

# THE PHYSIOLOGIST



A Publication of the American Physiological Society

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## Sixty-Sixth President of APS

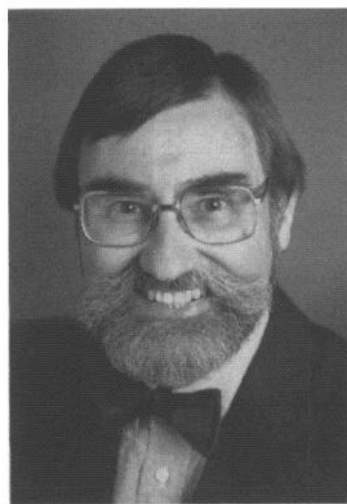
### William H. Dantzler

William H. Dantzler was installed as the 66th President of the American Physiological Society at the close of the Society's spring business meeting this month in New Orleans. He succeeds Stanley Schultz, Professor and Chairman of the Department of Physiology and Cell Biology at the University of Texas Medical School in Houston.

Dantzler is Professor and Head of the Department of Physiology at the University of Arizona College of Medicine. He has long been active in the Society, having served as a member of the Membership Committee and the Committee on Committees. He has also served as Secretary and Chairman of the Renal Section, as Councillor and Chairman of the Section on Water and Electrolyte Homeostasis, and as Councillor and Treasurer of the Comparative Physiology Section.

Dantzler has played a particularly active role with the Society's publications. He is currently the editor of the *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*. He has also served three years on the editorial boards of the *American Journal of Phys-*

(continued on p. 30)



## An Interview With the President

*William Dantzler recently shared his thoughts on a range of issues concerning physiology and the American Physiological Society.*

**What is your assessment of the current status of physiology as a discipline, and what is your vision as to what the direction of physiology as a discipline ought to be in the next 5 to 10 years?**

"The discipline of physiology is in one of its most exciting phases, with an even more exciting future ahead. The techniques of molecular biology and the physical sciences as applied to physiological problems are supplying new information on biological function at the molecular and submolecular level at a dizzying rate.

"However, this modern reductionist approach encom-

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## 66TH PRESIDENT

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*iology and the Journal of Applied Physiology*; four years as a member of the editorial board of the *American Journal of Physiology: Renal, Fluid and Electrolyte Physiology*; and nine years as Associate Editor of the *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*.

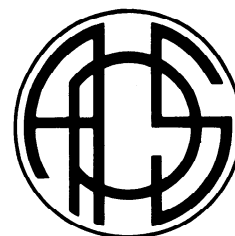
Dantzler earned his MD degree at Columbia University and his PhD degree at Duke University, the latter under the direction of a distinguished past president of the American Physiological Society, Bodil Schmidt-Nielsen. Dantzler's career includes a number of stints as a visiting professor at the Physiologisches Institut of the University of Wurzburg in the Federal Republic of Germany and one at the Institut fur Physiologie of Innsbruck University in Austria. He has been at the University of Arizona College of Medicine since 1968 and has been a full professor since 1974.

Dantzler's research involves comparative renal physiology with particular emphasis on the renal tubular trans-

port of organic molecules. He has been recognized at the University of Arizona College of Medicine numerous times for his teaching, most recently as Basic Sciences Educator of the Year 1990 and with the Spotlight of Excellence Award for Outstanding Teaching and Outreach to Medical Students in 1992.

Dantzler believes that the Society must seek to attract the brightest young people to physiology and to enhance the Society's already excellent programs to convey to them the excitement of the field. He wants the Society to communicate that same enthusiasm about physiology to the general public to convince them of the "critical need for additional and more secure national funding for biomedical research and education and of the legitimate requirement for the use of animals in biomedical research." Another goal is to streamline Society governance to allow young members and representatives of emerging facets of physiology greater participation.

According to Dantzler, the most significant aspect of physiological research in the next few years will involve applying the techniques of molecular biology and the physical sciences to physiological problems. "The most significant aspect of physiological research in the next few years should and almost certainly will be the attempts to use these new tools (and others yet to be devised) to integrate molecular information into a functional system at all levels from cells to intact individuals."

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## INTERVIEW

(continued from p. 29)

passes only a portion of the science of physiology. The essence of physiology is regulation and integration. The most significant aspect of physiological research in the next few years should and almost certainly will be the attempts to use these new tools (and others yet to be devised) to integrate molecular information into a functional system at all levels from cells to intact individuals. The future of physiology as an integrative science has never appeared more exciting or more challenging."

**With President Clinton taking office after campaign promises of major deficit reduction, it looks as though it will be another tough year to seek increases in biomedical research funding. At a time when many other domestic programs are likely to be cut or frozen at current levels, why should biomedical research funding be increased? What can APS as a whole and its members as individuals do to assure adequate funding for biomedical research in this year's congressional appropriations?**

"Obviously, basic biomedical research is in a difficult situation. It is competing for federal dollars with other worthy areas (health care, repair of infrastructure, applied research, technology development, etc.) that show results in the short term whereas it only yields results over the long term.

"APS and individual scientists must do a better job of convincing not only our legislators but especially the lay public of the true significance of basic biomedical research for improvements in health and advances in technology over the long term. We need to show how valuable the return on

this long-term investment can be by publicizing the newest examples of advances based on investigator-initiated basic research.

"We must clearly emphasize that the current lack of stability in our basic research support threatens our ability to make improvements in health care and to achieve technological growth, which puts us at a substantial disadvantage compared with our competitors in Europe and Asia who are more far-sighted in terms of research."

**Now that a federal animal facilities protection law is on the books, what are the most pressing issues APS should address concerning the use of animals in research?**

"First, we must avoid complacency. The new legislation affords institutions significant protection from some of the worst offenses of the animal rights groups. However, it does nothing to stop these people from spreading misinformation about the use of animals in research.

"I am constantly struck by the ignorance of many of the lay public (including those in influential positions in government) about the significance of animal use for major research advances. APS and we physiologists as individuals must continue to be proactive in convincing the public of the essential need for the humane use of animals in biomedical research. In this area, we have to develop more detailed information on recent examples of the significance of animal research for advances in medicine and technology.

"APS has recently endorsed the National Research Council's plan for a study to examine the use of animals in education. This study will focus on the role animals can play in the educational experience of students in grades K-12. This is an important area in which APS can play a role in

### William H. Dantzler's Goals as President

The APS must make every effort to

- attract the very brightest young people, including those from all underrepresented groups to physiology;
- enhance and promote its already excellent programs (publications, lectures, symposia, workshops, etc.) to convey to these young people, as well as to established scientists of other disciplines and the public at large, the excitement of a field in which new techniques are permitting extraordinary advances in understanding biological function and its regulation and integration at the molecular, membrane, cell, organ, and organismic levels;
- convince the public of the critical need for additional and more secure national funding for biomedical research and education and of the legitimate requirement for the use of animals in biomedical research; and
- streamline its governance to give full voice to young members and those representing the new and emerging facets of the discipline.

supporting the use of animals for educational purposes and in helping young students to recognize the significance of animal experimentation for advances in biomedical research.

"If we are to convince the public of the importance of humane animal experimentation for advances in basic knowledge and in medical treatments, we must play a proactive role at the level of elementary school education to counteract the very strong efforts of animal rights groups to turn children against any use of animals."

**What other critical issues confront physiology as a discipline, and what should APS do about those issues?**

"The most critical issue confronting physiology is actually a result of its success in making major scientific advances via the reductionist approach. This success has spawned ever greater specialization and new groups devoted to these areas of specialization. This fragmentation has led to problems in medical education. Whereas most physicians recognize the importance of basic integrative physiological knowledge to the practice of medicine, many others do not. Some, both physicians and scientists who started out as physiologists, have become so committed to specialized areas that the central place of physiology in the medical curriculum is threatened.

"Physiology has been the mother discipline for the development of many other fields of biological science (biochemistry, biophysics, etc.), but it also remains the mother familias to these areas in a broader sense: Physiology emphasizes the integration of information from all other fields into functioning units from cells to whole organisms. It is imperative that APS emphasize the exciting and challenging future of integrative physiology, stressing that it is not a matter of clinging to old approaches to integration, but involves developing totally new approaches."

**What is your overall assessment of the vitality of the American Physiological Society?**

"APS is in excellent condition. Its journals are doing extremely well: All are increasing their strength, and many are the leaders in their fields. The Society's resources enable it to sponsor first-class meetings and now to take new initiatives in education. The Spring Meeting, which is the major integrative meeting, and APS Conferences, which are vehicles for concentrating on specialized topics, clearly are attracting

outstanding science. I am convinced that they will steadily increase in importance. Together, they make the Society attractive to physiologists working at all levels of biological organization. The establishment of a new education office reflects the strength of the Society and the desire of its members to increase understanding of physiology among people of all ages and at all levels of education."

**How has membership in the American Physiological Society proven beneficial to you? Why would you recommend others to join?**

"Through its superlative meetings and publications, membership in the APS has allowed me to recognize and appreciate all areas of physiology, to truly understand the integrative nature of the whole of physiology, and to keep abreast of developments in many areas of physiology beyond my own research interests. With the growth of the APS Conferences and the continued strength of the all-encompassing Spring Meeting, the Society offers a forum for everyone working in physiology."

**What are your goals during your tenure as president of the American Physiological Society?**

"I plan to continue to promote the initiatives begun under the long-range strategic plan. This, of course, means further strengthening the Society's publications and the new APS thematic conferences. In particular, however, it means supporting and promoting the efforts of the new education officer to coordinate our education efforts at all levels, but especially among the precollege and college students and the lay public.

"I am particularly interested in making every effort to attract the very brightest young people, including all those from underrepresented groups, to physiology. I plan to further the efforts of APS to work through all its avenues (publications, scientific meetings, education office, and public affairs office) to convey to these young people, as well as to established scientists in other disciplines and the public at large, the excitement and challenging future of a field that holds our brightest hope for integrating the new biological knowledge at all levels, from cells to humans. I plan to do everything I can to promote the involvement of young people, of women, and of other underrepresented groups in the activities and governance of APS."

### Nominations for Honorary Membership

Members are invited to submit nominations for honorary membership. Send nominations and documentation of the candidate's contributions to physiology to the APS Honorary Membership Committee, 9650 Rockville Pike, Bethesda, MD 20814.

