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Perspectives on Research Support: Toward a More Signal-Averaged View

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This discussion presents a personal view of recent trends in the funding of NIH research projects, efforts to increase that support, and the effects of both on new investigators. It is based on a talk presented at the Association of Chairmen of Departments of Physiology, Los Cabos, December 1994.

I would like to start by drawing your attention to a recent, week-long series of page one articles and a follow-up editorial, "American Science: Losing Its Cutting Edge?", in Congress' morning newspaper, the *Washington Post* (5). They attracted our attention because science stories this newsworthy are not just exceedingly rare, but those dealing with declining paylines, decreasing appropriations, and a surplus of investigators had never appeared here before. Obviously not coincidental, the stories appeared just in the midst of the debate on next year's budget, when appropriations for the NIH, NSF, and other science agencies begin to be decided.

The *Post* articles expanded an earlier story in the *Journal of NIH Research* (6) and provided to Washington

and national subscribers alike a dismaying picture of the state of biomedical research. They focused on a dramatic "fall" in funding rates, highlighting, in the not subtle style of today's journalism, how this has resulted in insurmountable problems in trying to run a research laboratory today. Although many real issues were covered well, the strategy underlying the articles was a familiar one repeated many times before, though seldom with this degree of visibility. It is based on portraying a new and larger crisis with investigators leaving the laboratory, but with important new disease and public health discoveries just beyond that closing door. The expectation, of course, was that as before, new champions in Washington might emerge, restore federal budgets, and, just as on television, save the Enterprise again!

Many of the concerns raised by those interviewed in the articles were the same as those perceived by this audience today: issues like low levels of grant funding, seemingly arbitrary budget cuts despite increased costs, reduced funds for basic science, but no apparent shortage for clinical studies or new drug trials. Mandates like the new emphasis on targeted, "strategic" research, work with commercial potential, and the politically important diseases of today at the expense, it is suspected, of the projects of tomorrow. The clamor from these concerns—from special interests in everything from AIDS to women's health and minority disease, alternative medicine, etc.—enhances the perception promoted in the articles that, at least in the basic sciences, a research career dependent on grant and federal funding may no longer be a desirable option. The validity of these issues and how they are presented and debated with the Congress are especially critical for younger scientists; their careers and futures—the state of the Enterprise—will be determined by the response.

Interestingly, these same new investigators are viewed in
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Koeppen Named Physiology Teacher of the Year

The third annual Arthur C. Guyton Physiology Teacher of the Year Award was recently presented to Bruce M. Koeppen, Dean for Academic Affairs and Education at the University of Connecticut School of Medicine. Koeppen was honored at the annual dinner of the Teaching Section during the Experimental Biology '95 meeting in Atlanta.

Koeppen has had a distinguished career in both research and teaching. With his appointment first as Associate Dean for Preclinical Education, then Associate Dean for Graduate Education, and finally to his present position, he gave up his research laboratory to devote himself full-time to educational issues.

For four successive years, he was the recipient of the Charles N. Loeser Award, the most prestigious basic science teaching award at his institution. He is coauthor of a textbook of renal physiology and of the renal section of the popular Berne & Levy Physiology text. Koeppen's selection was supported by many letters from colleagues as well as past and present students. He is currently at the center of discussions and planning for a major curricular revision at his medical school.

Following is the text of his acceptance speech.

I am deeply honored to receive the Arthur C. Guyton Teaching Award. It is indeed a rare privilege to be recognized in this way. Clearly, I have many people to thank. Most importantly I would like to thank the students, colleagues, and mentors with whom I have had the pleasure of interacting over the years. The list is long, and I could not possibly name them all at this time. I owe them much, because they have taught me much, and each in his/her own way has helped me to become a better teacher. I would especially like to thank all who have been involved with this award. First, the selection committee, which as I recently learned includes the past award recipients Linda Costanzo and Heinz Valtin. I am truly honored to be judged by them as deserving of this award. Second, the Teaching Section of the American Physiological Society for establishing the award and the W.B. Saunders Company for supporting it. Last, but certainly not least, I would like to thank Gerhard Giebisch for nominating me and for his kind and generous introduction. Thank you all.

During the past several weeks I have thought much about what I might present to you this evening. My instructions from Allen Rovick were quite simple, and I quote from his letter, "we would like you to speak for about twenty minutes on some topic having relevance to education/teaching." The first thing I did upon receiving this charge was to dig up my back issues of *The Physiologist* and read the essays by Costanzo and Valtin. I quickly learned that my evolution as a teacher and my interactions with students and colleagues which shaped that evolution were very similar to theirs.



Teacher of the Year Bruce Koeppen (center) with Gerhard Giebisch (left), who nominated him for the award, and Allen Rovick (right), chair of the award committee.

Therefore, it was unlikely I could say anything new, and I seriously doubted I would be able to present my experiences as eloquently as they had theirs. At the suggestion of my wife, and with the urging of my former dean, I decided to talk more generally about education and teaching.

As some of you know, I have had somewhat of a career change. In 1992, I closed my laboratory and assumed a full-time administrative position as Dean for Academic Affairs and Education. In this position, I oversee all the educational programs of the University of Connecticut School of Medicine, including the undergraduate program, the residencies in the greater Hartford area, and our continuing medical education programs for community physicians. However, my major focus is to lead our faculty in a comprehensive review and revision of the undergraduate medical curriculum. It is from this experience that my presentation is drawn. Before you become concerned, let me assure you that I am not going to talk about problem-based learning, training students to become primary care physicians, the impact of managed care on academic health centers, or even about our "new curriculum." What I hope to do is try to look to the future, especially as it applies to the teaching of medical students. For those of you who read *Academic Medicine*, you may have seen a recent essay by James Woolliscroft, entitled "Who Will Teach? A Fundamental Challenge to Medical Education." I will borrow heavily from his essay, even using a portion of its title for mine.

Who Will Teach?

In his essay(1), Woolliscroft focuses on the conflict that exists between what faculty need to know in their area of expertise vs. what medical students need to know in order to become physicians. He summarizes this conflict as follows:

"The level of expertise possessed by medical school faculty members is unprecedented. Unfortunately, faculty

members' broad understanding of their domains has atrophied as the specialization they need to compete successfully in the clinical and research arenas has increased. Medical students are novices, needing teachers who possess broad knowledge and experience, who can integrate the specific areas of a subject with overarching themes, and who can teach at the students' level."

He illustrates this conflict with a wonderful analogy about learning to play the piano. The novice piano student, he notes, begins with the neighborhood or school music teacher. At this early stage the student learns the rudiments, such as reading music, scales, etc. As the student progresses and matures he/she is passed on to instructors with greater and greater expertise, eventually leading, for the truly gifted student, to specialized instruction at the side of a virtuoso. Few if any virtuosos teach the novice piano student. Moreover, such interactions, "mismatches" in Woolliscroft's words, would likely be frustrating for both parties. At the

While we may have become virtuosos in the laboratory, the dean still tells us we must teach the novices. To me this poses a great challenge. How do we continue to advance our discipline, yet provide the instruction the novice student needs? ... it is a challenge of time.

early stages of the student's learning, the virtuoso cannot convey what he/she knows about a given composer or how to interpret a particular piece of music. Likewise, the novice piano student is incapable of understanding or appreciating the knowledge and expertise of the virtuoso. Great talent is wasted, frustration develops, and the learning opportunity is diminished.

In relating this analogy to medical education, Woolliscroft poses two questions. "Are we trying to teach beginning piano students with instructors who specialize in the interpretation of Mozart?" Or even worse: "Are we using virtuoso voice instructors to teach novice piano students?" I do not know how you would answer these questions, but from my perspective, unfortunately, the answers are more often yes than no. Moreover, the end result of this approach can be the opposite of what was intended. For example, not only do we expect our virtuoso faculty to teach our novice students but we also hope they inspire and excite them and cause them to hunger for a broader and deeper understanding of a particular subject, usually that which is dearest to our heart. However, if the student cannot appreciate the knowledge of the virtuoso, because they have neither the

background nor the conceptual foundation, then frustration develops, and the learning opportunity is diminished. When this happens, the student does not become inspired or excited. Instead, the material is viewed as an impediment or hurdle—something that must be learned, perhaps memorized without context or understanding, in order to be allowed to progress to the next level.

What then can we learn from this analogy, and how can we apply it to the teaching of physiology? The discipline of physiology has advanced much since my first physiology course in 1971. At that time Guyton's textbook was only in its fourth edition. For the most part, research and teaching medical physiology were intimately linked. What was being learned in the laboratory was quickly and easily applied to the classroom. Today, physiological processes are studied and understood at smaller and smaller levels. To use another analogy, we have progressed from the forest, to the trees, to the leaves, and even to some of the molecules in the leaves.

There is no question that this progression of our study of physiological processes is necessary, and indeed it is what makes physiology so exciting and dynamic. Yes, these are exciting times for our discipline. A quick review of the program book for this meeting will certainly attest to that. However, while we may have become virtuosos in the laboratory, the dean still tells us we must teach the novices. To me this poses a great challenge. How do we continue to advance our discipline, and yet provide the instruction the novice student needs? I submit that this challenge is not related to ability. Rather it is a challenge of time. Developing and running a competitive research program is a full-time job. Taking students back to the forest and showing them some of the trees, leaves, and yes even some of the molecules is also a full-time job. How do we accomplish this?

I believe this challenge can only be met by radically changing how we approach medical student education. To do this schools of medicine need to be honest about their educational mission. I am certain that the mission statement of most, if not all, schools of medicine expresses education as the primary mission. The question is not, "Should this be the primary mission?" but instead should be, "Does the school act as if education is the primary mission?" In some institutions, there is no question that education, in every sense, is the primary mission. However, more often, education becomes a byproduct of other activities and priorities. If we are to meet the challenge articulated by Woolliscroft, we can no longer allow our educational programs, whether they be clinical or basic science, to be a byproduct of everything else we do as a faculty. Instead we need to reaffirm education as a true "product," a product that requires development and resources.

Before expanding on this idea, I must state that my emphasis here is on the education of medical students. Education of graduate students and research fellows in basic science is quite different in my mind. In the intimate setting of the laboratory, a close student-mentor relationship is

essential. Here, research and education are truly inseparable, and education can be viewed as a natural byproduct of the research effort.

Making education of medical students a product, I believe, is essential to properly meet their educational needs. But what should this product look like? First, the curriculum must be built around what the students need to know and not simply on the interests and expertise of the faculty. Second, sufficient time needs to be devoted to fundamental principles and concepts, especially those that are most difficult for students to grasp. Third, the teaching must be matched to the students' stage of development. This means that as physiologists the teaching we do should not end when the first or second year physiology course is over. Moreover, we should not feel compelled, nor should we try, to present the full depth and breadth of our discipline in that time span. We did not learn it in such a telescoped fashion; why then should our students. Instead, we should insist on having time in the clinical years to revisit and amplify the basic physiological principles that are so important for understanding the pathophysiology of disease. Ultimately we should also be involved in teaching the residents. I can think of no better place to introduce relevant and cutting-edge concepts. Having taught renal physiology to third- and fourth-year surgery residents, I can attest to how exciting and rewarding interacting with advanced students can be.

On a somewhat different, yet related level, we basic scientists should not be afraid to have clinical material moved into the early stages of the curriculum. I believe clinical material and experiences early in medical school can provide for the student an important context for the learning of the basic science material. I have heard the arguments that students at this stage are not ready for such material. They have neither the vocabulary nor the skills to make this a meaningful experience. Therefore it is just "show and tell" and ends up wasting a lot of valuable curricular time. I would respond to those that hold that view by returning to our piano student analogy. Would anyone prohibit novice piano students from listening to a Beethoven piano sonata, even before they've had their first lesson—telling them instead how important it is to practice only the theory, scales, and keyboarding techniques and that some day they will see how this all comes together to make music? If you think I have stretched the analogy, ask yourself how many times you have told your students, "You need to know this stuff; when you start seeing patients you'll see how important this is." I know I have caught myself saying this many times.

Having made the argument for bringing clinical material into the early parts of the curriculum, let me again emphasize the need to move basic science material later into the curriculum. I believe there are strong and compelling reasons for doing so, and we should voice these to our curriculum committees.

If this somewhat idealistic image of our educational product is to become a reality, what must be done?

Unfortunately I don't have a ready answer or an example to which I can point. Nevertheless, I offer the following thoughts and ideas, which hopefully will serve as a starting point for discussion and perhaps future direction.

As I have already stated, development and delivery of our educational product takes time, a very precious commodity these days. Can we continue to expect our research faculty to be competitive and also devote the necessary time to teach the novices about the forest? With rare exception,

As physiologists the teaching we do should not end when the first or second year physiology course is over. ... we should insist on having time in the clinical years to revisit and amplify the basic physiological principles that are so important for understanding the pathophysiology of disease.

I'm afraid the answer is no; especially if they also wish to have a life outside of the laboratory and the classroom. Does this necessarily mean separate faculty; one research and one teaching? Perhaps to some degree yes, but I hope a complete separation does not evolve. During discussions around our curriculum revision this issue has arisen many times. While we have not reached the ultimate solution, I believe we have taken some early steps in the right direction. Specifically, we are considering the formation of what we call a "Committee of Scholars of Medical Education." Before describing the function of this committee, I must tell you that our faculty is by no means in agreement on its merits.

As envisioned, the Committee of Scholars of Medical Education would be charged with the development, organization, and coordination of the teaching of those aspects of the basic medical science portions of the curriculum that are generally unrelated to the research focus of the basic science faculty (e.g., gross anatomy, histology, organ and systems physiology). Initially, the committee would be constituted with faculty currently teaching these subjects. At our institution, these tend to be faculty with considerable amounts of gray hair, not a result of teaching this material, but as a result of their years of experience. With time additional faculty would be recruited to the committee, with at least six tenure-track positions available. Each member of the committee would have a departmental home, so as to interact with the research faculty and thereby draw upon current research activities as they might influence educational objectives. Evaluation and promotion for these committee members

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Teacher of the Year

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would be based primarily upon their educational activity.

As I review this proposal, I do not see the establishment of separate faculties as some of its critics have suggested. Instead, I see the development of a close working network of basic scientist and clinician that extends throughout the curriculum. In this network the committee serves as the facilitator and the integrator. As part of the network, all faculty contribute to student teaching, each bringing their particular expertise to this effort. The members of the committee facilitate and coordinate these interactions. They work to ensure that the students know the forest before they explore the trees and that they know the trees before examining the leaves. They also serve to help students integrate new knowledge about the leaves and the molecules into a more complete understanding of the tree. In this way they help the student learn from the virtuoso.

As I have indicated, the concept of a Committee of Scholars in Medical Education is not yet a reality at my institution. I do believe it has merits and is a realistic first step toward addressing the challenge of "who will teach." I would

urge you all as members of the Teaching Section of the American Physiological Society, and in your roles as faculty at your institutions, to consider, debate, and recommend alternative models that schools of medicine might consider. The challenge is great, but I am confident that collectively we can meet it.

In closing I would like to return to my introductory remarks. As I noted, deciding on what to present this evening was a challenge for me. I chose tonight's topic with some hesitation, because I knew what I wanted to say on this topic is controversial and challenges the way basic science and physiology education in medical schools is currently approached. However, the future presents us with some staggering challenges for the education of our students, and these challenges will require new and different solutions. If I have caused you to at least think about education a little differently tonight, then I have succeeded in my task.

Thank you for your attention, and again thank you for the privilege and honor of this award.

1. Woolliscroft, J.O. Who will teach? A fundamental challenge to medical education. *Academic Medicine* 70: 27-29, 1995.

Perspectives on Research Support

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the *Post* stories not simply as the unfunded casualties of the budget decline but, in something of a new twist, as part of the root cause of the problem as well. Demands for resources may have outstripped supplies, it is implied, in part due to academic "overcloning" of too many investigators. In contrast to other recent concerns about a decline in the younger population (1, 2) the position promoted here was that if laboratory workers were not being produced in excess, there would not be so much pressure on the funding system! While growth in federal biomedical funding declined below inflationary levels beginning in 1987, the number of university scientists, it is noted, continued to grow at a considerably greater rate, with medical scientists growing 10 times faster than the US workforce as a whole (5)!

The companion story in the *NIH Journal* (6) was less implicit. To quote, you can

"name the field—researchers are standing in the midst of the greatest waves of advances ever. And yet, *biomedical research is in deep trouble* [emphasis added]. In almost every lab, the talk is becoming more anguished, more desperate. Many postdocs can't find permanent jobs, and growing numbers are either taking a second, or third, or fourth postdoctoral position or dropping out of science. Principal investigators submit grant applications that earn excellent scores, but no funding because NIH has only enough money to cover the top 25 percent of applications.... Many lab chiefs say they now spend

more time writing and revising grant applications than doing science. At all levels of the profession, the pressure to improve one's appeal to employers and granting agencies by publishing ever more papers is driving competitiveness to potentially damaging intensities among scientists. With so little room in biology for new PhDs, leaders such as NIH Director Harold Varmus and National Academy of Sciences President Bruce Alberts say young biomedical researchers should consider careers away from the bench, in, say, law or business or teaching. In what may be the most insidious effect of the funding crunch, many researchers confess they rein in their most creative ideas and instead pursue only modest incremental research possibilities, however uninspiring. When there are not enough grant dollars to go around, funding agencies tend to reject all but the safest proposals."

What a way to solicit better public support!

Too many investigators, not enough funds, or just not the right priorities? Diversionary tactics to attract congressional support or a sign of retrenchment? At least partially true—and if so which? Hope of a cure, or a wave so big we throw in the towel? Also, and importantly, is this the public portrayal we need to attain stable financial support, attract the brightest students, provide for training, and encourage and support productive investigators? Last, is it "trouble" or is it just "change"?

Questions about the financial base of the federal-academic alliance are apparently becoming so disturbing that

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some are working hard to have this aired with the new Congress' first cup of coffee! Yet if we are doing breakfast, is it not also likely we are going to be asked what is up for lunch? What are we serving, and oh, by the way, do the stories in articles such as these really reflect our best answers

Number of NIH Competing Research Project Grant Applications Reviewed and Awarded, FY1984-1993

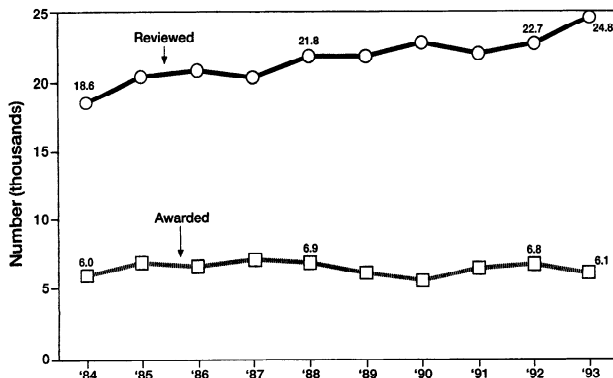


Figure 1. Competing Research Project Grants (RPGs) reviewed and awarded, 1984–1993. Applications increased to 24,774 while awards declined to 6,148 in 1993. (From Ref. 4.)

about better ways to bring funding back in line with need? Other than yesterday's solutions—providing more and more funds, rather unrealistic in these times—what should we suggest: what programs we should cut back or stop funding and how do we reduce costs and redundancy or develop workable new ideas that will keep up the Enterprise while improving its chances of flying tomorrow?

