpayers for this purpose; civil penalties against retirement plans that violate certain ERISA statutes; and additional sources that have not yet been identified. However, S. 1770 has raised some concerns because it provides little protection against the very real likelihood that efforts would be made to substitute the trust fund for regular NIH appropriations.

Animal Activists Make Seasonal Showings

The Animal Liberation Front claimed responsibility for planting nine incendiary devices in Chicago area department stores on November 28. The devices, consisting of a matchbook and a timer attached to a 9-volt battery, were placed in brown paper lunch bags. Six devices ignited, causing minor damages. Most were not even planted on the same floors as the fur departments.

On December 14, three anti-fur activists braved the London cold to parade through crowds of bemused shoppers. The protesters were wearing only Santa Claus hats and a banner asserting, "We'd rather go naked than wear fur." The protest was sponsored by People for the Ethical Treatment of Animals, which opened new offices in December in London, Amsterdam, and Hamburg. Police arrested the three naked demonstrators, including PETA chair Ingrid Newkirk. One policeman

said the group had caused "disorder and distress."

A week earlier, Newkirk was one of seven activists detained in Paris after trying to break through a police line in an effort to storm the offices of *Vogue*. The militants had said in advance that they would try to enter the offices with paint-spattered fur coats and steel-jawed leg traps.

NIH Cosponsoring Workshops on Animal Welfare Education

The National Institutes of Health, Office for Protection from Research Risks is cosponsoring two workshops on animal welfare education.

The first workshop, cosponsored with North Carolina State University, is "Current Issues in IACUC Protocol Review." It will be held on February 24-25, 1994, in Raleigh, NC. For information contact Kathryn Byrd, Director, Department of Continuing Education and Public Program Office, 4700 Hillsborough Street, NCSU-CVM, Raleigh, NC 27606. Tel: 919-829-4421; fax: 919-829-4452.

The second workshop is cosponsored with Purdue University. Entitled "Training and Education: Institutional Improvement—Crisis Prevention," it will be held May 5-6, 1994, in Lafayette, IN. The general theme will center on continuing education and training as mandated by NIH and USDA. Two subareas will be included: differential CET programs and approaches for different types of personnel and special topics for CET programs such as anesthesia/pain/surgery, euthanasia, and occupational health. For information contact Lisa D. Snider, Administrative Assistant, Laboratory Animal Program, Purdue University, 1071 South Campus Courts-D, West Lafayette, IN 47907-1071. Tel: 317-494-7206; fax: 317-494-0793.

Washington Grand Jury Ends

The federal grand jury investigating the August 1991 raid at Washington State University completed its term in early December of last year without announcing any indictments. The Animal Liberation Front claimed responsibility for that raid, which caused an estimated \$100,000 in damages. At least three other grand juries around the country are currently investigating suspected Animal Liberation Front activities.

During the course of the investigation, three people were jailed for a total of 338 days for refusing to testify before the grand jury concerning the whereabouts and activities of Rodney Coronado. Coronado is an ALF activist who is believed to have been involved in the raid. The longest-serving of the non-cooperative witnesses was Rik Scarce, a 35-year old WSU doctoral candidate in sociology who spent 159 days in jail. Scarce cited the code of ethics of the American Sociological Association (ASA) to bolster his claim that he had a "scholar's privilege" under the First Amendment not to reveal information about his confidential sources.

Although lionized by some for having gone to jail to uphold his principles, others have taken a darker view of Scarce's activities. Murray Comarow, a lawyer and former federal official who is now distinguished adjunct professor in residence at the American University's School of Public Affairs, wrote in the *The Chronicle of Higher Education* of December 15, 1993 that the sociologists' code of ethics unacceptably "urges members to place themselves above the law." He went on to say that "[i]t is extremely doubtful that a public-policy case can be made supporting a scholar's privilege not to disclose confidential information that may relate to crimes."

Course on Ethical Issues of Animal Experimentation

A Summer Course on Ethical Issues of Animal Experimentation will be held July 9-13, 1994, on campus at Georgetown University, Washington, DC. The course, funded by the National Science Foundation, is open to college faculty who would like to improve their skills in teaching about ethical issues surrounding animal experimentation to graduate and undergraduate students in their home institutions. Emphasis will be on how to use course materials in classroom instruction. Topics include the moral status of nonhuman animals, the justifications for using animals in research and edu-

cation, student objections, the use of alternatives, animal harms and pain, legal issues, the importance of relevant species, and case studies. Varying points of view will be presented in a well-balanced fashion. The course directors are F. Barbara Orlans, Tom L. Beauchamp of the Kennedy Institute of Ethics, and Alan I. Faden, School of Medicine, all of Georgetown University. Scholarships are available. For more information, contact Marc Favreau, Kennedy Institute of Ethics, Georgetown University, Washington, DC 20057. Tel: 202-687-6771; fax: 202-687-6770.g42

AWIC Workshop on Meeting AWA Information Requirements

The Animal Welfare Information Center (AWIC) of the National Agricultural Library (NAL) will present four two-day workshops in 1994 on how to provide the information required by the Animal Welfare Act.