# The NIH Strategic Plan: Biomedical Research as an Investment for Humanity

Jay Moskowitz  
Associate Director for  
Science Policy and Legislation,  
National Institutes of Health

Good afternoon. I welcome this opportunity to discuss the NIH Strategic Plan with this important group of colleagues. As chairs of Physiology and Pharmacology Departments, you represent areas of biomedical research and career development that are crucial to the success of the NIH Strategic Plan and, in fact, the biomedical research enterprise. I firmly believe that the Plan—along with its implementation strategy—will be a valuable tool for the biomedical research community in that it can extend the reach and enhance the accomplishments of our individual and collective research endeavors—within and across disciplines.

## Planning Process

On my flight down here, I had a chance to reflect on the events leading to this juncture in the evolution of the NIH Strategic Plan. It has been a productive—and, as many of you are aware, sometimes bumpy—20-month journey. It began with Dr. Bernadine Healy's confirmation hearings in March 1991. There, the new NIH director spoke of the agency's need for "a long-term plan that lives beyond immediate interests." Dr. Healy stressed the need for identifying priori-

ties and setting attainable goals that are sensitive to changing public need.

At Dr. Healy's initiative and under her leadership, NIH embarked on a pioneering planning process. The product of that deliberative, thought-provoking process will pay immediate and long-term dividends to the biomedical research community—present and future—and, most important, to the nation.

The Strategic Plan is the product of not only an NIH-wide dialogue, but a nationwide dialogue. Five public meetings were held at sites around the country. Some of you attended. Those meetings were part of a sincere effort to gain input to the Plan from a broad cross-section of the research community, industry, and the public. Over 2,000 individuals responded. In June, we held a major convocation of multidisciplinary panels of experts—some 250 of them—to further guide the Plan's development. Additional collaborative work occurred in July through the Director's Retreat, and still further refinements are being made, even today, as the document is readied for review by the new Administration.

The Plan is now entitled "Investment for Humanity." And the contents of the Plan live up to that billing. Major opportunities and challenges facing NIH and the entire biomedical research community are, I believe, conveyed clearly. The significance and importance of responding to these challenges and opportunities—the potential benefits to be reaped by science and society—come through strongly and, I hope, convincingly.

## Context for the Plan

Rather than plunging immediately into details, I want to begin by providing an overall context for the Plan. Our island setting provides an especially appropriate metaphorical backdrop for this discussion.

In biomedical research, as in so many other areas of human activity, "there are no islands, anymore," just as the poet Edna St. Vincent Millay wrote a half century ago. In the midst of the proliferation of specialties, we are witnessing a narrowing of the "technical oceans" that separated one field from another. To paraphrase John Donne, no modern biomedical research discipline "is an island, entire of itself." Every one "is a piece of the continent, a part of the main."

The increasingly interdisciplinary nature of the research endeavor and the growing importance of collaboration in science are testimony to this bridging of interests and activities. Although we pursue them from many different angles, the objects of our scientific pursuits are often the same: understanding the molecular workings that underpin health and disease and applying that knowledge for human benefit. Integration, coordination, and synergy are chief attributes of the Plan.

*(continued on p. 39)*

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Text of a speech given at the meeting of the Association of Chairs of Departments of Physiology and Pharmacology, Hutchinson Island, Florida, January 15, 1993.

## *Meetings and Conferences*

### **APS Conference Signal Transduction & Gene Expression Hyatt Regency at Embarcadero, San Francisco, CA November 17–20, 1993**

Growth, development, and metabolic regulation display physiological controls that often engage two fundamentally different foci, signal transduction and gene regulation. Signal transduction provides the proximal point of regulation. Analysis of cellular receptors, both membrane-bound and intracellular, has yielded a rich source of molecular information. G protein-linked, tyrosine kinase, and steroid receptors and the more distal elements in their signaling pathways are focal points for questions from physiological regulation to the molecular features of its nature. Physiological regulations extend from these signaling elements to gene regulation. Defining how signaling is propagated from the proximal elements to orchestrated control of gene expression is a primary goal of modern biology and the focus of an exciting conference entitled "Signal Transduction & Gene Regulation" to be held November 17–20, 1993, in San Francisco. Thirty world experts in signal transduction and gene regulation will convene for a program providing a unique opportunity to discuss the most recent advances in this area of research.

### **Program**

#### **Wednesday, November 17**

Registration

Evening Lecture: Henry Bourne (University of California, San Francisco)

#### **Thursday, November 18**

Signaling via G Proteins I

Heidi Hamm (University of Illinois)  
Brian Kobilka (Stanford University)  
Melvin Simon (California Institute of Technology)  
Richard Cerrione (Cornell University)  
Gary Johnson (National Jewish Center)

Signaling via G Proteins II

Arthur Brown (Baylor University)  
Randall Reed (Johns Hopkins University)  
Sue Goo Rhee (National Institutes of Health)  
David Clapham (Mayo Clinic)  
Allen Spiegel (National Institutes of Health)

Contributed Posters: G Protein-Mediated Signal Transduction

Evening Lecture: Ronald M. Evans (Salk Institute)

#### **Friday, November 19**

Growth Factors, Tyrosine Kinases, & Regulation I

C. Ronald Kahn (Joslin & Harvard)  
Morris White (Joslin & Harvard)

Morris Birnbaum (Harvard Medical School)  
Daryl Granner (Vanderbilt University)  
Graeme Bell (University of Chicago)

Growth Factors, Tyrosine Kinases, & Regulation II  
Lewis T. Williams (University of California, San Francisco)

John Cambier (National Jewish Center)  
Joan Massague (Memorial Sloan-Kettering Institute)  
Craig Malbon (State University of New York, Stony Brook)

Contributed Posters: Growth Factors & Tyrosine Kinases

Evening Lecture: James Wilson (University of Michigan)

#### **Saturday, November 20**

Mechanisms of Gene Regulation

Donald Brown (Carnegie Institution of Washington)  
Gregor Eichele (Baylor University)  
David Watkins (State University of New York, Stony Brook)  
Harvey Lodish (Whitehead Institute)

New Strategies for Molecular Studies of Regulation

Hsien-yu Wang (Taipei)  
Klim King (Taipei)

Transgenic Mouse Technologies

Gunter Schultz (Freie University, Berlin)

PCR-Based Technologies (TBA)

**Abstract Deadline—July 9, 1993**



## Publications

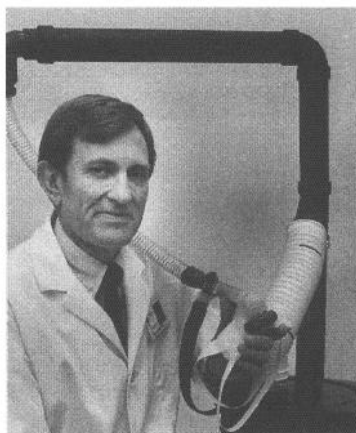
Introducing . . .

### John Remmers

John Remmers will become Editor of the *Journal of Applied Physiology* on July 1st. A professor of physiology and internal medicine, he heads the Respiratory Research Group at the University of Calgary.

Remmers graduated from Harvard Medical School and did pre- and post-doctoral research training in Dartmouth Medical School's Department of Physiology. After spending his early faculty years in that department, he moved to the University of Texas Medical Branch at Galveston, working for a decade in the physiology and internal medicine departments. In 1984 he moved to the University of Calgary as a medical scientist of the Alberta Heritage Foundation for Medical Research. Remmers has been a visiting scientist in the Department of Neurophysiology at the Karolinska Institute, Stockholm, Sweden, and in the Department of Physiology, University of Heidelberg, each for one year.

Remmer's work has focused on the neural control of breathing, including



fundamental aspects and clinical applications. His investigations have elucidated reflexes controlling the motor act of breathing, and he has systematically explored synaptic interconnections of bulbar respiratory neurons. His clinical investigations have probed the fundamental factors involved in pathogenesis of obstructive sleep apnea and have contributed to therapeutic and epidemiological advances in the field of sleep disordered breathing.

Remmer's goals for the *Journal of Applied Physiology* include enhancement of the Journal's scientific stature and improvement in review efficiency. The Journal will continue to be a vehicle for reports on respiration, exercise/muscle, and thermoregulation. The scope will range from cellular to integrative aspects in each area. The respiratory content will focus on pulmonary circulation, lung micromechanics and transport, airway function, and control of breathing. Articles on exercise physiology will relate to cellular aspects of muscle contractility and metabolism and integrative aspects of cardiorespiratory control.

The editorial team includes Peter Barnes, Frank Booth, Christopher Dawson, Jerome Dempsey, Jack Feldman, Carl Gisolfi, Sukhamay Lahiri, Steven Lai-Fook, Ron Terjung, Charles Tipton, and Magdy Younes. Don Bartlett will serve as Consulting Editor. The *Journal of Applied Physiology* will continue to feature brief reviews of timely and significant topics. The Editors will form a team with broad expertise, ready to serve the Society and the international family of scientists working in the fields of respiration, exercise, and thermoregulation.

## Publications Committee and Editors Meet

The new Chairman of the Publications Committee, L. R. Johnson, spent a busy week in Bethesda last month attending a two-day meeting with the Finance Committee and chairing three days of Publications Committee meetings. Two new members, L. M. Mendell and J. A. Williams, joined D. L. Kunze and L. B. Rowell on the Publications Committee in 1993. On March 10, the committee interviewed three candidates for the editorship of *AJP: Lung Cellular and Molecular Physiology*. J. R. Rodarte, Chairman of the APS Respiration Section, assisted in the interview process. E. Rannels, currently serving as acting editor through 1993, was selected for a three-year term as editor starting January 1, 1994.

The Committee held its regular spring meeting on March 11 followed by the annual meeting with journal editors on March 12. Agenda items discussed at both meetings included

the Publications Annual Report for 1992, progress in meeting goals and objectives set by Council for Publications at the APS Retreats, budgets, guidelines for redundant and duplicate publications, rapid publication, and abstract style.

The Committee approved subscription prices for 1994 and also discussed at length some ethical problems concerning publications that have arisen during the year.

At the Editors meeting, each Editor submitted a report on the health of his/her journal and shared common problems concerning journal operations.

At the Experimental Biology '93 meeting in New Orleans, Johnson will give a verbal report to the combined Editorial Boards of the journals on the book and journal program. A full committee report for members will appear in the August issue of *The Physiologist*.