Essential questions for which this audience, in its role as chairs of basic science departments, as shapers of academic policy, investigators, directors of professional societies, and as mentors of the next generations of scientists, can, if it chooses, have an important influence.

Toward that end, I was asked, as one of the remaining believers that multibillion dollar budgets continue to provide enormous opportunities, to review with you today directions in research support. To do that, it is necessary I think to step back and focus, if you will, on the more "signal-averaged" trends, the persistent signals, and not this mornings' "why are my grants not getting funded" anecdotes and noise. I would like to emphasize that the views expressed are solely mine, as a beginning-to-grey physiologist-cum-program-administrator and do not reflect in any way those of the NIH or our particular program. Because of that, this discussion and all of the data are

taken from sources within the public domain.

Figure 1 begins with the bottom line. It shows the total number of competing NIH Research Project Grants (RPGs) reviewed and awarded over the past 10 years. You will recall this category of support includes the traditional individual (R01) research projects, both investigator and institute (RFA) initiated, as well as others; the R29 or FIRST awards for new investigators; the MERIT and Outstanding Investigator Awards for those well established; the large Program Projects and smaller Shannon awards; some Cooperative Agreements, including many for large clinical studies; Small Business Innovation Research (SBIR) and Technology Transfer (STTR) awards; and a few others but mostly individually directed, project research.

As shown, the total number of these RPG applications increased over the decade by about one-third. In contrast, the number of awards supported stayed at relatively the same level, close to 6,000, in the mid-1980s, with an increase mid-decade to about 7,000, before returning in 1993 to 6,100, near the original level.

Information for 1994, along with estimates for 1995 and 1996, suggests this level is unlikely to change significantly without a major new initiative, such as the Harkin-Hatfield proposal considered by the previous Congress.

Table 1 shows the so-called "success rates" for NIH Research Project Grant applications as a whole and those for many of the individual Institutes who support work related to your interests in physiology. Average NIH rates ranged about one-third of all competitive submissions in the mid-1980s and declined erratically midperiod to the middle 20% levels, where they have stabilized over the last several years. Final figures for fiscal 1994 remained close to the same level

**SUCCESS RATES FOR NIH COMPETING RESEARCH PROJECTS BY ICD
FY 1984-1993**

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Total	32.1%	33.2%	31.7%	34.8%	31.4%	28.0%	24.6%	29.1%	29.6%	24.5%
NCI	32.9	31.9	30.1	34.1	32.7	25.0	23.5	27.5	32.2	24.6
NHLBI	34.8	32.4	31.2	32.5	31.3	25.6	24.9	27.5	29.2	21.9
NIDDK	35.4	32.4	33.1	37.8	31.8	26.3	23.0	26.8	32.7	22.0
NINDS	29.5	33.9	33.9	39.4	39.6	31.6	24.2	29.9	26.6	25.1
NIAID	33.6	33.6	31.5	34.0	30.6	29.9	27.2	31.0	29.6	29.3
NIGMS	33.2	42.3	40.0	37.6	38.5	28.4	22.0	34.4	35.7	29.8
NICHD	24.7	24.7	23.9	32.8	24.6	24.2	19.3	25.1	26.3	21.3
NEI	46.3	46.0	46.1	49.5	42.8	42.8	37.5	32.8	31.0	32.0
NIEHS	42.6	27.8	25.7	28.5	28.5	26.4	28.3	27.5	28.0	21.1
NIAMS	33.0	30.4	30.6	28.5	26.0	26.4	20.0	31.3	17.5	20.9
NCRR	—	—	—	—	—	—	21.6	28.8	32.7	28.4

Table 1. Success rates for RPGs submitted to a number of NIH Institutes that provide support for physiological studies. Figures for total NIH are the average of all 19 Institutes and Centers, not just those listed. Success rate is defined as the percentage of reviewed applications that received funds, divided by the number received, plus the number eliminated by triage, plus those carried over, not including supplements. (From Ref. 4.)

NUMBER OF COMPETING RESEARCH PROJECT AWARDS FY 1988 to FY 1993

Awards and Code	1988	1990	1992	1993	Difference FY 1988 and 1993
Traditional Research Projects (R01)	5,170	4,112	4,769	4,121	-1,049
Research Program Projects (P01)	225	185	233	182	-43
First Independent Research Support and Transition Awards (R29)	695	486	574	505	-190
Method to Extend Research in Time (MERIT) Awards (R37)	220	138	312	302	+82
Small Business Innovation Research Grants, Phases I & II (R43, R44, U43)	412	539	678	804	+392
Research Projects (Cooperative Agreements) (U01) and (U19)	113	149	179	189	+76
James A. Shannon Director's Award (R55)	0	0	0	27	+27
Other	30	17	23	18	-12
Total	6,865	5,626	6,768	6,148	-717

Table 2. Numbers of competing RPG Awards made in each grant category between 1988 and 1993. Note that MERIT awards are similar in project character and should be considered along with traditional R01s. (From Ref. 4.)

(26.4%) as before. Success rates for individual Institutes vary considerably, within a surprisingly broad range (5–10%), year to year. Much of the fluctuation depends on multiple factors, such as numbers and costs of noncompeting renewal applications, changes in indirect costs, funded and unfunded Congressional mandates, new offices and institutes, and even the appearance of threatening new diseases. It is also a function, not surprisingly, of the persuasiveness of different scientific and public constituencies to affect the directions of each year's fiscal appropriation.

Table 2 shows numerical changes in individual grant categories within the RPG budget over a similar period. Total awards dropped from 6,865 in fiscal 1988 to 6,148 in 1993, a decline of around 10%. Changes within specific categories were, however, of greater concern. Individual project grants (R01s) dropped more than 20% (more than 1,000 grants!), while FIRST awards to new investigators (R29s) declined by more than one-quarter of their 1988 levels. These were counterbalanced by increases in others, such as the near doubling in Small Business (SBIR and STTR) awards and significant, though numerically smaller increases in MERIT and Shannon awards, and in Cooperative Agreements.

Implications of the declines in R01s and R29s identified in Table 2 have raised many concerns within the NIH and biomedical communities and were discussed vigorously at the physiology chairman's meeting where this talk was presented in December. Similar concerns were also raised in a December letter to the editor in

Science (3), which argued (correctly) that success rates for new grants are too low and that the average rate cited for RPGs as a whole (about 26%) was overly optimistic for predicting success for brand new proposals (about 15–16% it was argued). Although it was recognized at the meeting that overall success rates represent averages that do not apply to all individual components (rates for competitive R01 renewals, for example, were near 36%), there was great concern about even some funding levels appearing to be this low.

These discussions identified, but did little to resolve, two key questions on which there was more speculation than information. The first was, what in fact are the trends in funding for brand new projects, and second, to what extent are investigators experiencing individual successes based on the resources of today's funding system.

Because additional information on these issues emerged since the meeting, it seemed worthwhile to include it here. Table 3 shows a more "averaged" approach to the first point. It shows "eventual success rates" for new NIH R01 projects received over the past five years. It confirms the point made in the letter to *Science* that initial, one-year "snapshot," award rates have indeed declined below the general averages and ranged between 19% in 1989 and 16% in 1994. Cumulative award rates for new projects, in either original or subsequently amended form, shown in Table 3 (right) have also, however, remained at higher levels, closer to the average of about one-quarter of those received (compare Fig. 1). Surprisingly, for projects tracked for at least

TABLE 3
EVENTUAL SUCCESS OF NEW INDIVIDUAL NIH RESEARCH PROJECT (R01) GRANTS

Received	No.	Awarded by Year						Cumulative	
		1989	1990	1991	1992	1993	1994	Total	Percent
1989	9,736	1,853 (19%)	498	180	41	12	3	2,587	26.6
1990	9,804		1,549 (16%)	608	175	38	11	2,381	24.3
1991	9,067			1,731 (19%)	572	138	56	2,497	27.5
1992	9,536				1,755 (18%)	485	212	2,452	25.7
1993	10,820					1,535 (14%)	757	2,292	21.2
1994	10,833						1,719 (16%)	1,719	15.9

Table 3. Cumulative new project award rate for initial and eventual funding of new, individual NIH R01 projects. Applications received for review between 1989 and 1994 were followed in successive years to determine number awarded. For purposes of this analysis, original and amended (A-n designation) versions were considered to represent the same application. Percent value in parenthesis below initial listings in each row indicates award rate for year of submission. Values in right two columns provide cumulative rates. Source: Personal Communication: Bob Moore, Division of Research Grants, ISB, SAES, NIH, 1994.

TABLE 4
FUNDING STATUS OF 1990 R01 AND R29 APPLICANTS

STATUS IN 1990	Total Number	Application Scored In	
		Upper Half	Lower Half
Number of Applicants	14,726	8,132	8,594
Number Funded in 1990	3,777	2,772	5
Additional support by:			
Other Competing Projects	61	32	29
Non-Competing R01s	1,993	1,077	916
Other Research Grants	307	127	180
Training Project Dirs	222	128	94
Fellowships	22	6	16
Total Other Support	2,605	1,370	1,235
Number Supported in 1990	6,382	5,142	1,240
Number Unfunded in 1990	8,344	2,990	7,354
STATUS IN 1991 OF THE 8,344 APPLICANTS UNFUNDED FROM 1990			
Number Supported in 1991 by:			
Primary Project	1,309	979	330
Non-Competing R01s	30	13	17
Other Research Grants	123	51	72
Training Project Dirs	16	7	9
Fellowships	15	9	6
Number Supported in 1991	1,493	1,059	434
Number Unfunded Through 1991	6,851	1,931	4,920
STATUS IN 1992 OF THE 6,851 APPLICANTS FROM 1990 REMAINING UNFUNDED FROM 1991			
Number Supported in 1992 by:			
Primary Project	588	275	313
Non-Competing R01s	5	4	1
Other Research Grants	94	23	71
Training Project Dirs	10	4	5
Fellowships	7	2	5
Number Supported in 1992	710	308	402
Number Unfunded Through 1992	6,141	1,623	4,518
STATUS IN 1993 OF THE 6,141 APPLICANTS FROM 1990 REMAINING UNFUNDED FROM 1992			
Number Supported in 1993 by:			
Primary Project	210	84	124
Non-Competing R01s	12	5	7
Other Research Grants	49	12	37
Training Project Dirs	6	3	3
Fellowships	8	3	5
Number Supported in 1993	293	109	184
Number Unfunded Through 1993	5,848	1,514	4,334
CUMULATIVE TOTALS 1990 - 1993			
Number of Applicants	14,726	8,132	8,594
Number Supported	8,676 60%	6,410 81%	4,260 50%
Number Unfunded	5,848	1,514	4,334

Table 4. Cumulative 1990 R01/R29 investigator cohort award rate. Applicants (14,726) applying for R01 or R29 awards in 1990 were tracked by principal investigator for a subsequent three years. Of this group, 3,777 (26%) requests for funding on the initial, primary project were successful in 1990. An additional 2,605 applicants received other support as directors of another award or were already funded on other grants. Analyses for successive years indicates that overall 60% of the cohort was successful through 1993. Parallel information is given for subgroups who initially scored in the upper and lower halves of the priority score or percentile range (less or greater than the 50th percentile or a priority score of 250) on the primary project. Source: Public Communication: NIH, Office of Extramural Research, 1994.

three years, the decline in eventual rates between 1989 and 1992 was less than 1%! Obviously the message here is persistence. The ensuing question—what is it that improves over time, the project, the reviewers, or the application?—does not have such an accessible answer.

The second question concerning investigator support is addressed by Table 4. It summarizes information made available on the funding of a single group of NIH applicants, both successful and unsuccessful, who applied for new support in one particular year. The analysis was done on the cohort who submitted proposals for R01 or R29 (FIRST) awards in 1990 and provides information about cumulative success on these awards and on the other NIH projects listed within Table 4. The findings show that at the end of 1990, 25–26% of applicants had received support for the primary project. Cumulatively, by the end of 1993, about 40% of this initial group of applicants (5,892) had achieved success for the primary proposal submitted in 1990.

Amount Awarded for NIH Research Project, Research Center, and Other Research Grants, FY1984-1993

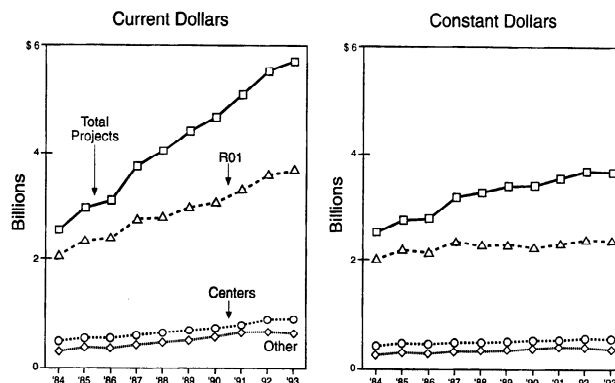


Figure 2. Amounts awarded for research projects, research center and other research grant budget categories, 1984-1993. Constant dollars calculated based on Biomedical R&D Price Index, FY 1984 = 100. Total projects represents RPGs including R01s. In 1993 RPGs constituted 67%, research centers 11%, and other research 7% of the total extramural budget of \$7.26 billion. (From Ref. 4.)

The analysis provided in Table 4 (right) subdivides the initial cohort into two subgroups based on whether the primary application scored in the "upper" or "lower" half of the priority score or percentile range on its first review. It shows that for those applicants who initially scored in the "upper" half, the 1990 award rate was about 46%, with the total chances of achieving success on this or any one of the other mechanisms listed an encouraging 81% over the four-year span. For applicants in the "lower" half, chances of success over the period, considering all mechanisms, were 50%! Note the "successes" included here do not count funding for subprojects on larger multiproject grants, such as Program Projects or Centers, or for individuals listed as coinvestigators on other awards. Although the data in these Tables (2–4) do show there has been a disturbing decline in overall R01 funding in recent years, the more averaged view indicates it is clearly not of the Casandric proportions reported by the headline-oriented press. It is taking longer, but excellent new projects and investigators who persist in seeking support through a variety of mechanisms are maintaining much success even in these difficult times.

For those who reminisce about the good ole' days when funding chances were more like 50:50, it is worth pointing out that, unlike our colleagues who have pursued other exploding areas of science (e.g., supercolliders and space platform research), support for biomedical activities has, in fact, increased considerably over recent years. Figure 2 shows in current and inflation-corrected constant dollars that funding allocated by NIH to Research Project Grants increased by 124%, about \$3.2 billion, or close to 46% after inflation since 1984. Awards for R01s, the largest category, increased by a lesser extent, about 13% in constant dollars, to about \$2.25 billion. Growth of funds allocated to the Research Centers and other research budget categories were

higher, at 31% and 50% in real dollars, respectively, although both occupy a much smaller fraction of the budget. "Center" funds provide support for many multidisciplinary basic and clinical programs, for animal, material, and facilities resources, whereas the "other" category includes mainly related efforts, such as those for education, intervention, and demonstration programs. It also covers a multiplicity of specialized efforts, including some for training.

Because our other major concern today is with new investigators, I have included Fig. 3 showing expenditures on the two major categories of National Research Service Act (NRSA) awards, an indicator of about 80% of NIH's pre- and postdoctoral training programs. Institutional awards, the so-called "T-series," grew from \$156 million in 1984 to \$297 million in 1994, in constant dollars a gain to \$194 million or about 24%. Fellowship awards (F-series) grew less, about 11% in constant dollars, to about \$41 million in 1994. In terms of real expenditures, funding of both the T- and F-series programs plateaued around 1990, with the number of trainees supported changing little since then. Growth in the number of total appointments made under both programs was thus just about 7% over the decade, less than 1% a year: hardly supportive of the "overcloning" charges leveled previously (5, 6).

The issue of appropriate levels of training has recently been addressed in two reports from the National Academy of Science's NRC. Both express the counter-concern, that is, that the lack of a sufficient supply of successful new investigators could, in fact, jeopardize progress, our supply of innovative new ideas, and even national economic interests, in the future. The first, "Meeting the Nations's Needs for Biomedical and Behavioral Scientists" (2), published earlier in 1994, attempts to analyze and recommend changes in NRSA training. It notes fundamental changes are occurring in both employment and educational patterns in biomedical science, with increasing movement of projects and personnel

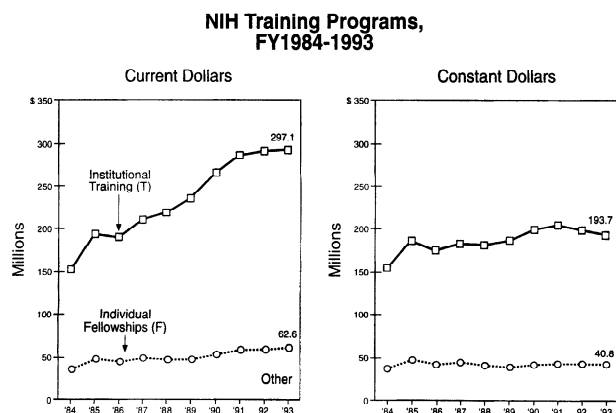


Figure 3. Amounts awarded for institutional training grants (T-series) and individual fellowships (F-series). Support in 1993 for NRSA T-series awards was \$193.7 million and for F-series awards \$40.8 million. T-series awards were estimated to be 11,423 in 1984 and 11,870 in 1993 while those with F awards were 1,778 in 1984 and 2,276 in 1993. (From Ref. 4.)

Numbers of Applications for Competing R01 Grants, by PI Age

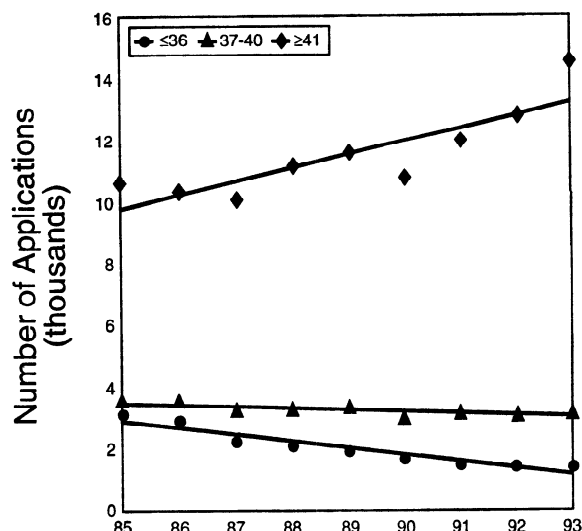


Figure 4. Numbers of competing NIH R01 grant applications from principal investigators in different age brackets, 1985-1993. Data include both new and renewal applications but do not include R29 (FIRST) investigator awards designed for new investigators. (Taken from Ref. 1 and based on information supplied by the Division of Research Grants, NIH.)

into the nonacademic sector. It also offers the opinion that employment conditions for new scientists remained "relatively robust" throughout the recent past. Its recommendations are that NRSA positions be expanded from 15,112 slots in 1993 to 16,260 in 1996 and remain at that level through 1999. Positions in basic biomedical sciences are projected to stay at 1993 levels (5,171 predocs, 3,836 postdocs) through 1999, with additional small increases allocated to other health fields. Altogether this is a view consistent with what is being predicted in terms of a leveling in the growth rate for new grants over the next few years.