The AWA requires investigators to provide Institutional Animal Care and Use Committees (IACUCs) with documentation to demonstrate that they have conducted a thorough literature search regarding model systems other than whole animals. This workshop was designed to train individuals in meeting those requirements. It is intended to be useful to principle investigators, IACUC members, information providers, animal use program administrators, and veterinarians. The objectives of the workshop are to provide

1. An overview of the AWA and its information requirements;

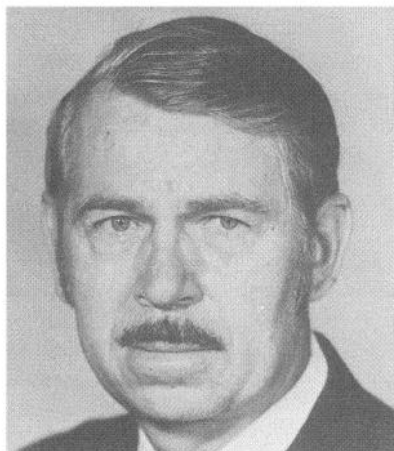
2. A review of the alternatives concept;
3. A comprehensive introduction to the National Agricultural Library, Animal Welfare Information Center, and other organizations;
4. Instructions on the use of existing information, databases/networks; and
5. On-line database searching expertise.

Workshops will be held at the National Agricultural Library on March 10-11, June 23-24, September 22-23, and December 8-9, 1994, with each workshop limited to 12 persons. Participants will receive a resource manual. For further information contact AWIC at (301) 504-6212 (voice) or (301) 504-5472 (fax) or write to AWIC, NAL, 10301 Baltimore Road, Beltsville, MD 20705-2351.

Ewald E. Selkurt (1915–1993)

Ewald E. Selkurt died Saturday, February 13, 1993, in Indianapolis at the age of 78. He was born in Edmonton, Alberta, Canada and moved with his parents to Racine, Wisconsin, where he spent his childhood, becoming a naturalized citizen in 1930. He earned BA and MA degrees in zoology at the University of Wisconsin and was a member of Phi Beta Kappa. Selkurt received his PhD in physiology from the University of Wisconsin in 1941. In the same year, he married Ruth Marion Gesley, and joined the faculty of the Department of Physiology at New York University School of Medicine. There he worked with Homer W. Smith, a leader in research on kidney function. Ewald and Ruth lived in Greenwich Village, as Ewald would often say, "as poor as a church mouse." Ruth did volunteer work to help the war effort, and throughout her life she devoted herself to community service. In 1944, Selkurt joined the faculty of Western Reserve University School of Medicine, Cleveland, Ohio, under the leadership of Carl Wiggers, an internationally respected cardiovascular physiologist.

In 1958, he came to Indianapolis as Professor and Chairman of the new Department of Physiology at Indianapolis of the Indiana University School of Medicine. With eight faculty members he developed an outstanding physiology program for about 160



medical, 125 dental, and 40 allied health students. He was instrumental in the reorganization of the Basic Science curriculum of the Medical School, retiring as Professor Emeritus in 1983.

Ewald Selkurt served as President of the American Physiological Society in 1976-77. He chaired the Circulation Group of the American Physiological Society in 1969-70, was a member of the Executive Committee of the Basic Science Council of the American Heart Association, and a charter member of the Shock Society. He served on many national and international review boards and committees, including five years as a member of the Cardiovascular Study Section of the National Institutes of Health in the mid-1960s, and served on numerous medical school committees.

Selkurt made highly significant

contributions to our understanding of renal blood flow and electrolyte excretion, autoregulation of renal blood flow, the relationship between glomerular filtration and sodium excretion, the role of renal countercurrent mechanisms in the urinary concentration of solutes, and the physiology of splanchnic circulation. He also investigated the release of renin, the effects of prostaglandins and histamine, and kidney function during hemorrhagic shock. He authored over 100 scientific papers. Selkurt trained six doctoral students and two postdoctoral fellows and hosted scientists from Puerto Rico, Germany, and Poland in his laboratory.

With seven members of his department, Selkurt was a contributor and the editor of *Physiology*, published by Little, Brown in 1962. This medical school textbook was published in five editions and was translated into Spanish, Italian, and Portuguese. Over 125,000 copies were sold. He also edited two editions of *Basic Physiology for the Health Sciences*, the first published in 1975.