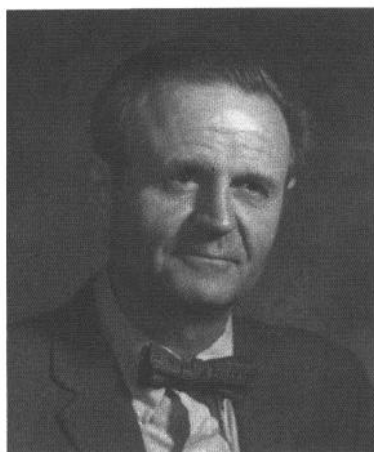
## Membership

### Giles F. Filley Memorial Awards

Thanks to a generous donation by the family of Giles F. Filley, the American Physiological Society is preparing to establish the Giles F. Filley Memorial Awards to honor one of the pioneers in pulmonology. The awards will recognize excellence on the part of young investigators pursuing research in the areas of respiratory physiology and medicine. Complete details of the award program will be announced in a forthcoming issue of *The Physiologist*. The APS hopes to announce the recipients of the first awards at the 1994 Experimental Biology Meeting in Anaheim, California.

Giles Franklin Filley, a member of the APS since 1957, died on January 22, 1989. Born on April 30, 1915 in New York City, he spent his early years in Greenwich, Connecticut. He received his AB degree in 1937 from Williams College and his MD degree in 1942 from Johns Hopkins University School of Medicine. The day after the completion of his final examination in May, he married Mary Brown Klinefelter.

Early in his residency, Filley developed a persistent cough and was diagnosed with pulmonary tuberculosis. This illness was to shape Filley's future career. While recuperating at the Trudeau Sanatorium at Saranac Lake, NY, he became acquainted with George Wright, who was the director of the physiology laboratory at the



sanatorium. As his health improved, he began working in the laboratory and discovered an abiding interest in physiological research.

He returned to Hopkins for two additional years of training in 1944 and then returned to Wright's laboratory in 1947. During the next eight years, he and Wright collaborated in a number of pulmonary physiological studies in both normal and pathological subjects. In 1953, Giles Filley was named Director of the Department of Physiology of the Trudeau-Saranac Institute, where he became widely recognized for his original method of testing pulmonary diffusing capacity during exercise.

In 1955, the Trudeau-Saranac Institute closed as a result of the advent of antimicrobial therapies for tuberculosis. Filley accepted the invitation of

James J. Waring to move to Colorado to work at the Colorado Foundation for Research in Tuberculosis and later the Webb-Waring Lung Institute. From 1955 to 1980, he served as Clinical Physiologist and Chief, Division of Physiology of the Webb-Waring Lung Institute and he attained the academic rank of Professor of Medicine at the University of Colorado School of Medicine.

Giles Filley, with several collaborators, played an important role in the development of one of the first "volume" ventilators to be manufactured. His interest in the physiology of respiratory failure and the associated acid-base disorders resulted in two classic textbooks: *Pulmonary Insufficiency and Respiratory Failure*, Lea and Febiger, 1967, and *Acid-Base and Blood Gas Regulation*, Lea and Febiger, 1971. His last years were devoted, in collaboration with the late Neal Kendig, to the conceptualization and development of "Carbicarb," a buffer for the treatment of acidemic states.

Filley's abiding interest in physiology and the development of young scientists was the reason why Mary Brown Filley and her four sons asked the APS to honor Giles' memory through the establishment of the Giles F. Filley Memorial Awards. In so doing, his contributions to respiratory physiology and medicine will be continued through the efforts of others.

Plan to Attend!

**XXXII IUPS Congress**  
Glasgow, Scotland  
August 1-6, 1993



## News From Senior Physiologists

### Letters to Helen Tepperman

**H. T. Chang** writes from Shanghai on his 85th birthday that he has been writing memoirs, reviewing articles for various journals, as well as enjoying "porch gardening" and Chinese calligraphy. He had stayed active with scientific work and tutorial services until an automobile accident in 1987 forced him to slow down.

"I think we older people should have lots to learn from our younger colleagues, who certainly know more than most of us about the modern technology and future trends in the physiological sciences. The future belongs to the young people," writes Chang.

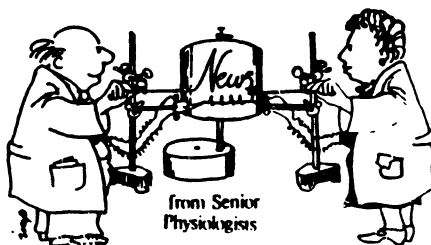
"I have managed to continue in research," writes **Francisco Alonso-de-Florida** from the National University of Mexico. His latest efforts include papers on a disinhibition mechanism of LTP in ganglia and the effect of motor denervation of muscle on cellular elements of the tissue not being directly concerned with contraction. Alonso-de-Florida founded an equivalent to a Doctor of Science at the National University of Mexico, dedicated to young scientists interested in one branch of the physiological sciences.

**Earl Wood** has moved from the Mayo Clinic to North York, Ontario to spend a year working with the Canadian Defense and Civil Institute of Environmental medicine to improve methods of monitoring +Gz tolerance in airplane pilots for the purpose of developing improved protective anti-G equipment.

"I am continuing my collection of portrait medals of individuals in physiology and related sciences, as well as medals of scientific congresses," writes **Ralph Sonnenschein** from Malibu, California. "I have all the medals of the International Physiological

Congresses except that of the 1901 congress in Torino and would be grateful if anyone can help me obtain this, or other medals of physiological interest." Sonnenschein can be contacted through the Department of Physiology at UCLA School of Medicine, Los Angeles, CA 90024-1751.

**David I. Abramson** writes from Evanston, Illinois, on his 87th birthday that he is well and is happily occupied. He retired as head of the Department of Physical Medicine and Rehabilitation at the University of Illinois



College of Medicine in Chicago in 1972 and from his private practice in peripheral vascular disorders in 1976. Since then he has been "working at the Office of Hearings and Appeals of the Social Security Administration as a medical advisor (medical expert) to the administrative law judges. These individuals, with a background in law and not in medicine, have to make decisions as to whether claimants [who are] less than 62 or 65 years of age are nevertheless eligible for a Social Security pension because they allege to be suffering from a disability that prevents them from performing gainful work.

"I help the judge come to a conclusion on this point by previously reviewing all the available medical records and then testifying at a hearing. The claimant is encouraged to have an attorney to present his or her claim and question the medical expert if he so desires, a possibility which keeps me on my toes mentally. The job is quite in-

teresting and requires that I maintain a constant perusal of the current literature in my field (cardiovascular diseases). I have on the average of 4 hearings a week either in the loop in Chicago or in neighboring suburbs."

**Bruno Balke** writes from Grand Junction, Colorado, that he wants to let "old friends and co-workers know that I am still alive and thinking about them often." Reflecting on his long career in exercise physiology, he counts as his greatest accomplishment "the eventual general recognition of the role of exercise in the prevention and treatment of coronary heart disease, based on physiological and sports medical principles."

Balke began his career as a "scientific assistant" in the sports medicine department of the University of Berlin. He accompanied the 1938 German Himalayan Expedition as team physician thanks to the late Ulrich C. Luft, a close friend from medical school who introduced him to research in altitude and exercise physiology. Balke later became "intensely involved in experimental investigations on the physiological effects of altitude, cold and exercise, in their various combinations" leading to a PhD thesis at the University of Leipzig on "Physical performance capacity in high mountains."

Balke continued his work in the United States at the USAF School of Aerospace Medicine in San Antonio first in the Department of Physiology and later Space Physiology, where he "became engaged in the physiological testing of the first selected astronauts."

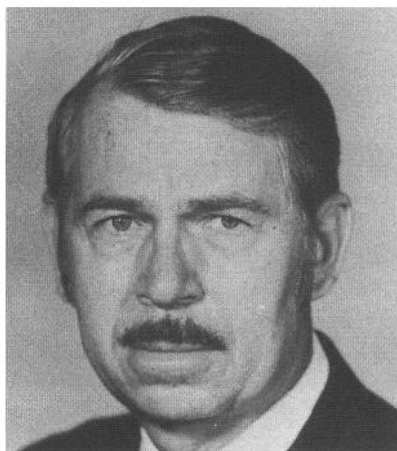
He was later affiliated with the University of Oklahoma and the VA Hospital in Oklahoma City and the University of Wisconsin-Madison.

Balke concludes, "After almost 20 years in semi-retirement, still engaged in sports medical and physiological testing, counseling, and active work with health or somehow disabled people, I finally have to slow down."

## 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.

## APS Receives Bequest

The American Physiological Society has received a bequest from the estate of Edith G. Fry, who died December 3, 1992, in New Haven, CT, at the age of 86. The bequest is an unrestricted gift and will be used to implement some of the member service program goals defined by the Society's strategic plan.

Fry was a 29-year member of APS. She graduated in 1926 from Wilson College in Chambersburg, PA, and re-

ceived a master's degree in biochemistry from the University of Pennsylvania in 1936. She joined the research faculty at Yale in 1936 as a research assistant in the department of physiological chemistry, moved on to the physiology department, and joined the department of medicine in 1967. Fry was a physiology instructor from 1964 to 1969 and then was an instructor in medicine until retiring in 1971. Her lifetime research focused on hormone and carbohydrate metabolism.

### NIH STRATEGIC PLAN

*(continued from p. 33)*

In the same vein, the Strategic Plan is the product of a truly collaborative undertaking. As a result, it offers the means to fix our collective sights on the extraordinary research opportunities that lie on the near and distant horizons of the biomedical and behavioral sciences. It can foster partnerships—across the institutes, among disciplines, and between the NIH intramural and extramural communities. The Plan can strengthen existing and emerging ties between and among government, academia, and industry.

For many reasons, the Strategic Plan is right for our times. It is right for this stage in the growth of the sciences and technologies critical to future progress. It's right for the societal and economic conditions we now face as a nation, and it's right for this juncture in the evolution of health research. It is right for this stage in the life of the modern NIH, now into its fifth decade. And it is the tool we are using to set funding priorities when we go back up to Capitol Hill to seek funding for the 1994 fiscal year.

### Mission and Goals

For the first time in its history, the NIH has an administrative mission statement. And this mission statement is fully reflected in each of the more than 78 specific initiatives that make up the Plan.

### NIH Mission Statement

The pursuit of science to expand fundamental knowledge about the nature and behavior of living systems; to apply that knowledge to extend the health of human lives and reduce the burdens resulting from disease and disability.