The second report, "The Funding of Young Investigators in the Biological and Biomedical Sciences" (1), addresses the next phase of the career ladder: providing support to newly trained investigators beginning their productive careers. Its findings were also considerably unlike those expressed by the popular press. Rather than proliferating to the extent they have increased competitive pressures on the funding system, young investigators have suffered a serious decline. Two trends were identified: a general lack of success because of decreasing resources, as shared by all applicants (Table 1), and second, a specific, selective decline in applications from the younger group. Figure 4, taken from the NRC report, illustrates the point. It shows that applications from investigators under age 37, as well as those between 37 and 40, decreased over most of the last decade, whereas

those from the over-41-year-old group steadily increased. Figure 5 shows the parallel decline in the percentage of R01 plus R29 (or its predecessor, R23 New Investigator) awards. The number of R01 project grants to those below age 37 actually fell from 1,308 in 1985 to 527 in 1993, a decline of more than 60%! The NRC committee that published this

**NIH Regular Research Grant (R01) and
New Investigator/FIRST Award (R29) Awards
To Investigators Aged ≤ 36**

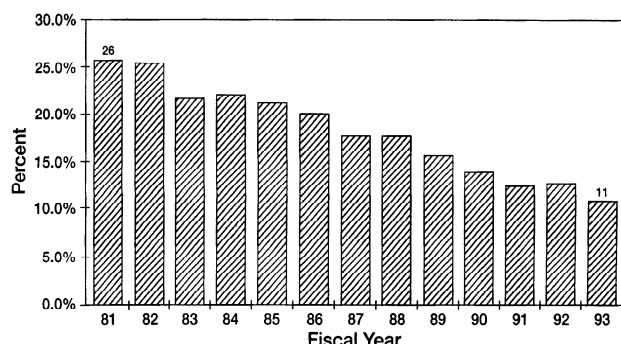


Figure 5. Combined success rates for investigators under age 37 for R01 and FIRST (R29) or New Investigator (R23) NIH project awards, 1981–1993. The R29 replaced the R23 as the primary mechanism designed for beginning investigators in 1986. Shown are values for awards; for comparison purposes application numbers from investigators under 37 declined from about 20% of the total in 1981 to about 10.5% in 1993. (From Ref. 4.)

finding is now undertaking a follow-up study to identify the possible causes responsible for these changes. Once this is completed, it is hoped we will have a better idea of the constellation of factors involved. The extent to which it reflects changing patterns of academic or industrial employment, longer training, shifts between smaller individual projects to larger team activities, or simply a bleaker recruitment rate than previously suspected seems difficult to predict but it is certainly cause for concern. In the interim, the report provides a number of recommendations to improve the care and feeding of young investigators within research and academic settings, which, if you have not yet seen, is clearly worth your time to review.

In concluding, I would like to go back to where we began and suggest much of what is being headlined as trouble is really reluctant reaction to some of the changes described here today. Obviously paylines have declined, and it appears we face a period of reduced growth, perhaps “stability.” Award rates are not as liberal as in the past but remain around 25%, and a persistent majority of applicants remains successful. It is also obvious that many investigators, especially those just beginning productive research, face different career challenges and options outside academia than in the past. These, I think, present enormous new opportunities that will continue to grow for those who wish to continue to contribute. Whether progress in research will be sustained in the

same ways it has in the past, given the pressures on federal, state, and academic resources, seems more difficult to predict. A significant part of the answer may well depend on how APS and others in the basic sciences deal with the reality of the kinds of changes we have discussed. To do that will require better ideas and strategies, constructive new efforts in the public arena, and a new proactive agenda directed at today’s realities, not ones that necessarily make good press or were effective for those of yesterday.

Acknowledgement: The author appreciates very much the interest of Antonio Scarpa, ACDP, and Marty Frank, APS, in stimulating this presentation, and the generous help of Bob Moore, NIH, DRG, SAES, in assembling much of the data.

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G. EDGAR FOLK, JR. SENIOR PHYSIOLOGIST FUND

The G. Edgar Folk, Jr., Senior Physiologist Fund provides modest but helpful assistance to senior physiologists 70 years or older who no longer have grant funds available to them. Recipients are selected throughout the year. Names of awardees are not made public. Inquiries concerning the G. Edgar Folk, Jr., Senior Physiologist Fund should be made to Martin Frank, Executive Director, APS.

American Physiological Society 148th Business Meeting

Time: 5:15 pm, Tuesday, April 11, 1995

Place: Georgia World Congress Center, Atlanta, Georgia

I. Call to Order

The meeting was called to order by President **Brian Duling**, who welcomed the members to the 148th Business Meeting of the American Physiological Society. Distributed with the agenda was a list of recipients of APS awards. President Duling selected **Barbara Horwitz** as parliamentarian.

II. State of the Society

It was with great pleasure that Duling announced the results of the election of the officers that was conducted by mail ballot. The membership elected **James A. Schafer**, University of Alabama at Birmingham, President-Elect (April 14–18, 1996). The two newly elected Councillors are **Walter F. Boron** (April 14–22, 1998), Yale University, and **Gerald F. DiBona** (April 14–22, 1998), University of Iowa. They will assume office at the close of the business meeting. They are replacing **Mordecai P. Blaustein** and **James A. Schafer**, who are completing three-year terms on Council.

Duling mentioned that each year the President of the Society has the opportunity to review the year and comment on the State of the Society at the annual business meeting. He stated, "It has been a real privilege to participate in the life of the Society at such an exciting time. Science is changing radically, making it difficult to foretell the future. Society is changing, funding patterns are changing in unpredictable ways, and we are questioning the training of our young people." For this State of the Society Address, Duling wanted to share his impressions of the Society and perhaps stimulate some thought for the future.

The sections and their chairs are very involved and have become the life blood of the Society. Duling noted that sections increasingly are taking a role in societal leadership and have been responsible for producing some outstanding programming, including the ongoing development of the Distinguished Lectureship program. The sections have implemented newsletters as a means of keeping members informed.

One new effort that Council has begun is the establishment of regional chapters, which brings together people in various areas of the country. Duling announced that Ohio is the first to request chapter status, which Council approved. Iowa has also submitted a request, which has been preliminarily approved. Chapters will be a potential venue for scientific enrichment and can aid the Society as a whole to identify the interests and concerns of the members. Duling encouraged other groups and individuals to consider forming their own local chapter.

The committees carry out the business of the Society. Through the involvement of members, the committees have been running very effectively. The Committee on Committees has become very active and was chaired this year by **Mordecai Blaustein**. This particular committee has had enormous impact on the



Brian Duling, President

other committees of the Society by their careful selection of new committee members. Recently, the Committee on Committee's composition was changed to reflect all the sections of the Society. Duling urged anyone interested in serving the Society to contact the chair of the Committee on Committees. While acknowledging that all the committees are critical to the Society, Duling singled out a few in the context of the activities of the past year.

The Finance Committee under the guidance of its chair, **Franklyn Knox**, has managed an \$11 million budget for the Society. The 1994 audit confirmed the financial health of the Society but has recommended that all sectional accounts need to be managed by APS. The 1996 budget includes an increase in institutional journal prices, which will serve to cover the continued loss in subscriptions and increased production costs. Duling noted that it is the investment income generated from societal funds that is used to fund the awards being presented.

The Publications Committee and its chair, **Leonard Johnson**, have overseen the publication of 33,000 pages and 3,834 articles this past year. About 900 scientists are currently serving on editorial boards, and approximately 4,000 scientists have served as referees. Electronic publishing has become a reality in 1995: APS Gopher and *APStracts* are on line for all APS journals. *APStracts* is on the World Wide Web this year, and the Red Sage Project will be in progress for one more year (UCSF, AT&T/Bell Laboratories, and APS joint venture). Duling announced that in 1996 the *Journal of Applied Physiology* will go on-line and on CD-ROM. In addition, this past year the Publications Committee has appointed four new editors: **Jeffrey Pessin** for *AJP:Endocrinology and Metabolism*, **Steve Hebert** for *AJP:Renal, Fluid and Electrolyte Physiology*, **Peter Strick** for the *Journal of Neurophysiology*, and **Stanley Schultz** for *News in Physiological Sciences*. Honoraria were instituted in 1995 for editors and associate editors.

The Program Committee, through the efforts of the past chair, **Heinz Valtin**, and current chair, **Ethan Nadel**, participated in the 1994 retreat on programming along with section

representatives. As a result of that retreat, the Physiology InFocus Program was created. The President-Elect will be responsible for selecting an individual to coordinate two days of programming related to a specific topic; included will be a variety of programming methods. **Raymond Frizzell** has been selected to coordinate "Physiological Insights into Molecular Medicine" as the first Physiology InFocus Program.

The second item to come from the retreat was the recommendation to revitalize the Experimental Biology (EB) themes to reflect active, high-intensity, exciting research. Both the Physiology InFocus Program and the themes will be advertised independently of the EB meeting. A third result of the retreat was the addition of "hot topic" symposia that will be submitted in the fall. Three slots have been reserved for these symposia.

The Program and Program Advisory Council approved a series of outstanding symposia for the fall in Washington, DC, when APS will be meeting with ASPEL, AIN, and AAA. The approved APS Conferences for 1995 and 1996 are "Understanding the Biological Clock: From Genetics to Physiology" in Hanover, NH; "New Discoveries Within the Pancreatic Polypeptide Family: Molecules to Medicine" in Newport Beach, CA; "pHysiology of Acid-Base Regulation: Molecular to Humans;" and "Neural Control of Breathing: Molecular to Organismal Perspectives." An intersociety conference, "The Integrative Biology of Exercise," has also been scheduled for 1997 in Vancouver, Canada. The international meetings scheduled for 1997 include the IUPS meeting in St. Petersburg, Russia; the ALACF meeting in Caracas, Venezuela; and the joint meeting of the Spanish Physiological Society and the APS in Malaga-Torremolinos, Spain.

The Interim Awards Committee with **Helen Cooke** as chair has reviewed all the APS awards. Council has approved the formation of a new standing awards committee, which will be responsible for oversight of the APS awards program and the selection of the Research Career Enhancement Awardees, as well as the recently approved continuation of the APS-Genentech award. Other APS awards include the Cannon and Bowditch Lecture Awards, the Ray G. Daggs and Orr E. Reynolds Awards, the Distinguished Lectureships, the John F. Perkins, Jr. Award, the Carolinatum Suden/Francis Hellebrandt and Procter and Gamble Professional Opportunity Awards, the Giles F. Filley Awards, the G. Edgar Folk, Jr. Senior Physiologist Awards, the Porter Physiology Development Awards and NIDDK Travel Fellowship Awards, and the various section awards.

The Public Affairs Committee and its chair, **Eric Fiegl**, are very active, especially since public affairs has become more of a focus of the Federation. FASEB will be publishing a series of essays on recent advances in biomedical sciences. However, the critical issues faced by this committee include decreased research funding, indirect costs, funding amounts for targeted research, the role of clinical trials, and, most importantly, the setting of funding priorities.

For the immediate future, the Society is facing many issues: 1) prioritizing the nation's budget; 2) PhD training;

What is the future? How many scientists? Where will they work? What should the physiology curriculum be?; 3) the teaching of physiology; 4) integrative biomedical research; 5) animal rights and the terrorism movement; 6) the development of electronic publishing; and 7) manuscript fees, page charges, and page limitations.

In closing, Duling stressed that, although changes need to be made, the Society needs to be sure the appropriate changes are made. "We need to decide what to do and use both our resources and our people well."

III. Report on Membership

A. Summary of the Membership Status



Max Perutz,
Cambridge University

President-Elect **Leonard Jefferson** reported on the status of the Society membership. Since the last spring business meeting, the Society has accepted into membership 258 regular, 142 corresponding, 5 affiliate, and 130 student members. The current membership of the Society is 7,760, of which 5,616 are regular, 31 honorary, 903 emeritus, 535 corresponding, 5 affiliate, and 670 student members. At this meeting, one physiologist, **Max F. Perutz**, MRC Laboratory of Molecular Biology, Cambridge University, was elected to honorary membership. (See page 177)

B. Deaths Reported Since the Last Meeting

The names of those members whose deaths have been reported since the last meeting were read by Jefferson, and the membership observed a moment of silence in tribute to their deceased colleagues. (See page 145)

IV. Awards

A. Ray G. Daggs Award

Ray G. Daggs was the APS Executive Secretary-Treasurer from 1956 until his retirement in 1972. In tribute to his devotion to the Society, the Ray G. Daggs Award was established and is given each year to a physiologist for distinguished service to the Society and to the science of physiology.

Brian Duling was pleased to announce that the recipient of the 1995 Ray G. Daggs Award is **Earl H. Wood**, who served as president of APS in 1980-1981. (See page 167)

B. Orr E. Reynolds Award

The Orr E. Reynolds Award was established in 1985 in honor of the second Executive Secretary-Treasurer of the Society, who served the Society from 1970 to 1985. The award is made annually for the best article submitted by a member of the Society on some aspect of the history of phys-

iology. It is given in recognition of Reynolds' outstanding contributions to the field of physiology and to the development of the historical aspects of the Society that have been well documented and preserved.

This year, it was an honor for President Duling to present the 1995 Orr E. Reynolds Award to **Jerod M. Loeb**, Joint Commission on Accreditation of Healthcare Organizations, for his manuscript, *Defending Medical Progress*, a detailed and comprehensive history of the rise of the antivivisection movement and the struggle of medical scientists against it. (See page 166)

C. Giles F. Filley Memorial Awards

As a result of a bequest from the family of Giles F. Filley, a memorial fund was established in 1993 to recognize excellence in respiratory physiology and medicine. Two annual awards are made to investigators who hold an academic rank no higher than assistant professor and are pursuing research in respiratory physiology and medicine. Awards are made to APS members working in the US, who have demonstrated outstanding promise based on their research program.

President Duling presented the 1995 awards to **Anthony G. Durmowicz**, University of Colorado, for his "investigation of the mechanisms that control tropoelastin mRNA expression in subpopulations of high and low tropoelastin-expressing pulmonary artery smooth muscle cells," and **Xiao-Jian Yuan**, University of Maryland, Baltimore, for his "investigation into the roles of membrane ionic channels, during normoxia and hypoxia, in regulating membrane potential, intracellular calcium ion concentration, and pulmonary vascular tone by using electrophysiological, quantitative fluorescent microscopy, and molecular biological techniques as well as pharmacological approaches." Each recipient received a \$12,000 check for use in their respective research program, a plaque, and reimbursement of expenses to attend the spring meeting. (See page 166)

D. Procter & Gamble Professional Opportunity Awards

The Procter and Gamble Company, a multinational, technically based consumer products corporation, provides support for the APS Professional Opportunities Awards. The APS Sections selected 17 predoctoral students, who are within 12-18 months of receiving a PhD and presenting a paper as first author at the spring meeting. The President recognized **Ted Logan** for making these awards possible by a generous grant to the Society and presented \$500 checks as well as paid registration to the awardees. (See page 169)

E. Caroline tum Suden/Frances Hellebrandt Professional Opportunity Awards

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

FASEB Placement Service. **Cheryl Heesch**, chair of the Women in Physiology Committee, assisted the President in presenting the awards. (See page 169)

F. NIDDK

President Duling announced that the renewal grant had recently been funded to continue the NIDDK Minority Travel Award Program for another five years. Twenty-nine NIDDK awards have been presented to minority students to help them attend the Experimental Biology '95 meeting. (See page 68)

G. Section Student Awards

President Duling announced that this was the first year for the Endocrinology and Metabolism Section Award. This award, made possible by the Immunobiological Research Institute, was presented to **Margaret Able**. (See page 166)

H. Recognition of Outgoing Councillors



Brian Duling, President, and Mordecai P. Blaustein, Outgoing Councillor

Councillors Mordecai P. Blaustein and James A. Schafer complete their terms at the close of this meeting. Duling expressed pleasure in having had the opportunity to serve on Council with them and recognized their dedication and guidance to the Society, presenting each with a plaque.



Brian Duling, President, and James A. Schafer, Outgoing Councillor

Announcing that this is **William H. Dantzler's** last meeting as an officer of the Society, Duling said that he was personally grateful for his wisdom and guidance during the past year. Dantzler was responsible this year for an outstanding Past President's Symposium and Bowditch Award Lecture. Duling took great delight in presenting Past President Dantzler with a plaque commemorating his presidency.



Brian Duling, President, and William Dantzler, Past President

Duling then turned the gavel over to Leonard S. Jefferson, Pennsylvania State University, Hershey, the incoming President of APS. Jefferson stated that, "my first order of business is to recognize the outstanding leadership of Brian Duling. As a result of the



Leonard S. Jefferson,
President-Elect

fall retreat, he initiated the process to improve our scientific meetings through revitalized programming, in particular the EB meeting. At the end of the retreat, we came out with plans for doing so, and if we stay the course, Brian Duling will have left a mark on the Society." Jefferson thanked the members for providing him the opportunity to serve the Society.

Jefferson noted he will base his presidency on three guiding principles. The first is to increase the inclusion of the membership in governance. He encourages members to work through the sections, which now have a more active role in governance through the joint meeting with Council, the Nominating Committee, and membership on the Committee on Committees. He will also continue to work for the involvement of the membership in industry through the Liaison With Industry Committee. Second, he wants to work on the challenges currently facing the Society. For the membership, the funding problems will continue to need attention. For the Society, with the expanded education and marketing offices, the expanding award programs including the Distinguished Lectures, and other recent initiatives, there is the need to determine how to balance activities and resources. The publications program must continue to operate in the rapidly changing world of electronic publishing. The meetings as a result of Brian Duling's important initiatives (Physiology InFocus Program and revitalized EB themes) must be nurtured and pursued to achieve the type of exciting scientific meetings the Society desires. Resource management must be given a high priority. Third, he noted that special attention in the upcoming year needs to be given to public affairs, as the Society needs to be more active in supporting the needs of the bench scientist. There is the need to work with other groups in order to speak with one voice, and yet he stressed that every member also needs to be an advocate. The training of PhDs in physiology needs to be carefully examined as to both the number of PhDs and type of training. He mentioned that either a retreat or a consensus conference will be held on these two areas.

In closing, Jefferson stated, "Any input on these areas from members will be welcomed. I again thank you for the opportunity to serve the Society."

V. New Business

Martin Frank announced that the IUPS meeting is scheduled for 1997 in St. Petersburg, Russia. He introduced the organizer of the meeting, **Sviatoslav Medvedev**. Medvedev thanked APS for its invitation to speak to the membership about the Congress. It will be held June 30–July 4, 1997, at the Military Medical Academy, located in the heart of St.



Sviatoslav Medvedev,
IUPS Congress Organizer,
St. Petersburg

Petersburg. Housing, from student dormitories to nearby hotels, is readily available and at a wide range of prices. Good public and private transportation is also available. He noted that all sessions will be held in one venue to make it easier for people to attend the different symposia, of which there will be 30 scheduled. Currently, the organizers have many proposals that cover all aspects of physiology (340 proposals for symposia), but they are willing to consider other proposals if they include exciting science. He asked APS members to fax proposals to either himself or to Martin Frank to pass on. They should include the topic, the organizers names, and possible speakers. The deadline for proposals is May 5.