Selkurt was a careful and productive scientist and an excellent teacher. As a leader, Ewald allowed his faculty to develop to the best of their abilities. It is no small measure of his leadership that most of the original group of faculty remained with him. Of those who did leave, most took positions as departmental chairmen.

By example and leadership, Selkurt forged a solid foundation for the growth and success of the Department of Physiology. He enriched the lives of those he led, those who knew him scientifically, and those who knew him as a teacher. Ewald was a good person and we will miss him.

Memorial contributions may be made to the Selkurt Scholarship Fund, c/o the Indiana University Foundation.

Sidney Ochs
George Tanner
Carl Rothe

APS Membership

Membership applications may be obtained from APS Membership Services, 9650 Rockville Pike, Bethesda, MD 20814-3991. Applications are reviewed and approved by Council on a regular basis throughout the year.

BOOKS RECEIVED

Foundations of Modern Neurology: A Century of Progress. Robert B. Aird. New York: Raven, 1993, 315 pp., index, \$85.00. ISBN: 0-7817-0112-0.

Nocturnal Asthma: Mechanisms and Treatment. Richard J. Martin (Editor). Mount Kisco, NY: Futura, 1993, 394 pp., illus., index, \$72.00. ISBN: 0-87993-546-4.

Pulmonary Care of the Surgical Patient. Leland H. Hanowell and Forrest L. Junod (Editors). Mount Kisco, NY: Futura, 1994, 400 pp., illus., index, \$65.00. ISBN: 0-87993-568-5.

The Electroencephalogram: Its

Patterns and Origins. John S. Barlow. Cambridge, MA: MIT Press, 1993, 456 pp., illus., index, \$95.00. ISBN: 0-262-02354-7.

Contrast Sensitivity. Robert Shapley and Dominic Man-Kit Lam (Editors). Cambridge, MA: MIT Press, 1993, 342 pp., illus., index, \$85.00. ISBN: 0-262-12179-4.

Temperature Regulation in Laboratory Rodents. Christopher J. Gordon. New York: Cambridge University Press, 1993, 276 pp., illus., index, \$64.95. ISBN: 0-521-41426-1.

Epilepsy: Models, Mechanisms, and Concepts. Philip A. Schwartzkroin

(Editor). New York: Cambridge University Press, 1993, 544 pp., index, \$120.00. ISBN: 0-521-39298-5.

How Do Brains Work? Papers of a Comparative Neurophysiologist. Theodore Holmes Bullock. Boston, MA: Birkhauser, 1993, 688 pp., \$145.00. ISBN: 0-8176-3535-1.

The Physiology of Reproduction. Second Edition. A Two-Volume Set. Ernst Knobil and Jimmy D. Neil (Editors). New York: Raven, 3,302 pp., illus., index, \$360.00. ISBN: 0-7817-0086-8.

Assistant Professor of Biology.

Tenure-track, available August 15, 1994. (Funding subject to final approval.) Teach introductory biology, undergraduate anatomy and physiology and/or physiology, upper division/graduate animal physiology; supervises MS students; serve as academic advisor; contribute service. Earned PhD in biological sciences emphasizing animal physiology. Teaching/postdoctoral research experience preferred. Ability to interact and communicate well, acquire extramural research funding, and report research in open literature. Do NOT request letters of recommendation. Closes March 15, 1994. To apply or for additional information, contact T. L. Wenke, Physiologist Search Committee, Fort Hays State University, 600 Park Street, Hays, KS 67601-4099. Tel: 913-628-5681; fax: 913-628-4290; bstw@fhsuvm.fhsu.edu. W/M/D/V encouraged to apply. [EOAAE]

Faculty Position in Physiology.

Tulane University invites applications for a tenure-track appointment at the rank of assistant or associate professor. Candidates should hold the PhD or MD degree, have a record of excellence in research, and be committed to academic programs in medical and graduate education. Research areas marked for expansion include, but are not limited to, cardiovascular-renal, cellular/molecular, and membrane/transport physiology. The successful applicant will be expected to have an established research program (associate professor) or to develop an independent extramurally funded research program. Send a curriculum vitae, description of research program, reprints, and four letters of recommendation to L. Gabriel Navar, Chairman, Tulane University School of Medicine, Department of Physiology, SL-39, 1430 Tulane Avenue, New Orleans, LA 70112. [EOAAE]

Assistant Professor.