This succinct summation of the NIH's reason for being does two things: It reaffirms the NIH's commitment to basic research—the foundation of our enterprise. And it assigns a responsibility to the biomedical research community. The Plan calls on the research community to work toward transferring the results of its efforts not only to other laboratories and the bedside, but to the community and to the organizations searching for ways to contain escalating health care costs and to increase access to quality care.

These implied obligations and the potential contributions of biomedical research to health and to the nation's economic strength are reflected in the Plan's goals.

### NIH Goals

- To foster fundamental creative discoveries, innovative research strategies, and their applications as a basis to advance significantly the Nation's capacity to protect and improve health.
- To develop, maintain, and renew scientific human and physical resources that will assure the Nation's capability to prevent disease, improve health, and enhance the quality of life.
- To expand the knowledge base in biomedical and associated sciences in order to enhance the Nation's economic well-being and ensure a continued high return on the public investment in research.
- To exemplify and promote the highest level of scientific integrity, public accountability, and social responsibility in the conduct of science.

As the nation confronts its economic, health care, and other issues that compete for limited resources, the connections between the health of US citizens, national welfare, and fundamental biomedical and behavioral research are often

overlooked. The Plan reasserts these links. It can be the vehicle to make these connections stand out in bold relief.

There is no force fit between basic research and application. The tremendous scientific strides that have been made over the last two decades have pushed back the limits of what is possible—the limits of what can be done to prevent disease, reduce the burden of disability, and promote health.

Consider the growth of the biotechnology industry, a child of NIH-supported basic research. Currently, a \$4 billion enterprise, the industry is expected to reach \$50 billion by the turn of the century. Or consider the growing number of applications for gene therapy protocols (just 3, three years ago, and now 25 are approved and 9 are pending). Or the progress reported by laboratories seeking cancer vaccines. Or the progress achieved in elucidating the structural components of transforming growth factor- $\beta$  (TGF- $\beta$ ). In a landmark achievement this year, researchers determined the structure of TGF- $\beta$  and identified the likely sites of cellular binding. This advance is key to the development of drugs that inhibit or promote the activity of TGF- $\beta$ . It opens the way to new therapies for treating disease and speeding wound healing and bone regeneration.

I could go on, but the message is clear. Teams of scientists pursuing these and other promising lines of research are straddling the once sizable wall that separated basic and applied research. Today, the wall is smaller than it ever has been before.

## The Six Objectives

Before I discuss the Strategic Plan's six trans-NIH objectives, let me repeat an observation made by the French scientist Charcot, the father of neurology, some one hundred years ago:

"Disease is from old and nothing about it has changed," he said. "It is we who change as we learn to recognize what was formerly imperceptible."

Clearly, AIDS and other diseases have arisen since Charcot spoke those words. But it is his broader point that pertains to what we are talking about today. The progress we have achieved over the last several decades has vastly changed our perceptions. Recent scientific progress has made our understanding of health and disease immensely deeper and the possibility of disease amelioration and cures a realistic goal. At the same time, our society and the world have undergone enormous change. This change is shaping perceptions of both the capabilities and the responsibilities of health research and the institutions that are charged with organizing and fostering that research. The Strategic Plan's objectives are fully responsive to changes in both dimensions—in science and society.

1. The first trans-NIH objective and top priority of the Strategic Plan is to "assure that critical areas of science and technology in basic biology impacting on human health and

the national economy are advanced as priorities across the NIH." Critical areas of science and technology form the deepening foundation of fundamental knowledge that underpins virtually all NIH activities.

The critical areas of emphasis for objective 1 are

- molecular medicine,
- biotechnology and bioengineering,
- immunology and vaccines,
- structural biology, and
- cellular and integrative biology.

I should point out each of these critical areas embraces, complements, and extends the aims of researchers in the fields of physiology and pharmacology. For example, advances in defining molecular mechanisms involved in normal cellular growth and differentiation—and in determining why and how they are disrupted—can lead to drugs designed specifically to correct, or mitigate, the cellular and metabolic processes that underlie disease.

Major goals and aspirations especially relevant to physiology and pharmacology appear throughout this section of the Plan. I'll mention a few.

- Facilitate the integration of such fields as synthetic chemistry, cell biology, physiology, the neurosciences, imaging biophysics, and computation with molecular genetics to accelerate basic research findings and clinical therapies.
- Develop methods for obtaining suitable crystals of target proteins, particularly those that are associated with the cell membrane.
- Intensify investigator research in the application of novel instrumentation and computational techniques to structure-based design of new drugs.

These are just three of the research directions outlined under this objective.

2. The second trans-NIH objective is to "strengthen the ability of the national biomedical and behavioral research enterprise to respond to current and emerging public health needs." The health and well-being of the American people is the essence of the NIH. The individual institutes—with their focus on specific diseases and facets of human health—are central to, and the agents for, achieving this objective.

The critical health needs and areas of emphasis for objective 2 are

- basic biology related to the environment;
- behavior and health;
- reproductive biology;
- bionutrition;
- childhood health and mortality;
- disease control and prevention;
- chronic and recurrent illness, rehabilitation, and aging;
- the health of women; and
- the health of minorities and underserved populations.

A physiologist or pharmacologist need not think long before identifying key research questions that await answers in each of these areas. Consider basic biology related to the environment—an area in which researchers must wrestle with the complex interplay between external agents and genetic composition over time. Our understanding of environmentally related diseases cannot increase without thorough examination of often subtle biological responses at every level—from gene to cell to tissue and so on up the whole organism and even populations of organisms.

3. The third objective is to “provide for the renewal and growth of the intellectual capital base essential to biomedical research.” A robust and diverse talent base is especially vital to sustaining our momentum. We can only be as creative and successful as the scientists who make up our enterprise. Training and career development and the recruitment of new generations into biomedical research, obviously, are key components of this objective. So is ensuring fairness and equity of opportunity at the NIH. This is of primary strategic importance and central to efforts to enhance the human resource base of today’s and tomorrow’s biomedical and behavioral research.

The areas of emphasis for objective 3 are

- development of scientific talent base,
- life sciences education and public understanding of science, and
- professional standards of scientific research.

4. The fourth objective is to buttress and nurture the physical research capacity necessary to address health needs and advance science. This means we must attend to needs for instrumentation, research resources, laboratory facilities, and enabling technologies—such as advanced computing hardware and software.

The areas of emphasis for objective 4 are

- Intramural NIH: A national resource,
- Research resources, facilities and instrumentation, and
- Computational biology.

This objective is especially critical to researchers in the field of modern pharmacology and, more broadly, the interdisciplinary domain of structural biology and physiology. One aim of this objective is to exploit powerful computer modeling programs that can capitalize on this knowledge to yield chemical structures that hold promise as therapeutic agents. Accomplishing this aim will require increasing access to advanced equipment and instruments and to high performance computing and communication facilities.

5. The fifth objective aims to secure the maximum return on the public’s \$10 billion investment in NIH-supported research. The investment will only continue as long as the public is confident that their monies are managed wisely. This commitment to the stewardship of public resources means,

for one thing, that we at the NIH must be efficient, responsible, and innovative managers. It also means that we must always act with integrity and fairness.

The areas of emphasis for objective 5 are

- NIH leadership base,
- peer review,
- technology transfer,
- economic analysis and budget policy, and
- cost management.

The fifth objective also highlights the strategic importance of technology transfer to the achievement of the NIH mission. The United States is the world’s front-runner in biomedical research because of its strong basic research structure and because we have been able to convert research discoveries into products. Among federal agencies, the NIH is the acknowledged leader in technology transfer efforts. Yet, there is more we can do. The emphasis placed on technology transfer in the Strategic Plan will motivate additional efforts to apply new knowledge to the development of products that benefit the American people.

6. Finally, our sixth trans-NIH objective is “to strive continually to earn the public’s respect, trust, and confidence as we carry out our mission.” That is, we must hold the NIH to the highest standard. The NIH now ranks among the three most-respected governmental agencies. This status must not be taken for granted. We must be alert to—and be responsive to—social, legal, and ethical issues in health research. We must maintain a two-way flow of communication with the public.

The areas of emphasis for objective 6 are

- social, legal, and ethical issues in biomedical and behavioral research,
- NIH and its relation to the Nation’s economy, and
- communicating with the public.

In addition to six objectives, the Strategic Plan contains a Statement of Means outlining principles that will guide the implementation of the Plan and ensure the fulfillment of our mission, goals, and objectives. These principles do the following:

- Establish a corporate or leadership role for the Office of the Director.
- Identify the Institutes, Centers and Divisions (ICDs) as the agents for implementing specific initiatives set forth in the Plan.
- Reaffirm the role of advisory groups and peer review in helping to identifying unanticipated health needs and scientific opportunities.
- Emphasize the importance of a scientific and programmatic focus in the development and allocation of the NIH budget.

*(continued on next page)*

- Reaffirm NIH's longstanding commitment to scientifically meritorious investigator-initiated research.
- Reassert cost management concepts in ensuring prudent and efficient stewardship of all NIH programs.

### A Compelling Vision of the Future

The Plan is not a "vanilla-flavored document"—intended to appeal to all tastes and to appease all of NIH's many masters. Nor is it a knee-jerk reaction to outside pressures. Recall that the NIH embarked on this novel undertaking more than one year before calls for goal-setting and self-reflection in the scientific community came from Congressman Brown, Chairman of the House Science, Space, and Technology Committee, and others.

The NIH Director called on the intramural and extramural communities to create a plan that "offers a compelling vision that inspires actions, entices investments, and presents NIH to the public as a noble enterprise worthy of advancement and essential to our nation's future."

To be sure, the Plan breaks with the status quo. It does not, however, sever ties with the past. Rather, it builds on past accomplishments, organizational strengths, and mechanisms and approaches of proven value. It attempts to adjust to changing times but holds to time-tested principles.

Nor is the Strategic Plan a grand design that imposes a rigid timetable and mistakes projections for reality. Indeed, flexibility in the research enterprise is an attribute that the NIH actively cultivates.

The Plan creates a framework for ordering NIH's organi-

zational thinking, and it charts an initial course for our efforts. We will have to modify that course periodically. There will be unexpected breakthroughs—leaps into a new dimension that will create unanticipated opportunities. No plan can predict these developments. A good plan, however, can actually foster path-breaking research. It can nurture intellectual ferment and creativity. It can encourage scientists to be innovative, to take calculated risks, and to cross disciplinary boundaries.