There being no other new business, the meeting was adjourned at 6:28 pm, April 11, 1995.

*Leonard S. Jefferson
President-Elect*



APS Council (Seated l to r): James A. Schafer, Leonard S. Jefferson, William H. Dantzler, Gerald F. DiBona. (Standing l to r): D. Neil Granger, Barbara A. Horwitz, Heinz Valtin, Leonard R. Johnson, Diana L. Kunze, Mordecai P. Blaustein, Francis L. Belloni, Franklyn G. Knox.



APS Past Presidents. (Seated l to r): David F. Bohr (78–79), Earl H. Wood (80–81), Norman C. Staub (91–92). (Second row): Stanley G. Schultz (92–93), Shu Chien (90–91), William H. Dantzler (93–94), Vernon S. Bishop (89–90), Leonard S. Jefferson (95–96). (Third row): James A. Schafer (96–97), Brian R. Duling (94–95), Aubrey E. Taylor (88–89).

Experimental Biology '95

Experimental Biology '95, held April 9-13 in Atlanta, Georgia, was a joint meeting of six FASEB societies (APS, ASPET, ASIP, AIN, AAI, and AAA) and several guest societies. EB '95 was organized around eight themes: cardiovascular biology; cell injury, inflammation and repair; epithelial

(2,706 or 51%) was presented under the auspices of the sponsoring societies. Of the 2,170 abstracts submitted to APS for programming, just under two-thirds (1,351 or 62%) were presented as part of themes, whereas the other one-third (819 or 38%) was presented as part of a societal program.

Of the 2,170 abstracts processed by APS, 22% (472) were presented by female scientists as first authors and 9% (198) were received from institutions outside of the Americas. Government laboratories represented 4% (78) of the abstracts received, and industry laboratories represented 3% (57). Table 2 provides information on the departmental affiliations of the first authors and indicates that 24% (520) were received from departments of physiology and 5% (107) from departments of physiology and biophysics.

The APS scheduled the abstracts it was responsible for programming into 181 total sessions: 80 poster, 40 slide, 35 symposium, 14 lectures, 7 minisymposium, 4 workshops, and 1 poster-discussion sessions. The lecture sessions include 12 Distinguished Lectureships and the Cannon and Bowditch Lectures. The Distinguished Lectureships served as the focal point for the programs of each of the sections and were complemented by special sessions related to the lecture and designed to encourage interactions between students and fellows and the Distinguished Lecturer.

The total meeting registration was 12,476, which represents a decrease of 2% from EB '94 in Anaheim, California. The total registration includes 9,630 scientific, 2,210 exhibitors, and 636 guest registrants.

TABLE 1

EB '95 ABSTRACTS BY THEME AND SOCIETY

Theme Name*	APS	ASPET	ASIP	AIN	AAI	AAA	Total
CVB	720	216	117	59	13	9	1134
CIIR	0	0	0	0	0	0	0
ECB	121	21	17	13	1	4	177
MPHD	90	25	4	291	3	1	414
NB	81	34	16	46	6	15	198
RGD	42	34	37	133	12	8	266
RB	255	26	12	10	4	1	308
ST	42	56	3	16	3	4	124
Total Abstracts							
Received	2170	993	394	1316	1202	152	5327
Total Abstracts per Themes	1351	412	206	568	42	42	2621
% to Themes of Total	62%	41%	52%	43%	3%	28%	49%

*Theme Abbreviations

CVB Cardiovascular Biology	CIIR Cell Injury, Inflammation and Repair
ECB Epithelial Cell Biology	MPHD Metabolic Processes in Health and Disease
NB Neurobiology	RGD Regulation of Growth and Development
RB Respiratory Biology	
ST Signal Transduction	

cell biology; metabolic processes in health and disease; neurobiology; regulation of growth and development; respiratory biology; and signal transduction.

A total of 5,327 volunteered abstracts were submitted. Of this total, 2,170 papers or 41% were received from APS members and APS' three guest societies (Biomedical Engineering Society, Society of Experimental Biology and Medicine, and North American Society of Biorheology). Details about abstract submission for each of the themes are included in Table 1.

Of the 5,327 total abstracts, about one-half (2,621 or 49%) was incorporated into themes, and the other one-half

Experimental Biology '96 Call for Papers

coming in September
abstract deadline December 1, 1995

TABLE 2

AUTHOR AFFILIATIONS OF PROGRAMMED VOLUNTEERED PAPERS

Department	Number of Papers	% Total
Physiology	520	24%
Physiology and Biophysics	107	5%
Anesthesiology	101	5%
Medicine	94	4%
Pharmacology	83	4%
Surgery	94	4%
Biology	54	2%
Biomedical Engineering	53	2%
Pediatrics	45	2%
Biochemistry	23	1%
Exercise/ Sport Science	26	1%
Other	472	22%
No department listed	359	16%

Experimental Biology '96

Washington, DC April 14-17

SYMPOSIA

From receptor to response: brain stem cholinergic mechanisms of autonomic control

Helen A. Baghdoyan

Neurogenic mechanisms of long-term arterial pressure regulation: beyond the baroreceptor reflex

John W. Osborn

The role of ras in the transmission of growth and developmental signals

Deborah K. Morrison

Intracellular calcium communication

Michael L. Woodruff

Oxidants and thiol redox control in the gastrointestinal tract

Tak Yee Aw & Dean P. Jones

Role of nitric oxide in the physiology and pathophysiology of the digestive system

Matthew B. Grisham

Signalling mechanisms and genes involved in the development of cell hypertrophy

Patricia Preisig

Fatigue and endurance capacity of respiratory muscles: emerging concepts

Ralph F. Fregosi

Lung inflammation: cells, secretory products and signalling mechanisms

James D. Crapo

Molecular targets of vascular disease

David L. Crandall

Comparative aspects of membrane transport: functional variation within common paradigms

Gregory Ahearn

The kidney as a target organ for growth hormone

Aviad Haramati

The single smooth muscle cell: 25th anniversary

Roland M. Bagby & Frederick S. Fay

Nitric oxide and the functions of juxtaglomerular apparatus

Ian A. Reid & Ronald H. Freeman

Epithelial issues

Sandy I. Helman

Mechanisms of angiogenesis

Kathryn G. Lamping

Structural and functional characteristics of juxtaglomerular cells

Jurgen B. Schnermann

Potassium channels and blood vessels

Donald D. Heistad

Effects of growth hormone excess in transgenic mice

Andrzej Bartke

Cell-matrix interactions in lung development

Robert M. Senior & Jesse Roman

WORKSHOPS

Refresher course for teaching of gastrointestinal physiology

Norman Weisbrodt

Methods for evaluating higher order learning

Roger Thies

BIOMEDICAL ENGINEERING SOCIETY

Adhesion biomechanics: Molecular, cellular and biomechanical aspects of cell adhesion

K.-L. Paul Sung

Transport of peptides and proteins

Cynthia Sung

New approaches to membrane potential studies using voltage-sensitive dyes

James M. Beach

NORTH AMERICAN SOCIETY OF BIORHEOLOGY

Gene regulation by mechanical force in mammalian cells

Larry V. McIntire

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE

Role of natriuretic peptides in body fluid homeostasis

Samuel M. McCann

DISTINGUISHED LECTURESHIPS

Robert M. Berne Distinguished Lectureship of the APS Cardiovascular Section

Richard J. Traystman

Joseph Erlanger Distinguished Lectureship of the APS Central Nervous System Section

J. Allan Hobson

August Krogh Distinguished Lectureship of the APS Comparative Physiology Section

Knut Schmidt-Nielsen

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

Diana L. Kunze

Hugh Davson Distinguished Lectureship of the APS Cell & General Physiology Section

Günter Blobel

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

Robert J. Lefkowitz

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

Allen W. Cowley, Jr.

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

John T. Reeves

Horace W. Davenport Distinguished Lectureship of the APS Gastrointestinal Section

Alan F. Hofmann

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

Mark A. Knepper

Julius H. Comroe Distinguished Lectureship of the APS Respiration Section

Marlene Rabinovitch

Claude Bernard Distinguished Lectureship of the APS Teaching of Physiology Section

Stanley G. Schultz

SPECIAL SESSIONS AND LECTURES

APS Bowditch Lecture

Kim E. Barrett

Physiology in Perspective: The Walter B. Cannon Memorial Lecture

Richard Tsien

Call for Symposia Topics—Spring 1997

Members are invited to submit proposals for APS symposia for the annual spring meeting, Experimental Biology '97, to their Section Program Advisory Committee representative.

Symposia will be considered for presentation as part of the traditional APS symposia program that highlights areas of interest to the physiological community. In addition, symposia will be considered for inclusion in the cross-society program focusing on one of the following eight theme areas: cardiovascular biology; respiratory biology; epithelial cell biology; cell injury, inflammation, and repair; metabolic processes in health and disease; neurobiology; regulation of growth and development; and signal transduction.

Organizers should consider multidisciplinary approaches with other sections and the contribution by experimentation at multiple levels of investigation.

What specific questions will the symposium address?

Are there two or three conflicting issues that warrant presentation and discussion? What does the symposium offer to the intended audience? Are future directions considered in the material to be presented?

Proposals should be submitted to the appropriate Section Program Advisory Committee representative. All proposals should include the title; the organizer's name and address; an abstract (150 words); the number of half-day sessions required; the names of session chair(s); the names of presenters-discussants—approximately six per half day (list the participant's name and the title of the presentation as it would appear in the program); a brief biographical sketch (2–3 sentences) of each speaker in the symposium; and budget information. Symposia are evaluated on the basis of their scientific merit. Organizers will be notified shortly after the 1996 spring meeting on acceptance of their proposal.

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Guest Societies

Biomedical Engineering Society

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Society for Experimental Biology and Medicine

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North American Society of Biorheology

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APS-Genentech Postdoctoral Fellowship in Mammalian Organ System Physiology

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

The ideal candidate is one who did an outstanding job in a top-flight graduate program (e.g., physiology, pharmacology, molecular biology, genetics, etc.) and who has the intention of enlarging or learning organ system approaches during their postdoctoral training. Alternatively, a well-trained graduate in integrative physiology might wish to expand their work through the use of molecular biological tools. A central criterion is that the postdoctoral project uses the tools of cellular and molecular biology in the setting of the whole animal.

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

Application Procedure

Candidates should submit an application form including information about both the candidate's proposed research plan and the sponsor's research program. The application should also include a statement of how the proposed training program will promote a career in mammalian organ system physiology. Candidates should include their curriculum vitae and that of their postdoctoral research sponsor and a listing of their research support. The applicant must also include letters of support either from his/her department chair or predoctoral research advisor, from the sponsor of the proposed postdoctoral research program, and up to two others from individuals familiar with the applicant's work. Either the candidate or sponsor should be a member of the APS. Please submit the original application and seven copies of all application materials.

Application Deadline: October 2, 1995

Additional Information and Application Materials

Dr. Martin Frank
APS-Genentech Postdoctoral Fellowship Program
American Physiological Society
9650 Rockville Pike
Bethesda, MD 20814-3991

Call for APS Conference Topics

Over the past several years, APS has transformed its fall meeting from one encompassing all aspects of physiology to one embracing a clearly defined theme or topic. Culmination of that transition has been the 1993–1996 APS conferences.

APS conferences offer the Society membership the ultimate in programming opportunities. The organizing committee selects the theme or topic, meeting format, abstract categories, method of presentation, and duration of the meeting. APS is responsible for all aspects of the meeting management and financial support. In essence, the Society is simply asking you to help organize a meeting that presents the best science, and it will provide the space and resources to support you. What more could you possibly ask?

Listed below are more specific guidelines to follow in organizing an APS conference. Any questions regarding the organization of such meetings should be directed to Ethan R. Nadel, chair of the Program Committee, or Martin Frank at the APS office. The deadline for proposals to be considered for 1998 is February 15, 1996.

Guidelines for APS Conference Proposals

There is no special form. Applicants may organize their proposals in whatever format they deem best. By and large, however, the information listed in these guidelines should be supplied.

Up to two (rarely three) conferences will be selected annually, to be held between June and December of a given year. Each proposal is scored and ranked by members of the Program Advisory Committee (PAC) and the Program Committee (PC). The Committees then recommend two conference proposals to Council, which gives final approval to each conference. The organizer of the proposed conference must give a formal presentation at the PAC meeting, which is scheduled on the first day of Experimental Biology.

Scope

Each APS conference should deal with a circumscribed topic, which may be narrow or broad. Although the ideal size is 300–500 attendees, there is great flexibility in this number. Except under unusual circumstances, the conference should not be so large as to require the scheduling of simultaneous sessions. Organizers should consider the suitability of a multidisciplinary approach to the topic, as well as different levels of investigation ranges from molecular to systems physiology.

Title

If possible, please include the term “physiology” or “physiological” in the conference title.

Organizer(s)

An APS conference may be organized and proposed by one or more persons. Somewhere in the application, the following information should be supplied for each organizer: name, including complete first name, not just initials; address; telephone, fax and e-mail numbers; and a very brief biographical sketch (up to four lines), which summarizes the credentials of the organizer(s) for leading the conference.

Background and Rationale

What is the history of the topic? Are there particular advances in the topic that warrant an APS conference now? When was a conference last held on this topic? Is a new or unique approach to the topic envisioned for the conference? What is the degree of current interest in the topic; is it international in scope? Are the main “players” in this field included in the proposal?

Dates and Location

All APS conferences are held between June and December of a given year. The duration should be three to four days, and a Saturday stayover should be scheduled to permit low air fares. A pleasant, collegial setting is encouraged. Bear in mind the weather; recreational facilities (for accompanying families as well as for attendees); common and inexpensive dining facilities; and reasonable and inexpensive accommodations, especially for young participants such as graduate students and postdoctoral fellows. Although a university campus often meets these requirements best, organizers should feel free to suggest other venues, including conference “resorts” and major city hotels. The rationale for the choice of dates and location should be explained.

APS discourages the temptation to append an APS conference to a national or international meeting in order to take advantage of major personages who will be attending the other meeting. Despite the higher cost of bringing the key investigators to APS conferences, APS wants each conference to stand on its own, with the clear identity of an APS-sponsored meeting.

Once a venue and dates have been selected, the APS office in Bethesda will assume full management of the conference, including all financial and logistical aspects, publicity, and technical exhibits if appropriate.

Sections, Specialty Groups, Other Societies

It is best, although not essential, if a proposal for an APS conference is submitted under the auspices of one or more

sections or special interest groups of the Society. A multidisciplinary approach to the chosen topic is encouraged, so that a given conference will draw participants from several sections and interest groups, as well as from societies other than APS. Primary responsibility for the conference, however, will rest with the organizers working through APS.

Structure

With rare exceptions (e.g., when a large meeting is contemplated), there should be no simultaneous sessions.

The reviewers can best judge the scientific merits of a proposal if a fairly detailed, although tentative, schedule is given. What subtopics are to be discussed each day? How long will the sessions last? Who will be the speakers? What will be the format of each session: plenary lecture, symposium, posters, panel discussion, volunteered slide presentations, others?

How have the invited participants been chosen? Active roles (including presentations) for young faculty, graduate students, and postdoctoral fellows is encouraged. Has due consideration been given to the inclusion of women and minorities?

For each invited participant, list full name, current position, title of presentation, and whether they have been contacted. A majority of the speakers to be invited should be contacted in a tentative manner, making it clear to them that final invitations are subject to the proposal being accepted by Council. Inasmuch as a proposal may be prepared more than two years in advance of a conference being held, as much as 25% of the slots can be left open to allow for later insertion of new developments and speakers.

It is very helpful to the reviewers if a summary schedule of the proposed program is supplied (e.g., in the form of a grid/calendar).

Financial Support

Each APS conference is underwritten fully by APS. Once a given proposal has been accepted by Council, the organizer(s) will be contacted for suggestions of organizations or societies that may support the conference. While the help of the organizer(s) in raising funds will be welcomed, all fund-raising efforts will be coordinated by APS.

Each proposal will be scored and ranked initially on its scientific and educational merit, without regard to cost. For that reason, statements regarding specific sources of funding, financial feasibility, or detailed budgets are not solicited as part of the proposal.

Deadline

All proposals must be received in the APS membership services office by February 15, slightly more than two years

before the Conference is to be held. For example, a proposal for a Conference to be held in October 1998, must be submitted by February 15, 1996.

Send proposals to:
Membership Services
The American Physiological Society
9650 Rockville Pike
Bethesda, MD 20814-3991
voice: 301-530-7171
fax: 301-571-8305
e-mail: lbuckler@aps.faseb.org

Call for Nominations

Walter B. Cannon Memorial Lecture Award

The Cannon Memorial Lecture honors Walter B. Cannon, President of the Society from 1913–1916 and one of the century's most distinguished physiologists. The plenary lecture is presented annually by a distinguished physiological scientist, domestic or foreign, at the spring meeting on a subject that addresses some aspect of the concept of homeostasis as enunciated in Cannon's classic work, *The Wisdom of the Body*. The lecture, sponsored by the Grass Foundation, is selected by the APS President with the consent of Council.

The recipient receives an honorarium of \$4,000 plus travel and per diem expenses and is invited to submit a manuscript for consideration of publication in one of the Society's journals.

Nominations for the Cannon Memorial Lecture Award should be adequately documented to demonstrate the candidate's contributions to physiology. A curriculum vitae should accompany the letter of support describing the nominee's achievements.

Submit nominations by October 1 to:

The APS Cannon Lecture Award

9650 Rockville Pike

Bethesda, MD 20814-3991

APS Members Highlight Physiology in Action for Atlanta-Area Teachers and Students

For the fourth year, the APS sponsored a special workshop for local middle and high school science teachers and their students during the Experimental Biology meeting. This year's program was coordinated by the APS Education Committee and APS staff. More than 50 teachers and 85 students from the Atlanta area attended the full-day workshop.

The morning session focused on research updates, research in action and research technology. Presentations were made on physiology studies on the summit of Mt. Everest (**John West**, University of California-San Diego School of Medicine); a mock murder trial using DNA fingerprinting evidence (**Barry T. Peterson**, University of Texas Health Science Center); and laser tweezers and laser scissors (Larry Keenan, Cell Robotics, Inc., Albuquerque, NM). Over box lunches, teachers and students met with APS Teaching Section members who served as volunteer guides for a tour of the posters and exhibit hall.

The afternoon included separate workshops for students and teachers. Students discussed the nature of scientific discovery with Peterson; participated in the math, physics, and biology presentation by **Donald T. Frazier** (University of Kentucky); heard about a variety of careers in physiology from **Joey P. Granger** (University of Mississippi Medical School); and learned about the diverse pathways that can lead to graduate studies in physiology from a panel of Granger's graduate students.

In the separate afternoon workshop for teachers, three of the 1994 summer research teachers presented activities developed for their classrooms as a result of their research experiences. Diana Fisher (Perth Amboy High School, Perth Amboy, NJ), who worked with APS member **Judith A. Neubauer**, UMDNJ-Robert Wood Johnson Medical School, described a project she designed for student interpretation of data from a research project at UMDNJ. The study relates to pulmonary hypertension in rats.