The Department of Physiology and Cell Biology seeks to fill a tenure-track position at the Assistant Professor level in one of the following areas of cell biology: extracellular matrix; cytoskeletal elements; growth factors and cytokines. Preferences will be given to candidates who take a multidisciplinary approach to studying how these cellular properties impact on physiological and pathophysiological mechanisms. Please send the names and addresses of three references, your curriculum vitae, two reprints/preprints, and a statement of research interests to the Chairman of the Search Committee, Leonard M. Lichtenberger, by March 1, 1994, at the following address: Department of Physiology and Cell Biology, The University of Texas-Houston Medical School, PO Box 20708, Houston, TX 77225. Women and minorities are encouraged to apply. [EOAAE]

Positions Available

There is a \$50 charge for each position listed. Positions will be listed in the next available issue of *The Physiologist* and immediately upon receipt on the **APS Gopher Information Server**. Listings will remain on the APS Information Server for 3 months.

A check or money order payable to the American Physiological Society must accompany the position listing. Purchase orders will not be accepted unless accompanied by payment. Ads not prepaid will not be printed. Copy must be typed double spaced and is limited to 150 words. All copy is subject to the editorial policy of *The Physiologist*. EOAAE indicates Equal Opportunity/ Affirmative Action Employer and appears only when given on original copy. Copy deadline: copy must reach the APS office before the 15th of the month, two months preceding the month of issue (e.g., before February 15th for the April issue). Mail copy to APS, *The Physiologist*, 9650 Rockville Pike, Bethesda, MD 20814-3991.

Assistant/Associate Professor.

Neuroscience: Department of Physical Therapy/Exercise Science, University at Buffalo, is seeking an Assistant/Associate Professor in applied neuroscience. Responsibilities include directing a productive research laboratory, teaching neuroscience in undergraduate and graduate programs, mentoring graduate students, and participation in professional service. Research focus that complements existing areas in biomechanics, cardiopulmonary physiology, electrotherapy, muscle injury and repair, or scoliosis evaluation, is preferred. Application deadline: February 15, 1994. Send vitae and names of three references to Harold Burton, Department PTES, 411 Kimball Tower, SUNY at Buffalo, Buffalo, NY 14214. [EOAAE]

*Introducing a New
Benefit of Membership:*

The Scientist

Starting in January, APS Regular members residing in the United States will receive *The Scientist* at no cost

Perspectives in Exercise Science and Sports Medicine

Volume 6. Exercise, Heat and Thermoregulation

Carl V. Gisolfi, David R. Lamb, and Ethan R. Nadel (Editors)
Carmel, IN: WCB Brown & Benchmark, 1993, 389 pp.,
illus., index, \$45.00. ISBN: 0-697-20492-8

This is an important new contribution to the exercise and thermoregulatory literature. It reports a meeting in which a refreshingly new group discussed the complex interactions of thermoregulation, exercise, heat illness, and aging to mention a few. A lively audience was also assembled for discussion.

The book opens with one of the best overviews of thermoregulation and fever that I have seen for some while (Stitt). In this not only the current wisdom is given, but some of the assumptions and shortcomings in our knowledge of the brain mechanisms of thermoregulation and fever are given. In particular the difficulty deriving from our lack of knowledge of the cytoarchitecture of the supposed thermoregulatory regions and the lack of direct correlation between the thermosensitive unit studies and thermoregulatory behavior are well discussed. Models, including their benefits and shortcomings, are also wisely discussed. In the discussion I found the problems of the useful concept of "set point" and its occasional breakdown useful.

Thermoregulation during exercise is discussed (Werner) together with acclimatization and heat exposure. The mathematical description of heat balance and heat loss are easily followed, and there is good discussion of fluid and osmotic balances and circulatory responses to changes in ambient temperature.

Important to the process of body cooling, the mechanisms of sweat secretion receives attention (Sato), with inclusion of a good deal of new information including important discussion of the biochemical mechanisms and models of the actions of neurotransmitters and neuromodulators. In the short section on the central and peripheral control of sweating I would have liked to see, for old times sake, mention of the studies of Kuno and important work of Kerslake and Brebner on central and peripheral stimuli. In the discussion of this paper it was good to see Senay speaking out against the all too casually accepted hypothesis of the linkage between heat-induced skin vasodilatation and sweat gland activity.

There is an extensive review of the control of skin and muscle blood flow in heat exposure and exercise (Pawelczyk). This traces the knowledge of the topic from the 1930s to the present with a full and very useful bibliography. The cardiovascular control systems used in exercise, body heating, and a combination of the two are extensively reviewed and synthesized. The summary, "Muscle vs. skin? Muscle wins!" is very well presented and concludes with the statement that the author leaves the reader with more new questions than answers to old ones. This is exactly what a stimulating review should do.

The chapters on fluid replacement during exercise (Coyle and Montain) and thirst in thermoregulation and exercise (Nadel, Mack, and Takamata) deal with changes in fluid compartments and the effects of thermoregulatory responses in exercise, on thirst, and the practical issue of fluid replacement. In discussion, Senay emphasized the role of osmolality in thermoregulation, and the general discussion of these papers raised many ideas for further studies.