While the Plan does place the Nation's health goals firmly within our collective sights, it sets only the beginnings of a path leading to the scientific objectives that will help bring these goals within our reach. It can lead no farther. It must rely on the creativity and initiative of individual pharmacologists, physiologists, and physicians. Each must make the leap to his or her own success and, in so doing, push the entire biomedical research enterprise further—closer to fulfilling the promise offered by the revolution in biology.

That is the vision of the NIH Strategic Plan—to advance all of biomedical research, and it aims to foster integrated research. This integrated effort, we believe, means we can set high research goals—higher than they would be if we labored as scientists or institutes along separate paths. In an institutional sense, we are avoiding what the German philosopher Arthur Schopenhauer cautioned against in *Studies in Pessimism*.

"Every man," he wrote, "takes the limits of his own field of vision for the limits of the world."

The NIH Strategic Plan can prevent us—men and women—from making that mistake in biomedical and behavioral research. Thank you.

### 1994 APS Conferences and Meetings

#### *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 (*tentative*)

#### *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, 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. Vandenberg

October 5–8, Sarasota, FL



**Michael Pagliassoti** is now with the Department of Pediatrics, University of Colorado Health Sciences Center, Denver. An APS member since 1991, he was formerly at Vanderbilt University, Nashville.

**Debra Ann Kirby** has moved from the Harvard School of Public Health to the Cardiac Research Laboratories, Children's Hospital, Boston, MA.

APS member **Chukuka Enwemeka**, University of Miami School of Miami, has moved to the Department of Physical Therapy, University of Kansas Medical Center, Kansas City, as chairman of the department.

Formerly at the Rhode Island Hospital in Providence, **Henry Gewirtz** has moved to the Department of Medicine, Division of Cardiology, Massachusetts General Hospital, Boston.

**Edward S. Horton** has moved from the Medical Center Hospital of Vermont to Medical Director of the Joslin Diabetes Center, Boston, MA.

**Jorge Valenzuela** is now with the Department of Physiology, University of Puerto Rico School of Medicine, San Juan. An APS member since 1990, Valenzuela was formerly in Auburn, AL.

Formerly at the University of Southern California, **N.-H. Holstein-Rathlou** has moved to the Department of Medical Physiology, the Panus Institute, Copenhagen, Denmark.

APS member **Waneta C. Tuttle**, formerly at the Lovelace Medical Foundation, Albuquerque, NM, has moved to the Southwest Medical Ventures, Albuquerque. Tuttle was elected to membership in 1973.

**Felix Strumwasser** is now with the Department of Psychiatry, Uniformed Services University of Health Sciences, Bethesda, MD. An APS member since 1962, Strumwasser was at the Marine Biological Laboratory in Woods Hole, MA.

Formerly at the Baylor College of Medicine, **Jeffrey P. Moak** is now

with the Department of Pediatric Cardiology, Children's National Medical Center, Washington, DC.

**Karen A. Munger** has moved from the University of Pittsburgh to the Renal Division, VA Medical Center, Atlanta, GA. Munger was elected to APS membership in 1991.

Corresponding member **Masanobu Maeda** is now with the Department of Systems Physiology, University of Occupational and Environmental Health, Kitakyushu, Japan. Maeda moved from the Osaka City University Medical School.

**Chiann-Tso Lin**, Rochester, MN, has moved to the Department of Molecular Physiology, Max-Planck-Institute, Dortmund, Germany. Lin has been a member of APS since 1991.

APS member **Thomas J. Doubt** has moved from the Naval Medical Research Institute to the Cardiac Diseases Branch, National Heart, Lung and Blood Institute, National Institutes of Health, Bethesda, MD.

**Adam J. Rich** is now with the Department of Physiology and Biophysics, Mayo Foundation, Rochester, MN. An APS member since 1992, Rich was formerly with the University of Nevada, Reno.

**Mitchell L. Schubert** is now Assistant Chief of Gastroenterology, Medical College of Virginia and McGuire VAMC, Richmond, VA.

Formerly at the University of Texas Health Science Center at San

Antonio, **Kathy L. Ryan** is now with the Department of Biology, Trinity University, San Antonio.

**Una S. Ryan** has moved from the Monsanto Company to the Washington University School of Medicine, St. Louis, MO.

**Joseph LaManna**, formerly with the University Hospitals of Cleveland, has moved to the Department of Neurology, School of Medicine, Case Western Reserve University, Cleveland, OH. LaManna was elected to membership in 1977.

APS member **Clifford B. Saper** has moved from the University of Chicago to the Department of Neurology, Harvard Medical School and Beth Israel Hospital, Boston.

**Jeffrey Schwartz** has relocated from Monash University, Australia, to the Department of Obstetrics and Gynecology, The Bowman Gray School of Medicine, Winston-Salem, NC.

Formerly with the University of Michigan School of Medicine, APS member **Abbas O. Elkarib** has moved to the Department of Physiology, King Saud University College of Medicine, Abha, Saudi Arabia.

APS member **Jaime Requena** has relocated to POBA International #639, Miami, FL.

**Peter J. Reiser** has moved from the University of Illinois to the Department of Oral Biology, Ohio State University, Columbus.

### Future Meetings

#### 1993

##### *APS Conference*

Physiology and Pharmacology of Motor Control

October 2-5  
San Diego, CA

##### *APS Conference*

Signal Transduction and Gene Regulation

November 17-20  
San Francisco, CA

#### 1994

Experimental Biology '94

April 24-29, Anaheim, CA

#### 1995

Experimental Biology '95

April 9-14, Atlanta, GA

## A Physiologist in the House



Roscoe G. Bartlett was elected to the US House of Representatives in 1992 from the Sixth District of Maryland. He may well be the first physiologist elected to national office.

Bartlett received a PhD in physiology from the University of Maryland in 1952. His professional experience includes both basic and applied research. His areas of interest include environmental and respiration physiology. He has published more than 100 papers and holds the patents on 20 breathing devices for divers and astronauts that he developed while working for the Navy. He taught for 23 years starting at the Loma Linda University School of Medicine and later at the University of Maryland, Howard University, and finally at the Frederick Community College in Frederick, Maryland. He also worked at NIH from 1956 to 1958.

Bartlett was born on a dairy farm in Kentucky and grew up in Western Pennsylvania before moving to Maryland when he was 17 years old. He is descended from one of the signers of the Declaration of Independence (Josiah Bartlett) and was described in a *Washington Post* profile as a "country gentleman" who speaks like "a twangless Ross Perot." A Republican conservative, Bartlett and his wife Ellen live on a 140-acre farm in Frederick in a 150-year old farm house that has 32 rooms and 9-1/2 baths.

Martin Frank and APS Public Affairs Officer Alice Hellerstein met with Bartlett on February 23 to congratulate him on his election to Congress and posed the following questions.

**The Physiologist:** How has your background in biomedical research and physiology in particular affected your approach to political life?

**Bartlett:** My professional background involves basic research (I have published more than 100 papers) and applied research (research and development, 20 patents). Both of these disciplines provide important perspectives when dealing with legislation.

I serve on both the Armed Services Committee and the Science, Space and Technology Committee. I am on subcommittees of each of these committees, which consider research and R & D programs. Unless one has been involved in research and R & D, it is very difficult to understand research planning or to evaluate results. Hopefully, I will be able to explain to my colleagues the nature of research and R & D so that they will be better able to understand the proposals for projects and the results of the activities.

**The Physiologist:** Do your plans for what you will do as a member of the House of Representatives include any projects or programs regarding biomedical science?

**Bartlett:** I am very concerned that Congress not try to force basic research in areas of expected societal payoff. One seeks knowledge for the sake of knowledge, not to further a specific application goal. There is no way to predict what benefit will accrue to society as a result of truly basic research. It is difficult to communicate this to those who do not have a background in basic research. My goal would be broad support of basic research with peer review deciding the grant and contract recipients.

**The Physiologist:** What are the most important issues facing biomedical science today?

**Bartlett:** Aside from the problem of communicating to the Congress and the public the nature of research and R & D, major problems facing biomedical science today are in the area of ethics. Genetic engineering, fetal tissue research, and biological patents are examples.

**The Physiologist:** Both NIH and NSF in their strategic plans have looked at ways to focus more government research on particular "objectives" or by increasing linkages between academia and industry. How do you view the role of directed versus undirected research at these two agencies whose missions include support for basic research?

**Bartlett:** I am opposed to directed basic research. The two words are essentially mutually exclusive. If it is directed it is very difficult to maintain the freedom of the pursuit of knowledge inherent in basic research. Applied research might be directed; fundamentally basic research cannot be. This is difficult to communicate to the nonscientist.

Even if applied research is to be directed, I do not believe that the Congress should decide this direction. The government has no money until it takes it from us or borrows it. If the government left this money in the private sector, then business and industry could make venture capital available and decide where to apply it.

**The Physiologist:** Last fall, George Brown, Chairman of the House Science, Space and Technology Committee, released the Report of the Task Force on the Health of Research. In his letter of transmittal, Chairman Brown said that the United States faces "societal crises and challenges in our educational system, our environment, our manufacturing sector, our health care system, our inner cities, our financial institutions, even our system of government" because "either we are not adequately using the knowledge that we already have, or that we are not sufficiently producing the knowledge that we actually need." Do you agree with that statement with respect to biomedical science in general and physiology in particular?

**Bartlett:** I would generally agree with both statements. We need more knowledge and we need to use better the knowledge we have. In terms of government-directed research, the USSR did this for 75 years. It didn't work well there; why should it here? Particularly in physiology, one has no way of knowing when there will be discoveries which will have a practical societal application.

**The Physiologist:** In December the Bush administration released two reports, "Renewing the Promise: Research Intensive Universities and the Nation by the President's Council of Advisors on Science and Technology (PCAST)" and "In the National Interest: The Federal Government and Research-Intensive Universities" by an ad hoc working group of the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET). The reports are predicated on the assumption that federal support for research is receding from a high-water mark and that universities must reorient themselves to increase their efforts at education. One key recommendation is that institutions retrench, weeding out their less successful research programs. Do you have any comments on or concerns about this proposal?