Susan Fountain (Akimel Aal Middle School, Tempe, AZ) worked with APS member **Jeffrey R. Hazel** at Arizona State University in Tempe, AZ, on a project that involved determining whether membrane cholesterol may be positively correlated with body temperatures in a variety of mammals. Although she could not directly adapt the research she performed to her middle school students' curriculum, Fountain developed scientific discovery activities that students and par-

ents could be involved with at home and at school.

The final presentation by Charles Geach (Irvin High School, El Paso, TX) demonstrated and predicted anaerobic power. Using an exercycle, an audience volunteer pedaled for 30 seconds against a resistance set by percent of body weight. Using the Wingate Anaerobic Test, peak power, mean power, and percent fatigue, which can be an indicator of anaerobic power, were measured. Geach worked with

APS member **R. Jorge Zeballos** at William Beaumont Army Medical Center in El Paso, TX, on a project comparing anaerobic power between male and female soldiers.

Following the teachers' presentations, a panel of research scientists discussed how teachers can make contact with local researchers to work in their laboratories or to use them as a resource for their classrooms. The panel included APS members **Barry Peterson** and **Edmund Miller** (University of Texas Health Science Center at Tyler), **Benjamin Brackett** (University of Georgia, Athens), and **Pamela J. Gunter-Smith** (Spelman College, Atlanta).

Feedback from teachers and students attending the program was very positive. In evaluating the program, one teacher said she enjoyed "meeting and spending lunch with an actual

research scientist. I liked that my students could see someone who earns a living as a scientist." Another teacher enjoyed the "opportunity to hear about current research, which renews my interest in science."

The students were equally enthusiastic about the program. One student enjoyed "having an APS person to walk around the exhibits [with] and translate 50-letter words." Another liked "listening to the grad students, and the steps needed to be taken to become a physiologist." Most of the students also enjoyed touring the exhibits and having a hands-on opportunity to see and, in many instances, to touch the latest technology.

The Education Committee is seeking suggestions for presenters for next year's workshop during the Experimental Biology '96 meeting in Washington, DC. APS members interested in making a presentation, being a lunch tour guide, or attending the workshop can contact Phyllis Edelman, Project Coordinator, Frontiers in Physiology, at (301) 571-0692 or email: pedelman@aps.faseb.org.



Megan Arnone (right), on exercycle, and Summer Research Teacher Cynthia Alvarado (center), assist Summer Research Teacher Charles Geach (left) in demonstrating his classroom activity at the teacher session of the Workshop for Life Sciences Teachers and Students.

Teachers Take Active Role in Experimental Biology '94

How do you top an exciting summer of physiology research? By presenting your results at the Experimental Biology meeting. Two of the twelve 1994 summer research teachers were first authors on accepted abstracts and presented their findings at the Atlanta meeting. The teachers were Cynthia Alvarado (research mentor, **Walter F. Ward**, University of Texas Health Science Center at San Antonio) and Velma Snow (research mentor, **Jeffrey L. Ram**, Wayne State University, Detroit, MI).

All of the 1994 summer research teachers attending the conference had an exciting week of scientific sessions, dinners, receptions, and networking with other research teachers and scientists. Three of the summer research teachers made presentations to 50 of their Georgia colleagues at the teacher session of the Workshop for Life Sciences Teachers and Students (see article previous page). The research teachers and their host researchers were honored at a luncheon attended by members of Council, the APS Education Committee, and guests of the teachers.



1994 Summer Research Teachers. (Back row, l-r): Cynthia Alvarado, Patricia Lisoskie, Diana Fisher, Velma Snow, Charles Geach, Elsie Scott, Paul Layshock. (Front row, l-r): Mary Jo Stein, Brenda Gates-James, Shirley Burton, Susan Fountain. Not pictured: Mary Kay LeBlanc.

APS Holds Workshop at Science Teacher Convention

In March 1995, nearly 15,000 science teachers from across the nation gathered in Philadelphia for the National Science Teachers Association (NSTA) annual meeting. Dr. Marsha Lakes Matyas, APS Education Officer, conducted a workshop for 50 teachers, introducing the Education Office project "Female Role Models in Science: Out of the Periphery and Into the Core Curriculum." This NSF-supported project is aimed at increasing students' exposure both to female science role models and hands-on, inquiry approach science activities. Modules focusing on both contemporary and historical female scientists are currently being developed and field tested by teachers across the country. These modules are formatted so that they can easily drop into middle and high school life sciences curricula. Each of the modules includes a brief biography of the female science role model, hands-on biology activities with a multidisciplinary focus that are related to the work of the role model, and suggestions for student assessment. Role models include women from physiology and other areas of life sciences research; two modules focus on APS members.

Through the teacher workshop, the Education Office introduced teachers to the project, generated interest in using the modules in their classrooms, and received feedback about the units. Introduced during the workshop were a unit on Betsy Dresser, an animal physiologist, and a unit on Linda Laubenstein, an AIDS researcher. After receiving an overview of the project, half of the workshop participants did the activities from one unit and half did the other unit's

activities.

Those participants working with the Dresser module debated the pros and cons of conservation efforts vs. embryo transfer of endangered species. Activities in the Laubenstein unit included a disease transmission simulation and an AIDS opinion analysis. Teachers then rated the biographies and activities in the units for readability, effectiveness, ease of use, and the likelihood that they would use the modules in their classrooms. On a scale of 1 to 5, with 5 denoting an "excellent" rating, 62% of evaluators gave the units an overall rating of 5, and the remaining survey participants gave the units an overall rating of 4. Interest in using the modules was high, feedback was generally very good, and teachers offered valuable suggestions and ideas.

APS was also represented in the exhibit hall, along with more than 3,700 exhibitors. The APS Marketing Office provided teachers with information on the society, its publications (especially *News in Physiological Sciences* and *Advances in Physiology Education*), and APS Education Office materials and resources.

For more information about the Female Role Models in Science Project, the modules, or the field testing process, contact Marsha Lakes Matyas in the APS Education Office at (301) 530-7132 or by email at mmatyas@aps.faseb.org.

1995 Summer Research Teachers Explore New Frontiers With APS Physiologists



Through APS' Frontiers in Physiology program, 23 middle and high school teachers will have an unforgettable summer experience learning about physiology research. Building upon the highly successful APS Summer Science Teacher Research in Physiology Program, Frontiers in Physiology combines summer research experiences with curriculum development, Internet exploration, and professional networking. Each teacher will receive a fellowship of up to \$5,750 and will conduct physiology research for a seven- to nine-week period in the laboratory of an APS member; attend a summer institute at the APS offices in Bethesda, MD, where each teacher will explore Internet

resources and learn how to translate their research experience into dynamic classroom activities; and attend the Experimental Biology '96 meeting in Washington, DC, where teachers and their hosts will be honored at a luncheon.

The number of awards for the program increased from 12 awards in 1994 to 23 in 1995. Support for the program is provided by the APS and through grants from NSF and the NIDDK. The program makes special efforts to include teachers from underrepresented minority groups and who teach primarily students from these groups.

The 1995 summer research fellows and their APS research hosts are listed below.

Sondra L. Baker
Pratt Elementary School
Sandy Springs, OK
Robert D. Foreman
University of Oklahoma Health
Science Center
Oklahoma City, OK

Misty Dawn Belmontez
East Central High School
San Antonio, TX
Meredith Hay
University of Texas Health Science
Center
San Antonio, TX

Lisa Lin Bidelsbach
Clear Creek High School
League City, TX
Norman W. Weisbrodt
The University of Texas Medical
School
Houston, TX

Victor J. Bliden
Contemporary Learning Academy-
Byers
Denver, CO
Robert J. Mason
National Jewish Center for
Immunological and Respiratory
Medicine
Denver, CO

Evelyn Bradshaw
Cleveland Heights High School
Cleveland Heights, OH
Joseph LaManna
Case Western Reserve University
School of Medicine
Cleveland, OH

Shauna Brammer
La Jolla High School
La Jolla, CA
Jeffrey B. Graham
Scripps Institution of Oceanography
La Jolla, CA

Tracey B. Carey
Atlantic Community High School
Delray Beach, FL
Lois Haller and David E. Mohrman
University of Minnesota Duluth
School of Medicine
Duluth, MN

Frances M. Coleman
Ackerman High School
Ackerman, MS
John E. Hall
University of Mississippi Medical
Center
Jackson, MS

Lois Ellen Delaney Cooper
Marion-Franklin High School
Columbus, OH
Cheryl M. Heesch
The Ohio State University
Columbus, OH

Dianne Guirado
El Rancho High School
Pico Rivera, CA
Kwang-Jin Kim
University of Southern California
Medical School
Los Angeles, CA

Melissa S. Kagle
Berkeley High School
Berkeley, CA
Barbara Horwitz
University of California at Davis
Davis, CA

Judith A. Kuhl
Suitland High School
Forestville, MD
Xiao-Jian Yuan
University of Maryland School of
Medicine
Baltimore, MD

Cheryl F. McVay
Capital High School
Charleston, WV
Susan DeMesquita
Marshall University, School of
Medicine
Huntington, WV

Evelyn Dianne Morris
Winona High School
Winona, TX
Barry T. Peterson
The University of Texas Health
Center
Tyler, TX

Edward G. Neubauer
Northwestern High School
Hyattsville, MD
Mordecai P. Blaustein
University of Maryland School of
Medicine
Baltimore, MD

John B. Nishan
Manchester High School
Manchester, CT
Walter F. Boron
Yale University School of Medicine
New Haven, CT

Arthur J. Payne
Murray Jr. High School
St. Paul, MN
Esther M. Gallant
University of Minnesota
St. Paul, MN

Jeanna M. Pisegna
Theodore Roosevelt High School
Kent, OH
Stephen DiCarlo
Northeastern Ohio University
College of Medicine
Rootstown, OH

Rachel Rubin-Green
Culver City High School
Culver City, CA
Kenneth P. Roos
UCLA School of Medicine
Los Angeles, CA

Carol B. Sanders
Louisiana School for Math, Science
and the Arts
Natchitoches, LA
D. Neil Granger
Louisiana State University Medical
Center
Shreveport, LA

Kerry C. Stevenson
Roosevelt High School
Portland, OR
Virginia L. Brooks
Oregon Health Sciences University
Portland, OR

Jay E. Sylvester
St. Mark's School of Texas
Dallas, TX
Kristine E. Kamm
University of Texas Southwestern
Dallas, TX

Mamie Odena Walker
Calvin Coolidge Redesigned High
School
Washington, DC
Eleanor L. Ison-Franklin
Howard University, College of
Medicine
Washington, DC

APS Awards Prizes to Students From the US and Canada at 46th ISEF

APS participated in the 46th International Science and Engineering Fair (ISEF) in Hamilton, Ontario, May 7-13, 1995, by judging and making special awards. The ISEF, the "World Series" of science fairs, is held annually and marks the culmination of a selection process involving thousands of schools and regional fairs in both the US and over 30 other countries. The 1995 ISEF was the first held outside the US. In Hamilton, APS joined with 65 other professional organizations and federal agencies making awards in a variety of disciplines.

The APS selection committee consisted of APS members **Ashok K. Grover, George J.F. Heigenhauser, J.D. Huizinga, and L. David Pengelly** from McMaster University and

Lawrence L. Spriet from the University of Guelph. Marsha Lakes Matyas, APS Education Officer, coordinated the team's efforts. The selection committee had the difficult task of first identifying which of the more than 1,036 ISEF finalists had projects related to physiology. From a potential pool of more than 130 projects, the committee then visited and interviewed the candidates in order to select the awardees.

During the awards ceremony, the APS presented four awards for excellence in the physiological sciences: a first award of \$250 and three honorable mention awards. All winners received certificates, subscriptions to *News in Physiological Sciences*, brochures and posters on careers in physiology, lists of institutions granting degrees in physiology, and APS t-shirts.

The first prize recipient was Lucy Clare Fisher, age 18, from East Noble High School in Kendalville, IN, for "Synergistic Effects of Hydroxyurea and Antioxidants on Fetal Hemoglobin Production."

The recipients of the honorable mention awards were Kyle Allan Hicok, age 15, from Lake Crystal Wellcome Memorial High School in Lake Crystal, MN, for "Cytokine Production in the Presence of Estrogen;" Jeremy David Kassebaum, age 17, from Sunnyside Senior High School in Sunnyside, WA, for "Organophosphates: Effects on Enzyme Systems, Biodegradation, and Detoxification in Water;" and Steven Chan, age 16 from Woburn Collegiate Institute in, Scarborough, Ontario, for "Mechanism of Cold Shock-Induced Physiological Changes in *Escherichia coli*." Kassebaum also won a third place award from the US Fish and Wildlife Service's National Biological Survey and honorable mention awards from the American Statistical



APS Education Officer M. Matyas presents awards to (l to r) L. Fisher, S. Chan, J. Kassebaum, and K. Hicok

Association and the Society of Environmental Toxicology and Chemistry.

As in previous years, the 1995 APS judging team regretted that it was only able to make four awards, because there were so many outstanding projects that deserved recognition. Although a large proportion of student projects at the ISEF dealt with life sciences, only 14 of the 66 groups making special awards were life science organizations. Therefore, the APS continues to play a critical role in recognizing the efforts of these students who commit much time and effort to their research projects in life sciences fields.

APStracts an on-line abstract publication

APStracts is a WAIS-searchable, on-line publication of abstracts of current research manuscripts accepted for publication in the journals of The American Physiological Society.

Articles may appear up to 4 months prior to publication in the journal. Dates of manuscript submission, acceptance, and corresponding author information are included with each abstract.

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Phone: 301-530-7164 Fax: 301-571-1814

APS Women in Physiology Committee Holds Mentoring Program Workshop and Reception at EB '95

One of the major projects sponsored by the APS Women in Physiology Committee, chaired by **Cheryl Heesch** of Ohio State University, is the Mentoring Program for Women in Physiology. The goals of the program are to increase networking among women physiologists and to encourage professional relationships between men and women scientists at all levels. Women who are graduate students, postdoctoral fellows, or faculty members in physiology are eligible to be mentees, while both men and women who are APS members are encouraged to volunteer as mentors. Currently, there are 68 mentees and 73 mentors involved in the program, with 42 matches already established between mentors and mentees.

In addition to recruiting and coordinating mentors and mentees, the program sponsors the annual Mentoring Program Workshop and Reception at the Experimental Biology meeting. This function focuses on issues pertaining to women in physiology. The workshop and reception at EB '95 were great successes. Program participants were able to meet each other face to face, Committee members were available to answer questions and discuss issues with workshop attendees, and interested individuals had the opportunity to learn about the value of the program and how to participate.

The EB '95 workshop speaker was Linda Skidmore,



Linda Skidmore of the National Research Council presents current statistics on women scientists in industry.

Study Director of the Committee on Women in Science and Engineering at the NAS's National Research Council. Skidmore discussed the status of women scientists in industry. Her informative remarks brought up important issues for the workshop attendees to consider. Marsha Lakes Matyas, APS Education Officer, also presented a brief summary of program statistics as well as more general information about the program.

More information on the program and application forms are available by contacting Marsha Lakes Matyas in the APS Education Office

at (301) 530-7132, or by e-mail at mmatyas@aps.faseb.org. Questions can also be directed to members of the Women in Physiology Committee.

THIRD ANNUAL CONFERENCE
COMMITTEE ON WOMEN IN SCIENCE AND ENGINEERING
NATIONAL RESEARCH COUNCIL

Diversity in Science

Perspectives on the Retention of Minority Women

October 22-23, 1995 Washington, DC

The Conference will inform policymakers of the significance of diversity in science, engineering, and health careers; provide a better understanding of the factors underlying the underparticipation of minority women in these fields; and recommend actions necessary to heighten their retention in these areas.

For registration materials, please send postcard to
Gaelyn Davidson, Administrative Assistant
National Research Council, Committee on Women in Science and Engineering
2101 Constitution Avenue NW, Room TJ 2004, Washington, DC 20418
Or fax your request to (202) 334-2753
Registration deadline is August 15, 1995

APS Education Office Coordinates My Health, My World Project for Grades K-4

The APS Education Office is collaborating with Baylor College of Medicine and the Texas Medical Association on My Health, My World, a project sponsored by the National Institute of Environmental Health Sciences. The project will develop, field test, and disseminate science curricular materials for children in grades K-4 that focus on the effects of the environment on human health and physiology. Three units will be developed, each including a picture storybook, a teacher guide to science activities, and a children's mini-magazine. The materials are being field tested in classrooms on a one-unit-per-year basis for three years in Houston and Austin, TX, and Washington, DC.



My Health, My World teachers measure their lung capacity.

The APS Education Office is coordinating the Washington, DC-area field test and will also conduct a content review of each draft unit for accuracy and completeness. Twenty-five preschool and elementary school teachers in Maryland and Washington, DC, were recruited by APS staff for the field test. For each of the three years of the project, the APS will conduct workshops to train the teachers in the use of the materials, and will guide follow-up feedback sessions to evaluate the units; APS activities are supported by a subcontract from Baylor College of Medicine.



My Health, My World students build lung models.

The first unit focused on air quality and the human respiratory system, and the hands-on workshop was held on March 18, 1995, at the APS offices. Education staff began by introducing the storybook and mini-magazine to teachers. Then, with the staff demonstrating and providing guidance, the teachers did each of the hands-on science activities in the teacher guide. Activities included discovering the physical properties of air, making lung models, examining air contaminants, and measuring vital lung capacity. Teachers were then provided with both

printed materials and equipment, as well as teacher and student evaluation forms.

To evaluate the unit and project materials, teachers later came back together for a feedback and brainstorming session held at the APS offices on June 3, 1995. In small breakout groups, teachers discussed with education staff their evaluation of the materials and whether the unit was well received by their students.

In early 1996, the Education Office will continue the project, bringing back the same 25 teachers to repeat the field testing and evaluation process with the second My Health, My World unit. For more information about this project, contact Marsha Lakes Matyas, APS Education Officer, at (301) 530-7132 or by email at mmatyas@aps.faseb.org.

HOST A SUMMER RESEARCH TEACHER!

Last year, the APS received calls from more than 40 teachers who wanted to apply for our Science Teacher Summer Research in Physiology Program but did not know how to get in touch with an APS member who might be interested in working with them. Help us to help them in making the connection!

The Summer Research Program provides \$5,000 fellowships for teachers to do research in the laboratories of APS members. If you would be interested in having a teacher work in your laboratory for the summer or would be willing to help refer teachers to physiologists in your area, please complete and return the form below. If a teacher in your geographic area expresses interest in the program, we will refer him/her to you to discuss possible research project.