Aging is becoming an important part of physiological studies as the proportion of elderly people in the general population rises, and so it was appropriate that this aspect of the control of the circulation in exercise should be included (Seals). It was good to see that the evidence supported similar responses to body heating in young and old subjects at rest. Such changes in responses as occur at rest and in exercise in the heat were related to differences in work capacity, states of acclimatization, activity levels, and morphological changes, not to mention the complications of subclinical pathologies. The evidences for these conclusions are well reviewed and referenced.

No meeting of this type would, in these days, be complete without a discussion of the molecular mechanisms (Moseley). This biochemical approach, particularly the analysis of the roles of heat shock proteins in thermotolerance, is a most valuable addition to the many previous symposia on thermal responses. It will lay the foundation for much new basic understanding of whole animal adaptations to thermal stress.

Finally, the role of endotoxemia in severe exercise and heat stroke is well presented with a good summary of the actions of endotoxins and the endogenous mediators of their action (Ryan). This is another important and little studied aspect of thermal and exercise responses. It is a pity that nobody nowadays quotes the work of Bannister (*Lancet* 2: 118-120, 1960) in which he explored the anhydrosis caused during exercise in the heat by doses of intravenous endotoxin which were in themselves not enough to cause significant symptoms. However, the work reported in this chapter is again novel to many thermoregulators and of great importance.

This book is a fine summary and unusual compendium of work related to the effects of exercise and thermoregulation. The discussions are all relevant and stimulating. It is at this time a most important addition to our bookshelves as a reference text and source of new ideas.

Keith E. Cooper
University of Calgary

Normal and Disturbed Motility of the Gastrointestinal Tract

Andrae J. P. M. Smout and Louis M. A. Akkermans
Bristol, PA: Taylor & Francis, 1992, 313 pp., illus., index,
\$65.00

Andrae Smout is a clinician scientist in the Department of Gastroenterology and Louis Akkermans a basic scientist in the Department of Surgery in Utrecht Hospital. Both excel in application of technology to research and diagnostic investigation of digestive tract motility. As a team working in The Netherlands, they have produced a book on gastrointestinal motility that will be a worthwhile acquisition for both the practicing gastroenterologist and the basic science teacher in the health sciences. Both authors are well known in the world's network of leading-edge investigators of gastrointestinal motility, and this status as scientists is reflected in a comprehensive, authoritative, and up-to-date account of the topic.

Readers interested in application of technology to GI-motility research and diagnosis of disordered motility will be impressed with

the accounts in this book. Advantages and limitations of methodologies including radiology, gamma scintigraphy, manometry, electromyography, and ambulatory monitoring are effectively presented for benefit to both clinician interested in diagnostic tests and the teacher seeking to add enrichment to a lecture. The book is superbly illustrated with endoscopic examples, radiographs, color photos of specialized instrumentation, instrumented subjects, data graphs, and artist's drawings.

The book is organized into five sections with the gross anatomy, histoanatomy, and physiology of normal motility comprising the first section. Basic science in this section is accurate and current with only an occasional factual mistake or misstep in the English translation. The second section deals with specialized regions from the esophagus to stomach to biliary tract to large bowel, anus, and pelvic floor. This section covers normal motor behavior, abnormal motility, the symptoms of disordered motility, and therapeutic strategies and interventions. The third section is essentially a handbook approach to the clinical treatment of the patient with symptoms suggestive of a motility disorder. Starting with specific symptoms, the authors take the reader through patient history and investigative examination to diagnosis and treatment. Discussion of treatment includes drug therapy, common surgical procedures, as well as discourse on iatrogenic disorders resulting from surgical intervention. Besides being a practical handbook for the clinician, the latter section offers useful enlightenment for basic scientists hoping to enrich their lecture to first- or second-year medical students.

Finally, the book can be recommended as a comfortably readable reference text firmly based in normal structure-function relations, pathophysiology, and clinical gastroenterology.

Jackie D. Wood
Ohio State University

Oxygen Transport in Biological Systems: Modelling of Pathways from Environment to Cell

S. Eddinton and H. F. Ross, Editors
Society for Experimental Biology Seminar Series 51
New York: Cambridge University Press, 1992, 298 pp.
ISBN: 0-521-41488-1

To "serve not only as an introductory review of a specific topic, but also to introduce the reader to experimental evidence to support the theories and principles and to point the way to new research" is the stated goal of this volume and others published in its series. This volume is a collection of 10 multiauthor chapters that were compiled from a symposium organized by the Society for Experimental Biology, and presented at the University of Birmingham in April 1991. The topic in this case is modelling oxygen transport to cells, and indeed the reader is led from an introduction to the fundamental concept of modelling in biological systems, to some specific models in oxygen transport and to their applications

and implications in research.