**Bartlett:** I'm not sure I know how, before the fact, to determine a "less successful" research program. If the hypothesis was not supported by the data, this is still a successful research program. The nonscientist will not understand this. To know the hypothesis was wrong is a very meaningful discovery. If this could have been predicted before the research, it would never have been initiated. That is why the experiments are designed and executed.

I support "weaning" our research universities from government support. The money the government provides was initially our money before they took it. If the money was left in the private sector, it could, by appropriate tax incentives, be made available from the private sector. The government is capricious and unpredictable. I have great concern about this proposal; it reflects a basic misunderstanding of basic research. We certainly should increase our efforts in education, but this is not an either/or situation. The implication is that a university education and research are in conflict or need to be in conflict. This is just not true.



Left to right: A. Hellerstein, R. G. Bartlett, and M. Frank.

## NIH Funding Prospects Uncertain

Because of the change in administrations, the progress of the budget and the appropriations cycle has been delayed this year. Although the President's budget is usually submitted to Congress by February, President Clinton's first spending plan was not expected until early April.

As of press time, it was widely rumored that the Clinton administration's proposals for FY 1994 spending would include funding for only 5,400 new and competing grants at the National Institutes of Health and that a 44% cap would be imposed on indirect cost reimbursements to research institutions. NIH and the former ADAMHA institutes already expect to face an alarming decrease in the number of new grants during fiscal year 1993: 5,634 new grants, a drop from the nearly 6,788 grants the two agencies funded during the fiscal year that ended October 1, 1992.

## APS Asks Congress to Increase NIH Funds

NIH research should be funded at \$11.75 billion in FY 1994, APS Councillor Mordecai Blaustein testified March 4 before a Congressional committee. This sum represents a 13.4% increase over the \$10.33 billion in this year's NIH budget and would enable NIH to award 6,800 new and competing grant awards, Blaustein told the House Appropriations Subcommittee on Labor-HHS-Education, chaired by Rep. William Natcher (D-KY).

Blaustein pointed out that biomedical research contributes to the nation's economic health because new methods of prevention and treatment can frequently be developed into commercial products by the pharmaceutical and biotechnology industries. A copy of the full text of Blaustein's testimony can be obtained from Alice Hellerstein.

## Animal Welfare Act Regulations Struck Down

APS has written to the Secretaries of the Departments of Agriculture and Health and Human Services urging them to appeal the decision of US District Court Judge Charles R. Richey setting aside the 1991 revisions to the Animal Welfare Act regulations. On February 25 Richey ordered the USDA to rewrite important sections of the Animal Welfare Act regulations on the grounds that the current regulations failed to comply with the intent of Congress when it passed the 1985 law. The sections affected are those mandating dog exercise, assuring the psychological well-being of nonhuman

primates, and requiring certain cage sizes for various animals.

The suit was brought by the Animal Legal Defense Fund (ALDF) and the Society for Animal Protective Legislation (SAPL). Richey found that USDA's actions were arbitrary or capricious because of the difference between the engineering standards USDA proposed in its first effort to formulate the regulations and the performance-based standards that were finally adopted.

USDA has until April 25 to decide whether to file an appeal.

## Animal Sheets Available

The Foundation for Biomedical Research is offering a set of seven one-page summaries highlighting the ways different animal species have contributed to biomedical research. Each set contains summaries for the following species: rats, mice, rabbits, cats, dogs, primates, and miscellaneous animals. The postage-paid cost is \$3.00 per set for up to 9 sets and \$2.50 per set when 10 or more sets are ordered. Send orders with payment to the Foundation for Biomedical Research, 818 Connecticut Avenue NW, Suite 303, Washington, DC 20006.

## Clinton's Team Taking Shape

President Clinton has nominated Phillip R. Lee as Assistant Secretary for Health, replacing James Mason. Lee was Assistant Secretary for Health during the Johnson Administration and later a professor of social medicine and chancellor of the University of California, San Francisco. He has been director of the Institute for Health Policy Studies since 1972 and was an original member of the Institute of Medicine.

NIH Director Bernadine Healy announced on February 26 that she would leave her position by the end of June to return to the Cleveland Clinic. There has been intense speculation about whether Healy, who was appointed by President Bush, would stay on or would leave.

National Science Foundation Director Walter Massey has also announced his plans to leave two years into his six-year term to become senior vice president for academic affairs and provost at the University of California.

The first and most prominent Clinton appointee in the realm of science policy is John Gibbons, who

holds the dual positions of Director of the Office of Science and Technology Policy and Presidential Science Advisor. Gibbons is a nuclear physicist who spent 13 years as head of the Office of Technology Assessment, which provides advice to Congress on issues related to science and technology. Gibbons' orientation is widely seen to be more toward technology than science, although at his January 26 confirmation hearing before the Senate Commerce Committee Gibbons applauded the importance of scientific research as the "epitome of the American experience."

However, some concerns have been raised about Gibbons' response to a confirmation hearing question about animal research. Gibbons told the Senate panel that more thought should be given to the ethics of animal use and praised the "Native American concept of the use of animals," which he said involved saying a "prayer of thanksgiving" when killing an animal for food or shelter. He said that an Office of Technology Assessment study on alternatives to animal use

showed that "there are an enormous number of technologies that now make it possible to do the kind of testing, research, and teaching without having to sacrifice animals that we once did." However, Gibbons also said he "understand[s] and appreciate[s] very much the importance of the use of whole animals in doing whole body research, and said it is not possible or "defensible" to eliminate animal use entirely.

One future member of the Clinton administration is Arkansas State Department of Health Director Jocelyn Elders, who is expected to succeed Antonia Novella as Surgeon General in June 1993. Although best known for her efforts to curb teen pregnancy and venereal disease by getting condoms to high school students, Elders is a pediatric endocrinologist who received NIH grant support for many years. She was quoted in the *Journal of NIH Research* on the importance of US leadership in biomedical research and expressing concern about the targeting of AIDS research because the cure may well come from "some other area we can't predict in advance."

## FASEB Societies Respond to the Brown Report

Basic biomedical research is already closely linked to social needs for improved health and economic strength, FASEB said in a statement responding to a call for greater linkage between societal goals and federally supported scientific research. That call was issued late last year by Rep. George Brown (D-CA), Chairman of the House Committee on Science, Space and Technology in the "Report of the Task Force on the Health of Research," commonly referred to as the Brown Report.

In its statement FASEB pointed out that many scientists engaged in basic research are also directly involved in its clinical applications. Furthermore the fruits of basic biomedical research are regularly harvested by the US pharmaceutical and biotechnology industries and transformed into products that contribute to the US economy and its international economic competitiveness. FASEB urged that the cornerstone for federal support of biomedical research continues to be scientific excellence since this is ultimately the best guarantor of progress.

## NIH Legislation Moves Through Congress

NIH reauthorizing legislation featuring an expanded Office of AIDS Research with extraordinary budget powers continues to move rapidly on Capitol Hill. The Senate version of the bill, S.1, was approved on February 18 by a vote of 93-4. The provisions regarding the Office of AIDS Research were one of the few new elements in a complex package of legislation that was approved in the last Congress but vetoed by President Bush because it

would have lifted a ban on federal funding of fetal tissue transplantation research. One of President Clinton's first acts upon taking office was to overturn that ban; the momentum behind the legislation has continued because of the AIDS research provisions.

The House approved HR.4, its version of the NIH bill, on March 11 by a vote of 283-131. Both S.1 and HR.4 would establish an expanded Office of AIDS Research to coordinate and give centralized direction to NIH's AIDS research efforts. Both call for development of an AIDS research strategic plan. The Senate version would channel all AIDS research funds through the enhanced Office of AIDS Research, a move that the APS and others in the biomedical research community saw as adding an unnecessary layer of bureaucracy. The House version of the bill would channel AIDS funding through the NIH Director's office.

## Activists Seek to Overturn European Mouse Patent

The Reuters wire service has reported that animal rights and environmental organizations are trying to revoke the European patent issued for the "onco-mouse." Organizations from a dozen European countries filed objections at the Munich-based European Patent Office (EPO), citing the European Patent Convention's ban on "animal patents and creations that violate basic ethical value." Harvard University's application for a European patent for the genetically altered mouse originally was denied; Harvard appealed, and the EPO reversed itself in May 1992 when its examining board concluded that the mouse's contribution to human welfare outweighed possible animal suffering or environmental risks. It could take as much as three years to address the objections.

## Three Sentenced for Pet Fraud

Three people were sentenced by a US District Court in Eugene, OR, for obtaining pet dogs under false pretenses and selling them to legitimate medical research facilities in Nevada and California, according to the Associated Press. The three pleaded guilty to conspiring to defraud the US Department of Agriculture of information required by laws regulating animal dealers.

Brenda Arlene Linville, who answered advertisements by animal owners seeking homes for pets, was sentenced to 8 months in prison and 2 months of home detention for her role. Linville sold the dogs she acquired to D&T Kennels of Sweet Home, OR, which in turn sold them to research laboratories. D&T Kennels owner David Harold Stephens was sentenced to 10 months in prison and 2 months of home detention; his wife and co-owner Tracy Lynn Stephens was sentenced to 1 year of home detention.

## Minnesota Survey Shows Support for Research

Nearly three-quarters of Minnesotans support the use of animals in biomedical research, according to a poll sponsored by the Minneapolis/St. Paul Star Tribune and WCCO-TV. The poll involved 1,009 Minnesotans and was conducted in November 1992. The survey found that 74% of those surveyed supported the use of animals in biomedical research; half said that testing cosmetics on animals is always wrong. According to Project Research of Minneapolis, the higher the person's education level, the more likely he/she was to approve of the use of animals for research and cosmetic testing. The population most likely to disapprove of animal testing was young women.



## Baboon Liver Transplant Autopsy Inconclusive

A copyrighted Associated Press story reported that an autopsy on the second baboon liver transplant recipient failed to reveal the cause of an intestinal leak that led to a fatal infection. The recipient, a 62-year-old man, died February 5. He never regained consciousness after the January 10 operation that replaced his hepatitis B-damaged liver with that of a baboon. The first human recipient of a

baboon liver survived 70 days after the transplant before succumbing to an infection last September 6.

Surgeon John Fung, chief of transplantation at the University of Pittsburgh Medical Center, told the AP the baboon liver had grown to the size of a normal human liver and "functioned well." Two more baboon-to-human liver transplants have been approved by a review board.