**YES, I'M INTERESTED IN FINDING OUT MORE ABOUT HAVING
A SUMMER RESEARCH TEACHER WORK IN MY LABORATORY!**

Name

Address

Telephone

Fax

E-mail

RETURN COMPLETED FORM TO:

MARSHA LAKES MATYAS, APS EDUCATION OFFICER
THE AMERICAN PHYSIOLOGICAL SOCIETY
9650 ROCKVILLE PIKE, BETHESDA, MD 20814-3991
PHONE: 301-530-7132, FAX: 301-571-8305
EMAIL: [MMATYAS@APS.FASEB.ORG](mailto:mmatyas@aps.faseb.org)

Membership Status

APS Membership as of March 14, 1995

Regular	5616
Emeritus	903
Honorary	31
Corresponding	535
Affiliate	5
Student	670
Total	7760

Honorary Members

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Sunnybrook Health Science Centre

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Shriners Burns Institute

Cohen, David Marshall
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Cohn, Jonathan A.
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Cope, Timothy C.
Emory University

Coutts, Kenneth D.
University of British Columbia

Crandall, Craig G.*
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Crawford, Douglas L.
University of Chicago

Culp, David J.
University of Rochester Medical
Center

Curras, Margarita C.*
University of California at
Riverside

Damon, Deborah, H.
University of Texas Health Science
Center

Dechman, Gail Sterns*
University of British Columbia

Defily, David V.
Texas A&M University

Desrochers, Paul E.
Thomas Jefferson University

Dickey, Burton F.
Houston VA Medical Center

Digiovanni, Susan Rosalie
National Institute of Health

Donahue, Henry J.*
Pennsylvania State College of
Medicine

Doyle, Michael P.*
University of Virginia Health
Sciences Center

Duan, Changping
Allegheny-Singer Research Institute

Dudeja, Pradeep K.
VA West Side Medical Center

Dunlap, Jay Clark
Dartmouth Medical School

Eakle, Kurt Andrew
University of Southern California
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Evans, Joyce McClendon
University of Kentucky

Ferguson, J. E.
University of Virginia

Ferrando, Arny A.
Shriners Burn Institute

Festa, Eliane*
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Flynn, T. Geoffrey
Queen's University

Forman, Lloyd J.
University of Medicine and
Dentistry of New Jersey

Fredricks, Kim T.
Hammond Bay Biological Station

Fried, Susan Kahn
Rutgers University, Cook College

Fullerton, David Aaron
University of Colorado Health
Science Center

Gelband, Craig H.
University of Florida

Golden, A. Lynelle*
Kennesaw State College

Goldsmith, Jason R.
University of Texas Medical School

Gonzales, Gustavo Francisco
Instituto De Investigaciones De La
Altura

Green, Jacob
Cedars-Sinai Medical Center

Greene, Eddie Leon
Medical University of South
Carolina

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Harari, Yael
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Louisiana State University Medical
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Harrison-Bernard, Lisa M.*
Tulane University School of
Medicine

Hegarty, Allison A.
University of Iowa College of
Medicine

Hillier, Simon C.
Riley Children's Hospital

Hocking, Denise*
Albany Medical College

Ignarro, Louis Joseph
University of California-Los
Angeles School of Medicine

Jacobs, Leila Susan*
Case Western Reserve University

Jasper, Michael S.
Massachusetts General Hospital

Kapicka, Chris L.
Northwest Nazarene College

Karnaky, Karl John
Medical University of South
Carolina

Kelly, Martin J.
Oregon Health Science University

Koch, Timothy R.
Zablocki VA Medical Center

Kraft, Timothy W.
University of Alabama at
Birmingham School of Medicine

Kuluz, John W.
University of Miami

Lauder, George V.
University of California, Irvine

Lawler, John M.
Texas A&M University

Lax, Daniela
University of Arizona Health
Science Center

Lee, Wai-Nang Paul
Harbor University of California-Los
Angeles

Lefer, David Joseph*
Tulane University School of
Medicine

Li, Zhong Yong
McMaster University

Loros, Jennifer J.
Dartmouth Medical School

Lytle, Christian
University of California, Riverside

Magazine, Harold Ira*
Queens College of CUNY

Marciniuk, Darcy D.
Royal University Hospital

Martin, Martin Gabriel
University of California-Los Angeles

Massey, Kenneth D.*
University of Michigan

Mateika, Jason H.
University of Arizona

Matthew, Candace B.
US Army Research Institute of Environmental Medicine

Matz, Jeannine Marie*
University of North Dakota

Maylie, James
Oregon Health Science University

McCulloch, Paul F.
St. Louis University School of Medicine

McFadden, David W.
University of California-Los Angeles

McIllroy, William Evans*
Sunnybrook Health Science Centre

McKay, Mary K.*
University of Mississippi Medical Center

McNeal, Ann, P.
Hampshire College

Merkel, Linda
Rhone-Poulenc Rorer

Merker, Marilyn P.
Medical College of Wisconsin

Meserve, Lee A.
Bowling Green State University

Montain, Scott J.*
US Army Research Institute of Environmental Medicine

Moore, Geoffrey E.
University of Pittsburgh Medical Center

Morin, Catherine L.
University of Colorado Health Science Center

Morrow, Richard J.
Drake University College of Pharmaceutical and Health Sciences

Mortensen, Luke H.
University of Texas Health Science Center

Mrotek, James J.
Meharry Medical College

Muchlinski, Alan E.
California State University

Muhonen, Michael G.
University of Iowa Hospitals and Clinics

Mulholland, Michael W.
University of Michigan

Olopade, Christopher Olusola
University of Illinois at Chicago

Packer, Randall Kent
George Washington University

Ping, Pei Pei
University of California, San Diego

Potteiger, Jeffrey A.
University of Kansas

Prange, Henry D.
Indiana University

Puro, Donald G.
University of Michigan

Quirk, Gregory John
New York University

Ramsey, Carla Renee
Mayo Foundation

Ravindra, Rudravajhala
University of Medicine and Dentistry of New Jersey

Reinhart, Glenn A.
University of Mississippi Medical Center

Rodnick, Kenneth Joseph
Idaho State University

Rosenberg, Gary A.
University of New Mexico

Roubenoff, Ronenn
Tufts University

Rutledge, John C.
University of California, Davis

Sahai, Atul
University of Southern California

Samuelson, Linda C.*
University of Michigan

Sarr, Michael Gregory
Mayo Clinic

Sarvazy, Narine
Texas Technological University Health Science Center

Saupe, Kurt W.
Children's Hospital, Boston

Schaefer, Saul
University of California, Davis

Schneider, Stephen P.
University of North Carolina

Schwaber, James S.
University of Pennsylvania School of Medicine

Schwiebert, Erik M.
Johns Hopkins University School of Medicine

Sculptoreanu, Adrian
Lady Davis Institute

Selman, Moises
Instituto Nacional De Enfermedades Respiratorias

Shaker, Reza
MCW Dysphagia Institute

Sharma, Kumar
Thomas Jefferson University

Sigmund, Curt Daniel
University of Iowa

Silverman, Howard S.
Johns Hopkins Hospital

Sissom-Demore, Janice
University of Texas-Houston Medical School

Skelton, Michele S.*
Stetson University

Smith, Barbara L.*
University of California, Davis

Smith, Peter G.
University of Kansas Medical Center

Spain, David A.
University of Louisville

Sprague, Randy Stephen
Saint Louis University

Stevens, E. Don
University of Guelph

Stone, Dennis K.
University of Texas Southwestern Medical Center at Dallas

Strack, Alison M.
University of California-San Francisco

Strum, David P.
University of Pittsburgh

Sugihara, Cleide Y.
University of Miami School of Medicine

Sun, Dandan
University of California School of Medicine

Tigyi, Gabor J.
University of Tennessee, Memphis

Tobin, Joseph Raphael
Bowman Gray School of Medicine

Toth, Linda A.
St. Jude's Children's Research Hospital

Tracey, W. Ross
Pfizer, Inc.

Tsai, Amy G.
University of California, San Diego

Tsin, Andrew
University of Texas at San Antonio

Tsuda, Akira
Harvard School of Public Health

Tumlin, James Alan
Emory University

Wade, George N.
University of Massachusetts

Wang, Jie*
Columbia-Presbyterian Medical Center

Wang, Tao
William Beaumont Hospital

Warburton, Stephen Jay*
New Mexico State University

Warwick, Warren J.
University of Minneapolis Health Center

Watford, Malcolm
Rutgers University

Westfall, David Patrick
University of Nevada

Whitcomb, David Clement
University of Pittsburgh

Wilson, Ted E. F.
Viterbo College

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Baker Medical Research Institute

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Madeleine F. Crawford, Davis, CA

Helen F. Cserr, Providence, RI

Thomas K. Cureton, Urbana, IL

Robert E. Davies, Philadelphia, PA

Robert S. Dow, Portland, OR

Leonard H. Elwell, Portland, OR

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Florent E. Franke, Webster Groves, MO

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Jack Gross, Jerusalem, Israel

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Public Affairs

Tough Funding Battles Ahead

A bare-knuckle political fight is shaping up between the Republican-controlled Congress and the White House over federal funding this year. As summer was heating up in Washington, NIH-watchers began worrying not only how much funding the agency will ultimately receive but also whether the NIH will find itself temporarily out of business on October 1 when the new fiscal year begins.

The concern is that NIH will fall prey to budget politics. If the Republican-controlled Congress is feuding with the President over federal spending and some of the appropriations bills have not yet been signed into law, Congress might pass a limited temporary funding measure that would keep open only select government agencies and programs, such as the Defense Department, Social Security, and Medicare. In that case, much of the government, including NIH, would literally have to shut down.

The House was expected to pass the Labor-HHS-Education appropriation bill containing NIH funding in July, but the Senate subcommittee is not expected to take action until mid-September. Under these circumstances, it will be difficult at best for the House and Senate to reach a compromise before the new fiscal year begins. Clinton might be tempted to veto the bill if it eliminates the employment training and education programs that he wanted to emphasize in the alternative budget proposal released mid-June. However, Republicans in the House were already saying that they are willing to let many government agencies shut down for a period of weeks or months if necessary to get President Clinton to sign funding measures that contain provisions he does not like. If that were to happen, NIH would be forced to halt funding grants and contracts until either the final appropriation could be agreed upon.

Varmus Predicts "Steady State" for NIH

In coming years the NIH is unlikely to see the kinds of funding increases it had during the 1980s, NIH Director Harold Varmus told the May 31 meeting of the Advisory Committee to the Director. Biomedical researchers need to "adapt to a steady state" Varmus warned, pointing out that in the past few years NIH budgets have basically kept pace with inflation.

Varmus said it was time to consider how best to manage the research portfolio in a no-growth environment. He noted that there has been some reluctance to engage in this kind of planning because some in the research community were hoping funding would enter an "expansionist mode" again.

Oppose the Animal Experimentation Right to Know Act

Representative Robert Torricelli (D-NJ) has again introduced the "Animal Experimentation Right to Know Act" (H.R. 1547). APS members are encouraged to write to their representatives in opposition to this unsound and unnecessary measure.

H.R. 1547 would greatly expand recordkeeping and reporting requirements under the Animal Welfare Act without improving animal welfare. According to the bill itself, the two objectives of H.R. 1547 are "to strengthen the annual reporting requirements of research facilities conducting animal experimentation or testing" and "to improve the accountability of animal experimentation programs of the Department of Defense."

The bill would require research facilities to keep records on all laboratory animals, including rats and mice. Facilities would be required to report to the USDA the source of all animals used in research, the kind of procedure (e.g., research, testing, or education) for which they were used, and the "severity of the pain or distress caused by such procedures." USDA would then publish all the information collected in its annual animal use reports.

The introductory section of H.R. 1547 claims that animal research in this country is inadequately supervised and that some of the research in Defense Department (DOD) laboratories is improperly conducted. H.R. 1547 would require the DOD to report to Congress in detail on its animal research programs, its initiatives to promote alternatives to animal research, procedures adopted to prevent unintended duplication of research, and a cost comparison between biological research it conducts with and without animals.

DOD would also be required to establish programs to phase out and replace current uses of animals, to appoint an ombudsman for animal issues at each facility, and to file USDA animal use reports. H.R. 1547 further requires the President to appoint an 11-member panel of biomedical and animal care experts to examine the ethics and procedures DOD labs use to regulate the number and types of animal experiments conducted.

It is unlikely that this legislation will receive serious attention in this Congress. Nevertheless, it is well-known

APS NetAlert Up and Running

An urgent appeal concerning the Congressional budget resolutions went out in mid-May to some 200 APS members who signed up for our rapid response network "NetAlert." NetAlert members were asked to write or call their Members of Congress about budget proposals that would have reduced NIH funding by 5 to 10 percent as part of overall plans to balance the federal budget by the year 2002.

Although we were unsuccessful in changing the House legislation, the Senate adopted a floor amendment sponsored by Sen. Mark Hatfield (R-Ore.), that restored virtually all of the planned 10 percent cut planned for the NIH. In order to find more money for NIH, Hatfield proposed reducing many other federal programs by about half a percent. The final vote on the Hatfield amendment was an overwhelming 85-14.

To join APS NetAlert and receive bulletins on funding, use of animals, and other research-related issues, send email to netalert@aps.faseb.org, or contact APS Public Affairs Officer Alice Hellerstein at 301/530-7105.

that statements uttered without being challenged are sometimes taken as true, and this bill is likely to become the focus of letter writing to Congress for animal activists. The Humane Society of the US (HSUS) in particular has published several articles about this legislation in its newsletters.

Scientists must write to their Representatives and tell them just what is wrong with this bill: H.R. 1547 is ill-advised scientifically and is bad public policy.

It is not necessary in terms of public policy or desirable in terms of animal care to keep track of every rat and mouse used in research. The legislation calls for institutions to report an "accurate count" of rodents, but this would be highly deleterious to the animals themselves. Rodents go through rapid reproductive cycles. Obtaining accurate counts could involve intrusive handling of pups, which has been known to cause rodent mothers to turn on their own young.

The legislation also requires reports on "the severity of pain or distress" involved in the procedure. USDA annual reports now require information on painfulness of procedures and whether pain relieving drugs were provided. Activists have complained that the old categories were too subjective, but pain is subjective. If the legislation is intended to set the stage for instituting pain scales, it is treading upon highly contentious ground indeed, since the degree of pain or distress for a single procedure can vary tremendously depending upon the animal itself, the skill of the individual performing it, and whether the animal has been conditioned to cooperate. Pain assessments should be left to the professional judgment of the attending veterinarian.

Scientists should tell their elected Representatives that animal research is conducted under a variety of laws, regulations, and standards, and there are already mechanisms such as IACUC supervision in place to assure that research protocols are appropriately designed and supervised as they are carried out.

H.R. 1547 would greatly expand record-keeping and reporting requirements, and this would be costly and burdensome to both the USDA and the research facilities themselves. The USDA's Animal and Plant Health Inspection Service (APHIS) does not have the resources it needs to carry out its current regulatory duties. This legislation might force USDA to divert its limited resources from inspections into collecting statistics and issuing reports.

Ask your Representative to oppose H.R. 1547. The 17 Representatives below have already joined Rep. Torricelli as cosponsors. If your Representative is on the list below, encourage him or her to withdraw cosponsorship of H.R. 1547.

Rep. Gary Ackerman (D-NY)
Rep. George Brown (D-CA)
Rep. Ronald Dellums (D-CA)
Rep. Peter Deutsch (D-FL)
Rep. Lane Evans (D-IL)
Rep. Sam Farr (D-CA)
Rep. Rodney Frelinghuysen (R-NJ)
Rep. Sam Gejdenson (D-CT)

Rep. Andrew Jacobs (D-IN)
Rep. Gerald Kleczka (D-WI)
Rep. John Lewis (D-GA)
Rep. William Lipinski (D-IL)
Rep. Nita Lowey (D-NY)
Rep. Thomas Manton (D-NY)
Rep. Christopher Shays (R-CT)
Rep. Charles Schumer (D-NY)
Rep. Bruce Vento (D-MN)
Rep. Charles Wilson (D-TX)

The address for all US Representatives is:
The Hon. [Name]
US House of Representatives
Washington, D.C. 20515

If you have questions, contact Alice Hellerstein, APS Public Affairs Officer at (301) 530-7105 or ahellers@aps.faseb.org.

Cassman Report Recommends Peer Review Fine Tuning

The Working Group on the Division of Research Grants (DRG) reported back to NIH Director Harold Varmus in May. In January Dr. Varmus had asked a task force led by NIGMS Acting Director Marvin Cassman to look at the structure and functions of DRG and to consider how it operates within the NIH community.

The working group concluded that a centralized review body such as DRG continues to be "effective in serving the review needs of multiple institutes and centers, which have overlapping interests in science while they address different mission oriented goals." In the course of its work, the working group did identify a number of significant concerns including:

Barriers between DRG and the institutes, resulting in DRG becoming isolated from institute and center program staff.

Lack of a stimulating and rewarding work environment in DRG, which is important to enhance DRG's responsiveness to new scientific developments.

Questions about whether DRG should remain an autonomous unit within NIH, since it primarily operates as a service to the institutes and centers.

Need for greater consistency and coordination of initial peer review both within DRG and between DRG and the institutes and centers to ensure that the best science is supported.

Questions about how review responsibilities will be distributed between DRG and the institutes and centers.

How to make DRG peer review more responsive to changes in science.

One of the working group's chief recommendations was that a new central oversight body be established to coordinate, evaluate, and make policy recommendations for all NIH peer review. It recommended that the Peer Review Oversight Group (PROG) be headed by NIH's Deputy

Director for Extramural Research and that its membership should include the director of DRG, representatives of the institutes and centers, and scientists from the extramural research community. The PROG is intended to promote interaction between DRG and the ICs and to provide continuous oversight of the peer review system.

The working group proposed that decisions about where grants are to be reviewed be based upon the principle that those involving "broad areas of basic research" should be reviewed in DRG, while "clearly mission-related" research should be reviewed in the ICs.

The working group also suggested that study sections' responsiveness to changes in science can be improved by if their membership is "broadened" and made "more diversified, with less attention paid to methodology or a specific organ or disease." The working group said that "the balance has swung too far in the direction of providing detailed expertise," according to the report.

"Review groups with a narrow focus can inhibit responses to changes in science because they fail to recognize relevance or superiority of similar studies done in another tissue or using another disease model, or of a similar question approached with a different methodology," the report stated.

Study Raises Questions on SBIR

A Congressionally ordered study earlier this year cast doubts upon the quality of NIH research grants being awarded under the Small Business Innovation Research (SBIR) program.

The interim study, released in March 1995 by the General Accounting Office (GAO), found that the NIH's SBIR award rate nearly doubled in 1993 when the proportion of funds set aside for the program went from 1.25 to 1.5% of NIH's extramural budget. The program has since increased to 2% of extramural funding and is scheduled to increase to 2.5% in FY 1997.

Established in 1982, the SBIR program requires all federal agencies with extramural research and development budgets of at least \$100 million to set aside a percentage of their extramural funds for small, minority-owned, or disadvantaged business applicants. Phase I awards are 6-month feasibility studies, and phase II awards are for a 2-year period to develop ideas further. Until 1992, phase I projects were limited to \$50,000, whereas phase II projects could be awarded as much as \$500,000. In 1993, NIH increased the phase I limit to \$75,000, and in FY 1995, phase I proposals will be able to receive as much as \$100,000 and phase II awards \$750,000.

As early as June 1989, the NIH's SBIR manager warned that the quality of the applications might not be able to keep pace with the pending funding increase. The GAO evaluated SBIR awards between 1991 and 1993, which covered the period just before and after the most recent program expansion from 1.25 to 1.5%.