The purpose of modelling, as introduced in the chapter by Shelton and reiterated throughout the volume, is to construct a framework for analyzing a given system. This framework must accommodate at least the essential physics of the system. In addition a model may be expandable to introduce some anatomical, physiological, or ecological parameters to add the flexibility necessary to make the model realistic. A model is successful if it describes a system in tractable terms. At least, a successful model relies on simplification and estimation to give insight into the functioning of a system without having to perform time-consuming and expensive experimentation. At best, a model may be useful for understanding physiological adaptation and selective pressures leading to evolutionary change.

A model need not be anatomically or physiologically correct to be useful. The chapter by Alexander and Young demonstrates how much can be learned about the dynamics of breathing by applying physics of vibrating springs. The chapter by van Beek uses the mathematics of fractals and the concept of self-similarity of structure to analyze blood flow heterogeneity and therefore ultimately to predict profiles for tissue oxygen content.

A simple model may be built upon slowly as anatomically and physiologically relevant parameters become better characterized through experimentation. The chapters by Perry, Egginton and Ross, Hoofd, and Groebe all begin with the Krogh model, which has been the foundation for modelling oxygen transport throughout this century. Each of these chapters then demonstrates how many advancements have been made in understanding the complexities of oxygen delivery to tissues by expanding this model.

The primary strength of this volume is its diversity; it covers topics from whole animals and plants to subcellular structures. Methodologies include such disparate fields as comparative physiology and ecology, mathematics, biochemistry, and microscopy. One would certainly never expect to open a volume with this title and not find chapters discussing the Krogh model and blood flow heterogeneity. But chapters that also discuss stereochemical modelling of hemoglobin (Bellelli and di Prisco) and aeration of plants (Beckett and Armstrong) are as appropriate as they are refreshingly unexpected. Despite the diversity, the volume remains cohesive, with numerous cross-references between chapters and clear, unifying themes.

An important attribute of these special symposium compilations is that they have the luxury of space. Page limits in modern scientific journals are such that the rationale behind the choice of methodologies is seldom discussed, and the methodology itself is often reduced to "... was performed following the procedure described by ...". The chapter by Mayhew on oxygen diffusion in the placenta provides a concrete example of how to design and perform a stereological experiment, including the reasons behind the choice of sectioning plane, sampling grids and counting procedures. These clear, detailed explanations are what give the volume its feeling of authority, yet keep it readable.

This volume should be welcomed and approachable by all serious scientists interested in oxygen delivery to tissues. Many of the chapters will surely become classic citations in this field.

Susan R. Kayar
Naval Medical Research Institute

Kevin C. Kregel, formerly at the University of Arizona, has accepted a position in the Department of Exercise Science at the University of Iowa, Iowa City.

APS member **David Mendelwitz** is now with the Department of Physiology, University of Tennessee, Memphis.

David Goltzmand has moved from McGill University to Royal Victoria Hospital, Montreal.

APS member **Jill L. Sondeen** is now with USAISR, Fort Sam Houston, Texas.

Robert D. Guthrie, formerly at Magee-Womens Hospital, has accepted a position as Chairman of Pediatrics, Alleghany General Hospital, Pittsburgh, PA.

Peter J. Oates is now a principal Research Investigator with the Department of Metabolic Diseases, Pfizer, Inc., Groton, CT.

Karsten Schror is now with the Institute of Pharmacology, University of Dusseldorf, Germany.

APS member **Dorothy E. Vatner** has moved to the New England Regional Primate Research Center, Southborough, MA. She was formerly at Massachusetts General Hospital.

Anthony B. Ebeigbe is now Professor in the Department of Physiology at the University of Benin College of Medicine, Benin City, Edo State, Nigeria.

Formerly at the University of Alabama at Birmingham, **C. Terrance Hawk** has moved to the Division of Laboratory Animal Resources, Duke University Medical Center, Durham, NC.

Laszlo Lorand is now at the Northwestern University Medical School, Chicago, IL.

Ivan Sabolic is moving to the Institute for Medical Research and Occupational Health, Zagreb, Croatia. He was at Massachusetts General Hospital.

Burton E. Sobel has moved from the University of Vermont to Washington University School of Medicine, St. Louis, MO.

APS member **Steven Wickler** is Professor of Animal and Veterinary Sciences and University Veterinarian at California State Polytechnic University, Pomona, CA.

David P. Swain has moved from Marshall University to the Wellness Institute and Research Institute, Old Dominion University, Norfolk, VA.

People and Places

People and Places notices come almost exclusively from information provided by members and interested institutions. To ensure timely publication, announcements must be received at least two months (by the 15th of the month) before the desired publication date. Send all information to *The Physiologist*, APS, 9650 Rockville Pike, Bethesda, MD 20814-3991.