## 60 Minutes Asks Why Research Was Halted

The CBS program *60 Minutes* recently aired an investigative piece about how the animal rights movement used false accusations to pressure the Army to halt funding for Michael Carey's life-saving research into treatment of brain injuries such as those soldiers suffer in combat. From 1983 to 1989, Carey conducted experiments at Louisiana State University that involved testing new therapies for brain injuries on anesthetized cats.

Carey explained to correspondent Mike Wallace that he pursued this research because brain injuries caused half of all Vietnam casualties due to a single wound. When animal activists complained to Congress that Carey was abusing the cats, the General Accounting Office was asked to investigate. A panel of medical experts headed by neurosurgeon John Jane praised the importance of Carey's work and said the cats were properly anesthetized and humanely treated. When the animal rights activists continued to complain, a second panel composed of veterinary anesthesiologists was convened. This panel reported no support for allegations that the animals were in pain. However, the panel criticized Carey's method of anesthetizing them as likely to skew his results; on that basis, Carey's funding was halted.

## POSITIONS AVAILABLE

### 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.

**Associate Professor.** PhD in human physiology to teach some or all cardiopulmonary, digestive, and renal physiology and to lead in coordination of entire physiology curriculum and implementation of supporting lab experiences. The courses should provide a strong background for those who will apply the information in a clinic situation. Begin May or September. Send resume and addresses and phone numbers of three references to Search Committee, c/o Kay Hill, Cleveland Chiropractic College, 590 North Vermont Avenue, Los Angeles, CA 90004; tel: (213) 660-6166.

**Research Director.** The Division of Critical Care Medicine of Miami Children's Hospital (State University of New York affiliate) is seeking a postdoctoral faculty member to serve as Director of its Research Program. Divisional interests include pulmonary physiology and biology, inflammatory and repair processes, and organ resuscitation. Excellent salary and benefit package. Academic rank will be determined by individual qualifications. Good initial intradepartmental research support and opportunity for collaboration with Miami Children's Hospital Research Institute. Direct inquires to Jack Wolfsdorf, Director Critical Care Medicine, Miami Children's Hospital, 6125 SW 31st Street, Miami, FL 33155; tel: (305) 662-2639.

## OPRR Workshop on Animal Welfare

The Northeastern Workshop on animal welfare education sponsored by NIH's Office for Protection from Research Risks will be held June 21-22, 1993, at the Warwick Hotel in Philadelphia, PA. The sponsors are Hahnemann University and Drexel University. The theme is "Ethical Issues of Animal Use in Academe and Industry." For information contact Roberta Sonneborn at (301) 496-7163.



## Auditory Physiology and Perception

Y. Cazals, K. Horner, and L. Demany (Editors)

Elmsford, NY: Pergamon, 1992, 655 pp., illus., index, \$190.00 (Proceedings of the 9th International Symposia on Hearing, Carcens, France, 1991)

The purpose of the 9th International Symposia on Hearing was to bring together scientists who use diverse approaches to the study of hearing that range from cell biology to psychophysics. The proceedings of the meeting have been published as part of the *Advances in the Biosciences* series and represent a compilation of these proceedings that focuses on physiology of primarily the caudal auditory system and on psychophysics of auditory perception. This volume includes 71 papers that were presented by the 116 participants. Related papers are grouped under 10 headings such that multidisciplinary approaches are brought together to explore each topic. The main section include inner ear cell biology, auditory periphery functioning, frequency selectivity, pitch, intensity coding, temporal analyses, spectral shape analysis, spectro-temporal processing, binaural interactions and sound localization, and pathologies. Each paper includes significant and full references of cited material; the volume thus provides a resource for those interested in pursuing topics further. Also valuable are the commentaries on the material presented that follow most of the papers. Four tutorial sessions are also presented that provide a broader view of current work on the neurobiology of cochlear hair cells, cochlear mechanics, and two papers on the perception of complex sounds.

The first section on inner ear cell biology includes the tutorial on hair cells by Dallos, which focuses discussion on transduction processes in mammalian hair cells, generation and properties of the receptor potential, and OHC (outer hair cell) motility. Under this heading, papers deal primarily with the motility of OHC but also supporting cells, both pertaining to the mechanisms of motility and functional influences on frequency tuning.

In the section on auditory periphery functioning, Wilson presents a tutorial on cochlear mechanics that includes discussion of mechanical tuning and the means of enhancing turning in the cochlea. Topics presented here range from investigation of mechanical properties of different types of hair cells and cochlear elements to modeling of the acoustic periphery. Models are described that represent efficiency of mechanical influences of hair cells on basilar membrane motion, generation of spontaneous otoacoustic emissions, and effect of discharge history on the probability of auditory nerve discharge.

The papers on frequency selectivity form a diverse group that explores different measures of frequency tuning. These include behavioral, physiological, and anatomical methods, including use of otoacoustic emissions, complex stimuli, and the effects of age on auditory filter shape.

The sections on pitch, intensity coding, temporal analyses, spectral shape analysis, and spectro-temporal processing consider psychophysical measures of detection, and discrimination, using both simple and complex stimuli. The interaction of sound level, frequency, and the temporal structure and order of stimulus components is considered. Physiological studies examine the influence of the above parameters on neural adaptation, neural discharge pattern, topographical organization, and coding of stimulus parameters. Models containing both theoretical and experimental components are discussed.

In the section on spectro-temporal processing, two tutorials are

presented. One examines auditory scene analysis or how the auditory system evaluates complex acoustic signals arriving from many sources (Bregman). A second tutorial explores contributions of the peripheral and central auditory system to the processing of complex sounds (Patterson, Robinson, Holdsworth, McKeown, Zhang, and Allerhand).

Papers on binaural interactions and sound localization consider various aspects of binaural masking, precedence effect, effects of echoic environments, and frequency and temporal character of stimuli on sound localization.

The section on pathologies explores the effects of short- and long-term trauma on acoustic processing and auditory development. The evaluation and modeling of hearing loss is also considered.

Overall, the papers present an interesting variety of topics in the field of auditory physiology and psychophysics. The papers examine their topics in more depth than is often found in proceedings of symposia; however, the scope of such proceedings is naturally limited, which is true of this volume as well. The cost of this book is likely to be a limiting factor in its purchase.

David M. Gooler  
University of Illinois

## Excitatory Amino Acids and Synaptic Transmission

Howard Wheal and Alex Thomson (Editors)

London: Academic, 1991, 482 pp., illus., index, \$129.00

Glutamate and related excitatory amino acids (EAA) represent the major class of fast excitatory neurotransmitters in the vertebrate central nervous system (CNS) and are involved in several forms of synaptic plasticity including long-term potentiation (LTP) and long-term depression (LTD). Over the past decade considerable information has been gathered characterizing synaptic actions of EAA. This book, edited by Howard Wheal and Alex Thomson, represents a summary by many of the major figures in selected subfields of this work.

The book is intended as a summary for investigators working in the field and for students new to EAA research. The principal aim is to describe biochemical, pharmacological, and physiological aspects of EAA as neurotransmitters. The book consists of sections dealing with EAA receptor types, channel kinetics, EPSPs/EPSCs, glial cells, epileptiform activity, and LTP and developmental plasticity. While these sections represent a broad view of the roles of EAA in synaptic function, potential readers should realize that all sections do not receive equal attention. For instance, the section of EAA receptor types contains six chapters while the section on glial cells contains only one. Helpful features of the book include a glossary and summary tables that provide the chemical structures of EAA agonists and antagonists.

The book easily accomplishes its goals, providing interesting summaries of many important topics. As is true of any multi-authored text there is some unevenness in the writing, with some chapters presenting broad overviews and others focusing on the author's own work. However, most chapters are excellent to outstanding and the editing errors are minimal. Physiologists will find this book particularly useful, with most chapters written from a physiological perspective. Biochemical aspects of EAA are less extensively cov-

ered. One aspect of transmitter function that is not covered in the book concerns the biochemical processing, packaging, and release of transmitter pools of EAA. Although the chapter on the molecular biology of EAA receptors by J. M. Henley and E. A. Barnard is excellent, it covers only the cloned receptor subunits from GluR-1 through GluR-5. However, limitations in this area are to be expected given the 1991 publication date and the rapid advances in the field. Similarly, I. D. Forsythe provides insight into presynaptic EAA receptors, but there is little information in the book about the possible synaptic actions of metabotropic EAA receptors.

There are several broad methodological topics that are very well covered in the book. The first concerns the binding properties of EAA. This topic spans chapters by A. B. Young and colleagues, D. T. Monaghan and K. J. Anderson, and T. Honore. A second area is a detailed description of rapid drug delivery methods in chapters by J. W. Johnson and M. L. Mayer and colleagues. These methods have become extremely important in understanding kinetic aspects of EAA-gated ion channels and have opened up several new areas of investigation including the role of glycine in the gating of NMDA channels and rapid desensitization of AMPA receptors. A third area that is well covered concerns the complications contributed by neuronal cable properties to the study of CNS transmission. Useful discussions of this issue are provided in chapters by F. A. Edwards and P. Stern, R. J. Sayer and colleagues, and H. V. Wheal and colleagues. A number of chapters also emphasize the advantages of single axon synaptic studies as a tool for understanding the contributions of recurrent synaptic connections within the cortex and hippocampus. However, the possible role of EAA in epileptiform activity is discussed in chapters by H. V. Wheal et al., R. S. G. Jones and U. Heinemann, and J. H. Schneidman and J. F. MacDonald. These chapters provide an excellent summary of mod-

els of epileptiform bursting and the role of EAA. The emphasis in these chapters is on in vitro models studied using physiological techniques in slice preparations with less information provided about in vivo seizure models.

An important aspect of EAA concerns the role that these agents play in synaptic plasticity. The last five chapters of the book deal with these issues in considerable detail, highlighting pre- and postsynaptic contributions of EAA in LTP and LTD. The possibility of arachidonic acid serving as a retrograde messenger in hippocampal LTD is discussed in detail in a chapter by M. A. Lynch, but the book antedates studies examining the possible role of nitric oxide in LTP. A possible addition to the section on synaptic plasticity would have been a more extensive overview of studies applying quantal analysis techniques to LTP, but again, this limitation may be more a reflection of a rapidity with which this field has been developing.

An interesting discussion of developmental changes in EAA and GABA-mediated synaptic transmission in the hippocampus is provided in the final chapter by J. L. Gaiarsa and colleagues. Additionally, the chapter by W. Singer and A. Artola presents an important discussion of the role of EAA receptors in developmental plasticity in the visual cortex. Other aspects of EAA as regulators of developmental structure and physiology are not covered in the book.