The most significant concerns were raised at the National Cancer Institute (NCI), the largest NIH component, where in fiscal year 1993, nearly 50% of SBIR research pro-

posals were funded. The lowest priority scores for a phase I award was 399, and the lowest score for a phase II award was 289. NCI officials were sufficiently concerned that they ordered a quality assessment, and the GAO reported that they were satisfied with the results. NCI officials then provided data that showed that in FY 1994 NCI received 568 proposals and funded only about 20%.

NIH Director Harold Varmus told the GAO investigators that he was satisfied that the quality of SBIR proposals was being maintained because the number of proposals had increased. The SBIR program director said he thought that, as award sizes increased, NIH would attract proposals from somewhat larger small businesses.

APS Reprints Educational Brochure

APS has just reprinted the brochure *Animals and Science: A Teacher's Guide*, last published in 1991 by what was then the Alcohol, Drug Abuse, and Mental Health Administration. The 13-page brochure discusses how animals have contributed to science history and medical progress and how to help students understand basic scientific research principles. It also includes a time line of medical advances and the animal studies that made them possible. Complimentary single copies of the brochure are available through the APS Education Office. Modest numbers of brochures can also be provided on a complimentary basis to APS members conducting classroom outreach visits or teacher workshops.

Coronado Sentence Delayed

Sentencing for animal rights activist Rodney Coronado was delayed past June 8 while federal parole officers continued investigating the impact of his crimes. In March Coronado pleaded guilty to aiding and abetting the 1992 Animal Liberation Front (ALF) break-in and arson at Michigan State University (MSU) and to the theft and destruction of an historical artifact taken from a national park.

In the plea bargain agreement, Coronado also took responsibility for other damage that occurred during the ALF's campaign known as "Operation Biteback." This campaign included raids at Washington State University and Utah State University. Coronado has said that he was not involved in the actual break-ins and only acted as a spokesman and media contact for the ALF. He claims that his only involvement in the MSU incident was to receive stolen materials and forward them to PETA.

The sentencing delay in Coronado's case came at the request of federal parole officers, according to reporter Ken Olsen of the Moscow-Pullman Daily News, who has been following this case closely. A member of the Rod Coronado Support Committee told Olsen that the parole officers needed more time to conduct a court-ordered presentencing investigation. That investigation will include interviews with victims of the two crimes to which Coronado entered guilty pleas, as well as with people who now work with Coronado.

at the Yaqui Indian Reservation near Tucson, AZ. While awaiting sentencing, Coronado has been freed on \$650,000 bond and is working with troubled youth on the reservation.

Nevada Court Rules Against Berosini

The Nevada Supreme Court ruled in May that Las Vegas animal trainer Bobby Berosini is not entitled to a \$3.1 million libel judgment against People for the Ethical Treatment of Animals (PETA) and Performing Animal Welfare Society (PAWS). The Associated Press reported in this latest action, the Nevada Supreme Court ruled that what the videotape showed was "clear and unequivocal." This ruling reversed a decision the Nevada high court had made the preceding month that Berosini was entitled to a new hearing.

The case, which has involved many reversals along the way, involves a videotape filmed secretly backstage by a dancer at a Las Vegas hotel. The videotape showed Berosini disciplining his trained orangutans prior to a performance. PETA and PAWS sent copies of the tape to the media, and he sued them for libel and defamation of character.

In 1992, Berosini was awarded \$3.1 million by a Clark County District Court jury after it found that PETA and PAWS had defamed him. That ruling was reversed in January 1994, but Berosini appealed on the grounds that Clark County Judge Jack Lehman should not have participated because he failed to disclose that he served on the advisory board of the Animal Foundation of Nevada.

In April 1995, the Nevada Supreme Court ordered a new hearing for Berosini on the grounds that Lehman's involvement was a conflict. However, the justices then ruled in May that Berosini should not receive the libel award. The justices said they had reviewed the tape and found that it showed Berosini "grabbing, slapping, punching and shaking the animals while several handlers hold the animals in position." Berosini had told the court he used those methods to discipline the animals and to quiet them before performances. However, the high court determined that since PETA had not altered the tape to show something that was untrue, PETA should not have been found guilty of defamation.

NIH Issues Grad Student Compensation Rules

The NIH has announced a new policy for graduate student compensation in order to address increasing concerns that some graduate students employed on NIH grants are receiving higher levels of compensation than postdoctoral fellows.

A May 19, 1995, notice in the NIH "Guide for Grants and Contracts" announced the new policy that compensation for graduate students must not exceed that allowed for first-year postdoctoral fellows performing comparable work at that institution. The past discrepancies were apparently due to the fact that, at many institutions, graduate students working on sponsored research projects receive tuition remission in

addition to salary and fringe benefits. The new NIH guidelines continue to allow tuition remission as part of or in lieu of salary, as long as the student's total compensation is reasonable and reflects the actual amount of work time involved.

FBR Publishes New Posters

The Foundation for Biomedical Research (FBR) recently published two new posters. One features two lab rats crawling above the caption "They've saved more people than 911." The second shows a curious toddler peering underneath a kitchen cupboard filled with cleaning products with the caption "Why are household products tested on laboratory animals? Ask somebody with kids." Both posters invite people to contact FBR for more information. Copies of the posters are available for \$5.00 each or groups of 10 for \$15. For more information contact FBR at (202) 457-0654.

Heflin to Retire

Sen. Howell Heflin (D-AL) has announced that he will not seek reelection to the Senate in 1996. Heflin, 73, is in his third six-year term. Heflin has long been a friend to biomedical research interests and the moving force behind passage of the "Animal Enterprise Protection Act of 1992," which made break-ins against animal facilities a federal crime.

Where the Dollars are Going

The publication *Animal People* provided the following information about the annual budgets of some major animal activist organizations:

American SPCA	22,242,264
Humane Society of the US	20,381,958
People for the Ethical Treatment of Animals	8,624,766
American Humane Association	4,985,731
Los Angeles SPCA	4,450,270
Friends of Animals	4,059,643
National Humane Education Society	3,422,494
Fund for Animals	2,662,645
Animal Protection Institute	1,484,984
Doris Day Animal League	1,421,856
New England Anti-Vivisection Society	1,397,578
Physicians Committee for Responsible Medicine	1,070,601
In Defense of Animals	996,906
Animal Welfare Institute	757,227
Farm Sanctuary	656,594
United Animal Nations	392,508
International Primate Protection League	348,842

There was no information available concerning two other well-known organizations, the Animal Legal Defense Fund and the National Anti-Vivisection Society.

Committee Reports

Animal Care and Experimentation

The Animal Care and Experimentation Committee has been monitoring areas where efforts may be made to add new laws or further regulations that would be highly detrimental to animal research efforts. These are not new issues, but there is concern that activists will try to get Congress to move on some of them this year in the context of the legislation needed to renew other USDA programs, which must be passed this year. Areas of concern include the following:

Elimination of Class B licensure, which would effectively mean that reasonably priced random source animals would become unavailable in some parts of the country. Efforts to do this might come about through legislation or regulation.

Increased regulation of agricultural animals used in research and education.

Inclusion of rats, mice, and birds in the daily accounting of animal usage in all research facilities. (See related item on page 146)

The ACE Committee considers all of these measures to be potentially detrimental to our research efforts and will continue to monitor them and to take action as needed. The ACE Committee feels strongly that APS must work to maintain access to random-source animals in the face of false information being provided to Congress and the general public about a "pet theft" conspiracy funneling large numbers of animals to research institutions. To help clarify the situation, the ACE Committee has recommended that Council adopt a policy resolution in support of the current Class B licensure system with proper enforcement of existing laws by the USDA. The resolution, which was on the agenda for discussion by Council at its June meeting, also encourages APS members to assist the USDA in enforcing the Animal Welfare Act regulations and urges the public to do its part by neutering pets, identifying them with tattoos or chip implants, and keeping them protected in homes or yards.

The ACE Committee sponsored a symposium jointly with the ASPET Committee on the Care and Use of Research Animals on "Bringing Science to the People" at the Experimental Biology '95 meeting in Atlanta. Speakers discussed ways to communicate the excitement of scientific discovery to the lay public. The committee is planning to sponsor another symposium at the Experimental Biology '96 meeting in Washington, DC, to discuss new or controversial provisions of the revised NIH "Guide for the Care and Use of Laboratory Animals," which is expected to be published in late summer or early fall. The symposium will also provide an update on developments in Congress and the executive branch concerning animal welfare laws and regulations.

In June 1994, FASEB held a consensus conference that developed a FASEB "Statement of Principles for the Use of Animals in Research and Education." As a result of the con-

ference, FASEB developed a classroom science folder and poster for distribution to middle schools. (Complimentary single copies of the statement of principles and the science folder are available through the APS public affairs office.)

APS has reprinted 5,000 copies of the ADAMHA brochure *Animals and Science: A Teacher's Guide* as requested last year by the Animal Care and Experimentation, Education, and Liaison With Industry Committees. Copies of the reprinted brochure are available from the APS Education Office for APS scientists doing outreach work in classrooms.

Jeffrey L. Osborn, Chair

Career Opportunities

Careers Opportunities in Physiology Symposium

The Career Opportunities in Physiology Symposium, presented at the spring meeting, was extremely successful. It was well attended and provided the opportunity for interested individuals to hear career professionals from a number of disciplines discuss job opportunities in their respective positions.

The reception following the symposium provided the audience with the opportunity to talk to the speakers in an informal setting and was a valuable component to the symposium. The Committee feels that this symposium is an efficient and effective avenue for providing information regarding careers in physiology.

Careers in Physiology Poster

The initial printing and mailing of 1,600 "Physiology—A Career for Life" posters was very successful. The total cost for development, printing and mailing was approximately \$4,000. To date, the education office has received over 1,200 reply cards requesting additional information regarding careers in physiology. The Committee feels that this project has been successful and supports a second printing and mailing of this poster during summer 1995.

Science Education Network

The Education Office has obtained additional information regarding creating a liaison with the American Society of Microbiology for an APS speakers bureau. APS responsibility would be to recruit members willing to be speakers and to publicize the speakers bureau through our normal publicity routes. The ASM would maintain the database and is not requesting financial support from APS.

K-12 Outreach Packet

The Education Office is developing a K-12 Outreach Packet. This material is to be distributed to K-12 teachers and APS members performing outreach activities for grades K-12. This packet is currently under development and will undergo revision prior to submission for final approval by Council.

Steven L. Bealer, Chair

Committee on Committees



The Committee on Committees consists of two Councillors, one of whom is chair, and 12 other members, each appointed by their respective sections to serve three-year staggered terms (see Table 1).

The Committee on Committees makes recommendations for committee appointments to Council from nominee lists provided by the membership.

Table 1. Committee on Committees Members

Section	Name & Term Expiration
Cell/General	Mordecai P. Blaustein* (95)
Environmental	Barbara Horwitz** (96)
Cell/General	David Dawson (95)
Environmental	Suzanne Fortney (97)
Water/Electrolyte	Ronald Freeman (95)
Gastrointestinal	P. Gunter-Smith (97)
Cardiovascular	David Harder (97)
Neural Control/ Auton. Regulation	Eileen Hasser (97)
Comparative	Jeffrey Hazel (97)
Central Nervous System	Ralph Lydic (96)
Teaching	Joel Michael (95)
Respiration	Lynne Olson (95)
Renal	David Plath (96)
Endocrinology/ Metabolism	Gerald Shulman (96)

*Chair

**Incoming Chair

The Committee on Committees plays an important role in selecting nominations for the APS standing committees. This process is highly dependent on nominations received from members of the Society. The process is initiated by solicitation of nominations from APS members and culminates with Council approval of nominees recommended by the Committee on Committees. The process for obtaining nominations for APS standing committees is a somewhat complex process. By familiarizing members with the steps involved in the final selection of nominees, it is hoped that members will be encouraged to submit nominations and to participate in the process.

Process of Committee Membership Selection

During November and December, nominations are solicited from the President, Councillors, members of the Committee on Committees, chairs of committees, sections, and departments of physiology, as well as from the general membership. The call for nominations is announced in *The Physiologist*.

By January or February, the Committee on Committees receives a list of all nominees and their nomination forms.

By February or March, each member of the Committee on Committees chooses his/her slate of candidates and an alternate for each committee. Selection is based on qualifications for the particular committee appointment. Section affiliation, gender, and minority or junior investigator status are also given serious consideration.

In March, the APS office prepares a list of nominees ranked by the number of votes.

At the spring APS meeting, the Committee on Committees meets to select the final slate of candidates. Input from committee chairs, as well as considerations of section representation, gender, minority status, and age, are discussed before determining the final slate.

The Committee on Committees also makes recommendations for the committee chairs. The recommendations for chairs of the Program, Finance, and Publications Committees are given to the Executive Cabinet (President, President-Elect, and Past President). The Executive Cabinet interviews these candidates, or those of their own choosing, and selects one nominee for each vacant position.

In the summer, the Committee on Committees chair presents the Committee's report and recommendations concerning appointments for committees and committee chairs to Council.

Council approves all appointments to committees for service starting in the following year.

In summer or early fall, members are notified of their appointments to committees.

Summary of Committee on Committees Activities

The Committee on Committees met on April 9, 1995, at the Experimental Biology '95 meeting in Atlanta. The Committee on Committees reviewed the list of nominees for each of the committee vacancies and selected a final list of nominees and alternates. This slate will be presented to the Council at its summer meeting on June 23–25, 1995. To assist the Committee on Committees and the Council with nominations for committee membership and committee chairs, both the incoming chair and the current chair sat in on the meetings of several committees and met with several committee chairs during the Experimental Biology '95 meeting. It is especially important for the chairs of various APS committees to provide input to the chair of the Committee on Committees regarding suggestions for new committee chairs. This input will need to be formalized to assure an orderly turnover of chairs and committee members.

Selection of Nominees for Committees

The Committee on Committees selected a slate of nominees and alternates based on expertise, section affiliation, gender, age, and minority status for approval by Council (Table 2).

The Committee on Committees encourages all members

Table 2. Projected New Committee Appointments

<u>Number</u>	<u>Section</u>
11	A Cardiovascular
5	B Cell/General
3	C Comparative
2	D Endocrinology/ Metabolism
4	E Environmental
3	G Gastrointestinal
3	J Central Nervous System
1	K Neural Control/ Autonomic Regulation
1	L Renal
8	M Respiration
1	N Teaching
8	O Water/Electrolyte
0	U Undeclared

of the Society to participate in the process of selecting committee members by submitting complete nominations that include the individual's expertise and qualifications. Self-nominations are encouraged as well. The Committee on Committees welcomes any suggestions for improvement of the process.

Mordecai P. Blaustein, Chair

Education



During the past year, the Education Committee continued or initiated actions in four separate educational arenas. In the area of continuing education for physiologists, the Education Committee sponsored a techniques workshop entitled "Photorelease of Caged Compounds Applied to Physiological Systems" at the Experimental Biology '95

meeting in Atlanta. At next year's Experimental Biology '96 meeting in Washington, DC, the Education Committee is organizing a refresher course on gastrointestinal physiology. This program will be geared toward physiologists who have teaching responsibilities for gastrointestinal physiology, even though it is not their primary research area. A mixed format will be used that will include lectures by experts in the field on new developments that have not yet made it into the textbooks; poster presentations on the use of case studies, problem-based learning, and other innovative teaching techniques in this field; and exhibits of relevant audiovisual and computer-based educational material.

The Society's involvement in precollege science education continued to grow and evolve during the past year. Twelve middle and high school science teachers received

summer research fellowships in 1994 that allowed them to work in the laboratories of APS members. During this past year, the APS received a grant from NSF for its Frontiers in Physiology project. Using the funds from this grant, a continued APS investment, and a renewed NIDDK grant, APS will be able to support 23 middle and high school teachers in research laboratories this summer. In addition, the Frontiers in Physiology grant will support a week-long summer institute for these teachers during which they will receive more in-depth content exposure, practice specialized teaching techniques, and develop specific hands-on science activities for use in their classrooms. Moreover, the Frontiers in Physiology grant also supports the development of two model in-service workshops, one for middle school science teachers and the other for high school science teachers. These two-day workshops will be developed by collaborative efforts of physiologists and teachers in San Diego and Columbus. After field testing, they will be packaged for use by any interested physiology department.

The Education Committee has begun to explore possible useful activities in undergraduate physiology education. By finding common areas of interest and avenues for cooperation with other professional societies and groups, such as the Human Anatomy and Physiology Society or the Coalition for Education in the Life Sciences, the APS hopes to achieve its strategic goals of attracting the best students to physiology, ensuring that physiology is appropriately represented in life and health science education, and developing a scientifically literate public.

Most recently, the Education Committee has turned its attention to issues related to graduate and professional education. Despite current trends to alter the mode and goals of the education of physicians and other health professionals, it is imperative that physiology as the science of body function and the foundation for the understanding of disease mechanisms retains a central place in the education of all health professionals. In terms of graduate education in physiology, there is growing concern over the number and types of career opportunities available for physiologists and other life scientists in today's marketplace. Graduate education programs, therefore, must be capable of training physiologists who are capable of succeeding and contributing in this environment. The Society needs to analyze the various facets of these big issues and then formulate effective programs and positions that promote these ultimate goals. The Education Committee is planning an open panel discussion for next year's Experimental Biology '96 meeting in Washington to begin to address these challenges.

Francis L. Belloni, Chair

Finance

It is the responsibility of the Finance Committee to review and modify the 1995 budget that was approved by Council in October 1994. With the Executive Director,



Business Manager, and Publications Manager, the Committee reviewed the Society's performance in 1994, revised the 1995 budget, and submitted it to Council for final approval. Based on the performance of the Society in 1994, the Finance Committee recommended an overall budget for 1995 of \$11,406,340.

During 1994, the Society's journal operations ended the year with income in excess of expenses of \$430,880. Although there was a projected deficit for 1994, this income is the direct result of the Society's decision to change printing companies for the *AJP* journals, which resulted in an appreciable cost savings. This number also includes the allocation of \$150,000 to a contingency fund. The Society's book operations ended the year with income in excess of expenses in the amount of \$41,330. The Society's general fund derived from direct membership activities ended the year with a deficit of \$394,993.

The Finance Committee is also responsible for reviewing the performance of four management groups managing our investment accounts through the consultative services of Smith Barney. As of December 31, 1994, the accounts had

the following market value: Operating Reserve Investment Account = \$8,099,190; Publications Contingency and Reserve Account = \$5,222,322; Caroline tum Suden Account = \$321,118; IUPS Account = \$234,815; Perkins Memorial Fund = \$174,796; Second Century Program Fund = \$1,237,911.

In 1995, the Society raised journal prices to maintain the goal of a three-tiered subscription pricing schedule and to adjust prices to reflect a journal's total cost of production. As a result of the discussions, the Finance Committee recommended, and the Council approved, raising institutional subscription prices as follows: consolidated *American Journal of Physiology* = 8.0%; *Journal of Applied Physiology* = 0%; *Journal of Neurophysiology* = 10.0%; *Physiological Reviews* = 0%; *AJP: Cell Physiology* = 20%; *AJP: Lung Cellular and Molecular Physiology* = 0%; *AJP: Heart and Circulatory Physiology* = 11%; *AJP: Gastrointestinal and Liver Physiology* = 0%; *AJP: Regulatory, Integrative and Comparative Physiology* = 20%; *AJP: Endocrinology and Metabolism* = 6%; and *AJP: Renal, Fluid and Electrolyte Physiology* = 0%. The 1995 rates on most of the APS journals for members and nonmember individuals will remain unchanged.