Gregory L. Stahl is now with the Department of Anesthesiology, Brigham Women's Hospital, Boston. He was formerly at the University of California, Davis.

Charles L. Rice is now with the Department of Surgery, University of Illinois, Chicago.

APS member **Evelyn Satinoff**, formerly at the University of Illinois, has moved to the Department of Psychology, University of Delaware, Newark.

APS Members Receive Humboldt Awards

The Alexander von Humboldt Foundation announced that several APS members received awards. **Mordecai Blaustein**, University of Maryland, Baltimore, received a Humboldt Award for Senior American Scientists. This award is given to scholars possessing a position as a full/associate professor and an internationally recognized research record. Award winners are invited to spend a research stay of 4-12 months at a university or research institute within Germany.

Arthur M. Brown, Baylor College of Medicine, Houston, has received funding for a German postdoctoral researcher under the Feodor-

Lynen program. The selection committee has also selected **Thomas Dick**, Case Western Reserve University, Cleveland, **Brian Guth**, University of California, and **Karie Scrogin**, Oregon Health Sciences University, as recipients of Research Fellowships for long-time collaborative research projects in Germany. These awards are made to highly qualified foreign scholars holding doctorates and under the age of 40.

Applications and information about these programs may be obtained from the Alexander von Humboldt Foundation, 1350 Connecticut Avenue NW, Suite 903, Washington, DC 20036.

Popel Elected as Fellow of ASME

APS member **Aleksander S. Popel**, Professor of Biomedical Engineering at the Johns Hopkins University School of Medicine, has been elected a Fellow of the American Society of Mechanical Engineers for his contributions to the field of mechanics of blood flow and molecular transport in the microcirculation. He has also been elected a Fellow of the American Institute of Medical and Biological Engineering.

Know Your Sustaining Associates

Mack Printing Group

The Mack Printing Company began early in the twentieth century when in 1902 Harvey Mack established a business relationship with Professor Edward Hart, owner of the Chemical Publishing Company of Easton, Pennsylvania. Professor Hart's primary business was assisting a group of chemists in the New York area publish scientific journals. In the years since printing those first journals for a group that would eventually become the American Chemical Society, The Mack Printing Group has grown to be one of the 10 largest publications printers in the United States.

The Mack Printing Group operates three divisions specializing in the printing of short-to-medium run magazines and scholarly publications. The company operates manufacturing facilities in Easton, East Stroudsburg, and Ephrata, Pennsylvania.

The core business of The Mack Printing Group continues to be scientific and technical publications. Today the company prints nearly 500 such journals. The company provides publishers with a full range of services, including composition, prepress, printing, binding, mailing, and alternate forms of information delivery such as CD-ROM and on-line products.

APS Membership

Membership applications may be obtained from APS Membership Services, 9650 Rockville Pike, Bethesda, MD 20814-3991. Applications are reviewed and approved by Council on a regular basis throughout the year.

Symposium to Honor Coleridges

A symposium to celebrate the careers of **Hazel and John C. G. Coleridge** will be held April 8th and 9th, 1994, at the University of California-Davis Medical Center in Sacramento, CA. All friends and previous colleagues of Hazel and John Coleridge are invited to attend and to present their research if they desire. An attempt will be made to publish the proceedings of the symposium.

For more information, please contact C. T. Kappagoda or M. P. Kaufman. Either can be reached at the Division of Cardiovascular Medicine, TB 172 Biolatti Way, University of California-Davis, Davis, CA 95616. Tel: 916-752-0717; fax: 916-752-3264.

Lakatta Receives Award for Aging Research

APS member **Edward Lakatta** is the 1993 recipient of the AlliedSignal Achievement Award in Aging for his contributions to this field in biomedical research. Lakatta is the Chief of the National Institute on Aging Gerontology Research Center's Cardiovascular Laboratory.

Lakatta, an APS member since 1979, studies cardiac functions and how aging and cardiovascular disease modify these functions. The award seeks to support and encourage highly innovative research into the biology of aging and new insights into the mechanisms of age-related diseases and disabilities.

ANNOUNCEMENTS

LSRO Begins Study

The Life Sciences Research Office of FASEB is beginning a new study to prepare the Third Scientific Report on National Nutrition Monitoring for the US Departments of Agriculture and Health and Human Services. The 21-month project will be completed in 1995, and the Third Scientific Report on National Nutrition Monitoring will be published in mid-1995.

LSRO Publishes Report

"NHexas Dietary Monitoring Options" is a report prepared for the Center of Food Safety and Applied Nutrition, Food and Drug Administration and is available from LSRO. The report provides an independent assessment by an ad hoc expert panel of the dietary monitoring options for the National Human Exposure Assessment Survey. The report is available for \$15.00 prepaid from the FASEB Special Publications Office, 9650 Rockville Pike, Bethesda, MD 20814-3998. (Maryland residents, please add 5% sales tax.)