In summary, *Excitatory Amino Acids and Synaptic Transmission* is a well-planned and useful book that will be of interest to all students of EAA, in particular physiologists working on excitatory synapses. Wheal and Thomson are to be commended for their efforts in organizing and editing this valuable collection.

Charles F. Zorumski  
Steven Mennerick

Washington University Medical School

## BOOKS RECEIVED

*The Merging of the Senses.* Barry E. Stein and M. Alexander Meredith. Cambridge, MA: MIT Press, 1993, 211 pp., illus., index, \$42.50.

*Animal Experimentation and the Future of Medical Research.* Jack H. Botting (Editor). Colchester, UK: Portland Press, 1993, 98 pp., illus., index, \$30.00. Proceedings of the Research Defense Society Conference, Royal Society, London, 1991.

*Cancer: Causes and Prevention.* Swedish Cancer Committee. Bristol, PA: Taylor & Francis, 1992, 626 pp., illus., table of contents, \$198.00.

*Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition.* Merlin Donald. Cambridge, MA: Harvard University Press, 1991, 413 pp., illus., index, \$14.95.

*Neural Computation of Pattern*

*Motion: Modeling Stages of Motion Analysis in the Primate Visual Cortex.* Margaret Euphrasia Sereno. Cambridge, MA: MIT Press, 1991, 181 pp., illus., index, \$19.95.

*Function and Dysfunction in the Basal Ganglia.* A. J. Franks, J. W. Ironside, R. H. S. Mindham, R. J. Smith, E. G. S. Spokes, and W. Winlow (Editors). *Pergamon Studies in Neuroscience.* William Winlow (Series Editor). Oxford, UK: Pergamon, 1992, 277 pp., illus., index, \$120.00.

*What Is Cognitive Science?* Barbara Von Eckardt. Cambridge, MA: MIT Press, 1993, 466 pp., illus., index, \$45.00.

*The Nervous System: Its Function and Its Interaction with the World.* Lloyd D. Partridge and L. Donald Partridge. Cambridge, MA: MIT Press, 1993, 579 pp., illus., index, \$39.00.

*Cerebral Blood Flow and Metabolism.* Lars Edvinsson, Eric T. MacKenzie, and James McCulloch. New York: Raven, 1993, 693 pp., illus., index, \$130.00.

*Assessment of Physical Fitness: A Practical Approach.* Boonseng Leelarthaepin. Matraville, NSW: Leelar Biomedical, 1992, 300 pp., illus., index.

*Diseases of the Kidney.* Fifth edition. Robert W. Schrier and Carl W. Gottschalk (Editors). Boston, MA: Little, Brown, 1992, 6,522 pp., illus., index, \$350.00. (Three volume set).

*Body Composition: The Measure and Meaning of Changes with Aging.* Judith C. Watkins, Ronenn Roubenoff, and Irwin H. Rosenberg (Editors). Boston, MA: Foundation for Nutritional Advancement, 1992, 80 pp., illus., \$10.00.

## Scientific Meetings and Congresses

**Fourth Annual Decade of the Brain Symposium**, Washington, DC, May 11, 1993. *Information:* National Foundation for Brain Research, 1250 24th Street NW, Suite 300, Washington, DC 20037.

**Fifth International Symposium on Ischaemic Heart Disease, Exercise, and Related Topics**, Toronto, Ontario, Canada, May 14–15, 1993. *Information:* Toronto Rehabilitation Centre, Symposium Coordinator, 347 Rumsey Road, Toronto, Ontario M4G 1R7. Tel: (416) 425-1117; fax: (416) 425-0301.

**Pharmacology 93: American Society for Pharmacology and Experimental Therapeutics 44th Annual Meeting**, San Francisco, CA, July 30–August 3, 1993. *Information:* Kay A. Croker, ASPET, 9650 Rockville Pike, Bethesda, MD 20814-3995. Tel: (301) 530-7060.

**Microbiol Pathogenesis and Immune Response**, Orlando, FL, September 8–11, 1993. *Information:* Conference Department, New York Academy of Sciences, 2 East 63rd Street, New York, NY 10021. Tel: (212) 838-0230; fax: (212) 838-5640.

**Second International Congress on Peer Review in Biomedical Publication**, Chicago, IL, September 9–11, 1993. *Information:* Annette Flanagan, North American Coordinator, Peer Review Congress, JAMA, 515 N. State Street, Chicago, IL 60610. Tel: (312) 464-2432; fax: (312) 464-5824.

**Fetal Cells in Maternal Blood: Prospects for Noninvasive Prenatal Diagnosis**, Arlington, VA, September 27–29, 1993. *Information:* Conference Department, New York Academy of Sciences, 2 East 63rd Street, New York, NY 10021. Tel: (212) 838-0230; fax: (212) 838-5640.

**15th Annual International Gravitational Physiology Meeting**, Barcelona, Spain, October 4–7, 1993. *Information:* Lorraine Tucker, APS, 9650 Rockville Pike, Bethesda, MD 20814. Tel: (301) 530-7165; fax: (301) 571-8305.

**International Congress of the International Association of Inflammation Societies: Inflammation '93**, Vienna, Austria, October 10–15, 1993. *Information:* Inflammation '93 Congress Secretariat, ICOS Congress Organization Service, Schleifmuhlgasse 1, A-1040 Vienna, Austria.

**DNA: The Double Helix. Forty Years: Perspective and Prospective**,

Chicago, IL: October 13–16, 1993. *Information:* Conference Department, New York Academy of Sciences, 2 East 63rd Street, New York, NY 10021. Tel: (212) 838-0230; fax: (212) 838-5640.

**Pain Management: An Active Model of Quality Care**, Knoxville, TN, October 14–17, 1993. *Information:* American Academy of Pain Management, 3600 Sisk Road, Suite 2-D, Modesto, CA 95356. Tel: (209) 545-0754; fax: (209) 545-2920.

**Oxygen Society Annual Meeting**, Charleston, SC, November 12–16, 1993. *Information:* The Oxygen Society, 8000 Westpark Drive, Suite 130, McLean, VA 22102. Tel: (703) 790-1745; fax: (703) 790-9063.

## AAP Changes Name

AAP members have voted to change the name of the society from American Association of Pathologists to American Society for Investigative Pathology. The society, with origins in the American Society for Experimental Pathology and the American Association of Pathologists and Bacteriologists, takes pride in its members' research contributions to the understanding of basic mechanisms of disease. Recognizing that this interest goes beyond traditional concepts of pathology and includes many basic biomedical scientists, the society chose its new name to reflect the interests of its members not just in pathology but also in other disciplines.

## Historical Equipment

The Historical Committee of the American Association of Electrodiagnostic Medicine (AAEM) is seeking "antique" electrodiagnostic equipment for potential display. Appropriate equipment should typify that used in an earlier era of electrodiagnostic medicine; equipment used by pioneers in the field or for particular landmark studies would be especially desirable. Please contact Donald A. Barone, AAEM Historical Committee, Voorhees Professional Building, 102 West White Horse Road, Suite 101, Voorhees, NJ 08043, tel: (609) 784-6800; or the AAEM Executive Office, 21 Second Street SW, Suite 103, Rochester, MN 55902, tel: (507) 288-0100.

## "Why I Should Stay Awake in Science Class"

"Why I Should Stay Awake in Science Class," a new, 10-minute video from the Foundation for Biomedical Research, is designed to help junior-high school students (grades 5–9) realize that careers in the applied sciences are interesting and exciting. The film features Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases at the National Institutes of Health.

The film is ideal for a classroom setting and is accompanied by a teacher's guide to assist the instructor in stimulating student discussion. The film is available at a cost of \$15.00 per copy, which includes shipping and handling.

Make checks payable to the Foundation for Biomedical Research and mail to the Foundation for Biomedical Research, 818 Connecticut Avenue NW, Suite 303, Washington, DC 20006.

## Integrative Study in Physiology Workshop

The Integrative Study in Physiology and Medicine interest group held its Eighth Annual Workshop at the New Orleans Hilton on March 27 and 28, 1993. For more information about integrative study, see the article by Joseph Engelberg in *The Physiologist* 34: 320–321, 1991. If you want to be on the mailing list for this interest group and receive a report of the workshop and a packet of materials, contact Roger Thies, Department of Physiology, University of Oklahoma Health Sciences Center, Oklahoma City, OK 73190; fax: (405) 271-3181. The group will meet again next year (April 23 and 24, 1994) before the Experimental Biology '94 meeting in Anaheim.

## Moving?

If you change your address or telephone number, please notify the APS office (301-530-7171) as soon as possible.

## APS Sustaining Associate Members



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

- |                                       |   |                                      |
|---------------------------------------|---|--------------------------------------|
| Abbott Laboratories                   | * Hoffman-La Roche, Inc.                        | NARCO Bio-Systems                    |
| Alliance Pharmaceutical Corporation   | ICI Pharmaceuticals Group                       | Pfizer, Inc.                         |
| American Medical Association          | Institut de Recherches Internationales          | Pharmacia, Inc.                      |
| Axon Instruments, Inc.                | Servier   | Procter & Gamble Company             |
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## APS Election Results

Brian R. Duling, Professor and Director of the Cardiovascular Research Center, University of Virginia School of Medicine, Charlottesville, is the new President-Elect. The two newly elected Councillors taking office on March 31, 1993, for three-year terms are D. Neil Granger, Professor and Head, Department of Physiology, Louisiana State University, Shreveport; and Barbara Horwitz, Professor and Chair, Department of Animal Physiology, University of California, Davis.

### President-Elect Brian R. Duling

"My experience on Council convinced me that we have great, though often unappreciated resources with which to pursue the goals of the Society. These resources include an enviable financial position that allows us to initiate new programs, and an extremely effective administrative apparatus that offers us the structure within which to implement such programs. In addition, our publications give us a voice of great prominence. We must use these strengths to make the Society a resource for scientists and teachers interested in exploring the nature and significance of physiological processes. Our energy and our money must be devoted to maintaining and expanding the breadth of our educational programs and meetings, and to fostering integrative biological research in the scientific community. I am pleased and honored to have the opportunity to collaborate with membership and Council to continue the work of the Society and to ensure a bright future for physiology."



### Councillors



D. Neil Granger



Barbara Horwitz