AAAS Seeks Information for Resource Directory

The American Association for the Advancement of Science Project on Science, Technology, and Disability invites scientists and engineers with disabilities to be included in the third edition of the *Resource Directory of Scientists and Engineers with Disabilities*. Potential candidates for the directory must hold, or be working toward, a degree in a scientific, engineering, or medical discipline, or currently be employed in a scientific field.

Funded by the National Science Foundation, the directory has assisted hundreds of individuals enter and advance in scientific disciplines. The directory helps connect persons with disabilities with professors, teachers, and counselors who can serve as role models and mentors.

To be included in the directory or for more information, contact Laureen Summers, Program Associate; or Patricia A. Thompson, Editorial Specialist, AAAS, 1333 H Street NW, Washington, DC 20005. Tel: 202-326-6645 (V/TTD); fax: 202-371-9849.

APS Sustaining Associate Members



The Society gratefully acknowledges the contributions received from Sustaining Associate Members in support of the Society's goals and objectives

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Scientific Meetings and Congresses

Symposium: Human Resources in Science and Technology: Coping With Change, March 3-4, 1994, Washington, DC. *Information:* Eleanor L. Babco, Commission on Professionals in Science and Technology, 1500 Massachusetts Avenue NW, Suite 831, Washington, DC 20005. Tel: 202-223-6995.

***Helicobacter pylori* and Gastro-duodenal Disorders**, April 11-12, 1994, Philadelphia, PA. *Information:* IBC USA Conferences Inc., 225 Turnpike Road, Southborough, MA 01772-1749. Tel: 508-481-6400; fax: 508-481-7911.

IBC's Third Annual Conference on Gene Therapy, April 18-20, 1994, Washington, DC. *Information:* IBC USA Conferences Inc., 225 Turnpike Road, Southborough, MA 01772-1749. Tel: 508-481-6400; fax: 508-481-7911.

Novel Amplification Technologies for DNA/RNA-Based Diagnostics, April 20-22, 1994, San Francisco, CA. *Information:* IBC USA Conferences Inc., 225 Turnpike Road, Southborough, MA 01772-1749. Tel: 508-481-6400; fax: 508-481-7911.

8th Annual Human Anatomy and Physiology Society Conference and Workshops, June 4-9, 1994, Portsmouth, NH. *Information:* Pamela M. Langley, 1994 HAPS Conference Director, New Hampshire Technical Institute, 11 Institute

Drive, Concord, NH 03301-7412. Tel: 603-225-1868; fax: 603-225-1895.

II International Symposium on Imidazoline Receptors, July 19-20, 1994, New York City. *Information:* Imidazoline Symposium Secretariat, The Macrae Group, 230 East 79th Street, Suite 8E, New York, NY 10021. Tel: 212-988-7732; fax: 212-717-1222.

XI Congress of the International Society for Artificial Cells, Blood Substitutes, and Immobilization Biotechnology, July 24-27, 1994, Boston, MA. *Information:* Pamela Bron, MIT, 77 Massachusetts Avenue, Bldg. E25-342, Cambridge, MA 02139. Tel: 617-253-3123; fax: 617-258-8827.

Society of Magnetic Resonance Second Meeting and Exhibition, August 6-12, 1994, San Francisco, CA. *Information:* SMR Berkeley Office, 1918 University Avenue, Suite 3C, Berkeley, CA 94704. Tel: 510-841-1899; fax: 510-841-2340.

First World Congress on High Altitude Physiology and Medicine, September 12-16, 1994, La Paz, Bolivia. *Information:* John C. Triplett, Chairman, World Congress on High Altitude Medicine and Physiology, US Embassy La Paz, APO AA 34031. Tel: 591-2-350251; fax: 591-2-359-875.

Research Associateships Available

The National Research Council announces the 1994 Resident, Cooperative, and Postdoctoral Research Associateship Programs to be conducted on behalf of federal agencies or research institutions. Approximately 350 new fulltime associateships will be awarded on a competitive basis for research in many scientific fields. Most of the programs are open to both US and non-US nationals and to both recent PhD degree recipients and senior investigators.

Annual stipends for recent PhDs for the 1994 program year range from \$30,000 to \$45,000, depending on the sponsoring laboratory, and will be appropriately higher for senior associates. Applications submitted directly to the National Research Council are accepted on a continuous basis throughout the year. Those postmarked no later than April 15 will be reviewed in June and by August 15, in October.

Information on specific research opportunities and participating federal laboratories as well as application materials may be obtained from the Associateship Programs (TJ 2094/D2), National Research Council, 2101 Constitution Avenue NW, Washington, DC 20418. Fax: 202-334-2759.