In proposing the 1996 subscription rates, the Finance Committee had extensive discussions with the Publications

APS Balance Sheet

December 31, 1994

Assets

Cash and cash equivalents	\$ 882,976
Certificates of deposit	868,684
US government securities, at cost	8,235,830
Marketable securities, at cost	10,037,578
Accounts receivable, including	
\$20,000 due from FASEB in 1994	1,050,688
Accrued interest receivable	109,756
Advances to section editors	211,214
Inventories, net of allowance of	
\$500,000 in 1994	315,237
Prepaid expenses	39,823
Furniture, fixtures, and equipment,	
net of accumulated depreciation	
of \$219,191 in 1994	<u>169,872</u>
	21,921,658

Net assets restricted and allocated
for unexpended grants, contracts,
and restricted funds:

Cash	382,546
Certificates of deposit	0
US government securities, at cost	357,038
Marketable securities, at cost	1,093,220
Accrued interest receivable (payable)	<u>(17,986)</u>
	1,814,818

Total **\$23,736,476**

Liabilities

Accounts payable and accrued expenses, including \$216,876 in 1994	\$ 928,006
Unearned revenue	
Subscriptions	4,985,707
Dues	<u>237,197</u>
	5,222,904
Unexpended grants and contracts	<u>1,814,818</u>
	7,965,728

Fund Balances

Publications general fund	9,966,115
Publications special fund (deficit)	(206,599)
Society general fund (deficit)	(528,518)
Publications contingency and reserve fund:	
Principal	4,198,159
Income	953,741
Second Century Program Fund:	
Principal	1,059,986
Income	149,710
Strategic Goals Fund	<u>178,154</u>
	15,770,748

Total **\$23,736,476**

Committee and journal editors. As a result, it was recommended that the journal prices be increased to again reflect the actual cost of production of each APS journal and to set prices so that none of the scientific journals lost money. With Council's approval, the journal prices will be increased in 1996 by the following percentages: consolidated *American Journal of Physiology* = 6.2%; *Journal of Applied Physiology* = 10.8%; *Journal of Neurophysiology* = 6.8%; *Physiological Reviews* = 1.6%; *AJP: Cell Physiology* = 0%; *AJP: Lung Cellular and Molecular Physiology* = 20%; *AJP: Heart and Circulatory Physiology* = 18%; *AJP: Gastrointestinal and Liver Physiology* = 0%; *AJP: Regulatory, Integrative and Comparative Physiology* = 0%; *AJP: Endocrinology and Metabolism* = 0%; and *AJP: Renal, Fluid and Electrolyte Physiology* = 0%.

For 1995, the Society General Fund is projected to show a deficit of \$394,854 as a result of efforts to fulfill the goals of the 1992 Strategic Plan under Council's direction; to support two APS conferences, in Hanover, NH, and in Newport Beach, CA; and to undertake the *Journal of Applied Physiology* electronic publishing experiment.

As part of the Finance Committee's and Council's strategic plan, Council formally established a Strategic Goals Fund using income derived from the Society's reserves. This fund will be used to provide added benefits to the membership and will be used to support the minority programs administered by the Porter Physiology Development Committee, the Research Career Enhancement Awards, the High School Science Teachers Program, the Distinguished Lectureship Program, and speaker support for the APS conferences. This fund will be utilized to initiate other new programs that fulfill the goals of the APS Strategic Plan, such as the second APS-Genentech Award. Unexpended funds in any given year will be carried over for use in subsequent years.

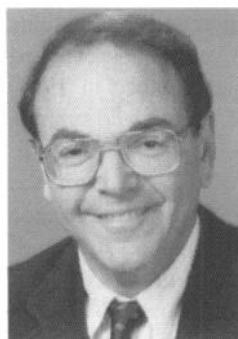
The Finance Committee is also responsible for receiving the annual audit performed by Coopers and Lybrand. The audit found the operations of the Society to be "in conformity with generally accepted accounting principles" and that the finance statements "present fairly, in all material respects, the financial position of the American Physiological Society." For the information of the membership, the Society's balance sheet for 1994 is provided for review.

Franklyn G. Knox, Chair

International Physiology

The International Physiology Committee continues to be active in programs associated with countries in the Pacific Rim, Latin/South America, and Africa.

The Sino-American Initiative in Biomedical Sciences and Medical Education (SAIBS) is cosponsored by the American and Chinese Physiological Societies. Support is needed to establish a database for members of the respective



societies so that investigators abroad will be made aware of research opportunities and meeting announcements. SAIBS will continue to organize minisymposia and scientific sessions as funds become obtained. The International Physiology Committee recommends that APS provide \$2,200 for SAIBS to develop such a database for collaborative efforts and opportunities.

The Subcommittee on Latin America has successfully established a network of correspondents with physiologists in countries of Latin/South America. Several interactions have been developed between US and Latin American physiologists interested in planning meetings and workshops. To further the development of relations with the Latin American physiologists, the International Physiology Committee recommends the creation of a Distinguished APS Visiting Professorship for Latin America. The Committee also recommends the establishment of APS-sponsored Latin American workshops to be given by US physiologists under 40 years of age.

The Committee recommends the establishment of an African subcommittee that would be charged, if funding becomes available, with organizing a database of physiologists between the two countries.

The International Physiology Committee also recommends the expenditure of \$1,500 to establish an Information Liaison Program with developing countries using the Healthnet Satellite System. The funds would be to cover the purchase of software.

In addition, the Committee urges Council to support annual joint physiological society meeting between APS and foreign societies that could be held either in conjunction with Experimental Biology or as a small specialized meeting.

Melvyn Lieberman, Chair

Liaison With Industry



The Liaison With Industry Committee is continuing work on programs that will encourage physiologists working in industry to become more involved in the Society. Efforts to encourage submission of symposia proposals to the Committee for consideration by the Program Advisory Committee for inclusion in Experimental Biology programs have been extremely successful.

Two symposia sponsored by the Committee were presented at the Experimental Biology '95 meeting in Atlanta. The Experimental Biology '96 meeting in Washington, DC,

will include a Committee-sponsored symposium. APS members working in industry are strongly encouraged to submit symposia proposals to the Committee for consideration for the Experimental Biology '97 meeting.

The Committee has initiated an effort to encourage greater involvement between physiologists working in industry and the APS journals with respect to submitting and reviewing manuscripts and serving on editorial boards. A list of potential reviewers who work in industry, along with their areas of expertise, has been prepared and made available to the editors and associate editors of the APS journals. The Committee is also working with Council on other proposals to encourage greater involvement of physiologists working in industry with the Society.

The Committee is continuing to work with the APS Education Officer, Marsha Matyas, and other interested committees in preparing a package of materials that can be used by APS members in academia or industry when visiting local schools to discuss the opportunities for careers in physiology and other issues including the importance of animal research. The Committee is continuing to solicit information and material that would be helpful in this very important program.

The Committee and Council are committed to improving the relationship between physiologists working in industry and the Society. Through APS-sponsored symposia, the APS journals, and appointments on APS committees, physiologists working in industry have a significant opportunity to become involved in the affairs and activities of the Society.

David P. Brooks, Chair

Long-Range Planning



The Society's Meeting Program

The Long-Range Planning Committee is pleased to note that its recommendations to Council in past years regarding the Experimental Biology meeting have been acted upon, including the greater responsibilities taken by the Society in programming and the initiation of the Distinguished Lectureships in each section. These changes, together with the planned institution of the

Physiology InFocus Program, will ensure the high scientific quality of the spring meeting.

The Committee made the following recommendations to Council regarding the use of opening receptions and ceremonies at the spring meeting to help make physiologists feel that they are part of the meeting:

An APS plenary lecture, such as the Cannon Lecture, be given at the beginning of the meeting on Sunday to attract as much of the membership as possible.

The plenary lecture should be followed by a short busi-

ness meeting for the introduction of the officers and Councillors, the Distinguished Lecturers, the student/trainee awards, etc.

The short business meeting should be followed by a President's Reception that is open to the entire membership (currently, the reception is by invitation only).

The APS mixer should be continued. Members could break out on their own for dinner after the reception, before returning to the mixer.

Following a lengthy discussion, during which the survey on APS conferences and the deliberations at the Council retreat were considered, the Committee made the following recommendations to Council:

The APS conferences should be continued.

One or two predetermined sites should be identified for the APS conferences. This will facilitate scheduling and help to promote the APS conferences.

There should be broader peer review of proposals for APS conferences. This will help to guarantee scientific excellence and to identify redundant themes.

APS members should be encouraged to communicate with their sections about topics and proposals for future APS conferences.

The Future of Physiology

There were extensive discussions on a number of issues related to the future of physiology. These include the movements to eliminate physiology as a required course for graduate students in some departments, the lack of expertise of some teachers in the physiology courses for medical students, the question whether too many graduate students are being trained, how to deal with the large number of scientists who never become successful in obtaining extramural funding, and the need for setting the standards for graduate training programs.

The Committee made the following recommendations to Council:

The Committee requested of Council that it be charged with writing a position paper on the role of physiology as a discipline, especially in the medical school environment.

The Committee recommended that Council and the Committee continue to evaluate the goal of graduate student training in physiology, including consideration of the numbers of students we should be training as well as establishing standards for physiology education that ensure that trainees are exposed to the entire spectrum of physiology from the molecular and cellular levels to systems and integrative physiology.

The Committee proposed that the Society consider developing an accreditation program for evaluation and accreditation of physiology training programs. The Committee believes a formal accreditation process will help to control the quality of physiology graduate education in the US, as well as being a mechanism for controlling the number of students in these programs.

Miscellaneous

The Committee heard reports from James Schafer and Martin Frank on the activities and plans of the Society in the area of electronic publishing. The possibilities of expanding electronic communication on the Internet to include poster discussions or "chat sessions" were discussed. The Committee voted to recommend that the Society continue to explore novel forms of electronic communications.

This fall, the Committee will formulate a White Paper on the role of physiology as a discipline, especially in the medical school environment, if it is so charged by Council. Committee members plan to forward any statements or drafts on this subject to Shu Chien prior to a teleconference call scheduled for August.

Shu Chien, Chair

Membership



During the past year, the Membership Committee reviewed applications for regular and corresponding membership under the new membership criteria that were instituted in 1994. As described in an earlier issue of *The Physiologist* (December 1993), these membership categories now encompass all previous associate and associate corre-

sponding members. The changes in membership criteria allow a more direct transition from receipt of an advanced degree (e.g., MD, PhD) to regular or corresponding membership. In addition, individuals who hold other degrees (e.g., masters) but have demonstrated significant involvement in research are now also considered for these membership categories.

A new affiliate membership category was established for individuals interested in the physiological sciences but lacking scholarly work, for example, those engaged primarily in research administration or teaching. Applications for affiliate membership are reviewed by the Executive Director and the membership services staff. Seven individuals are now affiliate members in the Society.

Applications for regular and corresponding membership are reviewed twice per year by the Membership Committee. A total of 287 new members were accepted into the Society after the spring 1995 application review. Of the 173 applications for regular membership that were submitted, all were approved by the Committee. This is an increase of 87 new members over the number of regular members admitted in the Fall 1994 review period, when the new criteria were first instituted. Thus, the change in membership criteria is continuing to stimulate growth in the membership of the Society.

Applicants for regular membership in Spring of 1995 were dominated by individuals holding PhDs (113), followed by MD (44), MD/PhD (11), masters (3), DVM/PhD

(1), and DVM/MS (1).

The average age of the applicants was 40, with the age breakdown as follows: 27–30 years (7), 31–40 years (94), 41–50 years (54), 51–60 years (17), and >60 years (1).

Thirty-four of the applicants listed their primary affiliation as a university department with physiology in the title. Approximately 25% of the applicants were women.

As in the fall 1994 review, over half (66%) of our new regular members were of junior rank (defined as less than associate professor). The positions held by the applicants at the time of submission include assistant professor (60), associate professor (32), professor (26), postdoctoral fellow (29), and other positions, including research associate, instructor, etc. (26). Four of the new members are chairs of academic departments.

Applicants for corresponding membership in the spring of 1995 numbered 114, and all were accepted into the Society. The degrees held by those applicants were PhD (54), MD (13), MD/PhD (46), DVM (1), DVM/PhD (1), and masters (2).

The average age of the applicants was 41, with the age breakdown as follows: 25–30 years (6), 31–40 years (62), 41–50 years (31), 51–60 years (13), and >60 years (5).

APS members should be encouraging their students, trainees, and colleagues that are engaged in research in the physiological sciences to consider joining the Society. The new membership applications have been simplified to make the application process more efficient in terms of time and amount of information needed to complete the form. This includes elimination of the requirement for letters of support from current APS members. A supporting letter is now optional and is typically used to document the applicant's unique accomplishments if they are not readily apparent from the application form.

Student membership remains free for the first year, with dues of \$15 annually thereafter. For recent doctoral recipients, dues are \$25 less than regular member dues for the first five years after receiving the advanced degree.

Hannah V. Carey, Chair

Perkins Memorial Fund



The Perkins Memorial Fund Committee supervises maintenance of the Perkins Memorial Fund, reviews applications, and selects recipients of the award. The award enables visiting foreign scientists to bring their families to the US to enhance their experience.

In June 1994, the Committee considered two applications and was split in its evaluation of them. Subsequently, one application was withdrawn due to a change in the applicant's plans, and the second application was found to be incomplete. That

application was deferred until a complete packet could be obtained. To date, the applicant has not supplied the required materials.

No applications were received for the December deadline for the Perkins Memorial Fellowship Award.

The funds available for the 1994 awards have been forwarded into 1995.

Robert Berliner, Chair

Porter Physiology Development



The Porter Physiology Development Committee, comprised of seven to nine members, stimulates and assists in improvement of underdeveloped American departments of physiology, particularly in colleges and medical schools with predominantly minority enrollments. In addition, the Committee awards fellowships to minority students who are engaged

in graduate study in physiology.

Between 1962 and 1995, the program supported 75 predoctoral and 16 postdoctoral fellows. In addition to the training fellowships, the program has funded faculty travel to meetings, manuscript publications, undergraduate summer research fellows, and the production of a cardiovascular teaching module.

One of the previous Porter Fellows, John C. S. Fray (1968–1975), a professor at the University of Massachusetts Medical School, received the 1994 Enterprise Award of the Telegram and Gazette Visions 2000 Community Service for his research in the treatment of diabetes and other disorders using drugs derived from herbs.

The success of the program can be attributed to the generous support from the William Townsend Porter Foundation, the Upjohn Company Foundation, and APS. We are again grateful for the generosity and commitments to the program. The Upjohn Company Foundation awardee for the second year of support is Debbi-Anne McDermott, Department of Physiology, Boston University School of Medicine.

A recently added role for the Porter Physiology Development Committee is to serve as the review panel for applications to the NIDDK Travel Fellowships, a society program under the directorship of Martin Frank. During 1994–1995 the Committee reviewed and rated a total of 62 travel applications.

The Porter program announcements and applications were revised to refine the criteria and to insure comparability among the applications. Announcements were distributed to all departments of physiology and MARC program directors in November 1994.

At the Experimental Biology '95 meeting in Atlanta, the

Porter Committee took final action and approved three new and two continuation applications for predoctoral fellowships. Fellowship awards were made to the following graduate students. The award notices were sent to the awardees in May 1995.

Heidi Collins (new)
Kent State University
Robert Espinoza (new)
Colorado State University
Thomas Hornby* (new)
University of Arizona
Sheila Mathias (continuation)
Meharry Medical College
Ronald McMillon (continuation)
University of South Alabama

*Awarded, but declined in order to accept another fellowship

We are pleased to welcome to the Committee Reinier Beeuwkes III, Michael J. Overton, and R. Clinton Webb. We must also include our gratitude to Reynaldo Elizondo, David Robertshaw, and James G. Townsel, whose terms expired in December 1994 and whose contributions during their membership were invaluable to the work of the Committee.

We are grateful to all the supporters and Committee members of the Porter Physiology Development Program for their participation in the work of the Committee and for their assistance and guidance in maintaining its integrity.

Eleanor L. Ison-Franklin, Cochair

Program



The Experimental Biology '95 meeting was held in Atlanta, April 10–13, with six participating societies and was attended by 12,476 people (9,630 scientists, 2,210 exhibitors and 636 guests). Eight scientific themes ran throughout the week. Specific symposia, workshops, tutorials, and other presentations were included in the different themes. Submitted abstracts were also accommodated under the themes as slide sessions, minisymposia, or posters. The attempt was

made to create a smaller meeting within a larger meeting so that scientists belonging to different societies but sharing similar interests would gather throughout the week. In addition, each society sponsored concurrent slide sessions, symposia, and poster sessions that had not been designated for a theme.

Both attendees and exhibitors found the situation of posters among the exhibits to be successful as it allowed for more uniformity of attendance throughout the day. This will

be repeated at EB '96.

The Distinguished Lectureships continued for the second year at EB '95. By and large the lectures were a tremendous success. They have served as an impetus for the sections to build an interesting program around the distinguished lecturer, through special symposia based on the lecture topic, tutorials, and special luncheons, receptions, or dinners featuring the distinguished lecturer and geared toward interactions with students and postdoctoral fellows. Selections for the 1996 Distinguished Lectures are almost complete (see page 131).

The Program Committee met in Atlanta to begin plans

APS Research Career Enhancement Awards

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

◆ **The Awards can be used to support short-term visits to other laboratories to acquire new scientific skills or attendance at special courses devoted primarily to methodologies appropriate for both new investigators and more senior investigators entering a new field of research.**

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

Application Deadlines

February 15 and August 15

Additional Information and Application Material

Dr. Martin Frank, Executive Director
American Physiological Society
9650 Rockville Pike
Bethesda, MD 20814-3991
Tel: 301-530-7118; fax: 301-571-8305

for EB '96 to be held in Washington, DC, April 14–17. Four FASEB societies and three guest societies will meet at EB '96. Program Committee Chair Ethan Nadel described the responsibilities of the Committee in formulating the program. When the theme concept was initiated, it was recognized that the themes would change from time to time. The themes for EB '96 are cardiovascular biology, respiratory biology, epithelial cell biology, metabolic processes in health and disease, regulation and growth and development, neurobiology, and signal transduction.

The APS Program Advisory Committee (PAC) reviewed 49 proposals for EB '96. It selected 22 symposia and 2 tutorials/workshops, in addition to 5 symposia for the guest societies, all of which will appear under the themes. Three additional symposia were placed on a wait list pending the outcome of the "hot topics" submissions and selection. There also will be sessions based on submitted abstracts. There is continuing awareness of the importance of including women and members of underrepresented minorities as invited speakers. To this end, a sentence was added to the symposium proposal application form in 1994.

In 1994, an intersociety meeting organized by the Comparative Physiology Section was held in addition to two other conferences. Two conferences, "Understanding the Biological Clock: From Genetics to Physiology" (July 8–12; Hanover, NH) and "New Discoveries Within the Pancreatic Polypeptide Family: From Molecules to Medicine" (November 8–11; Newport Beach, CA), are scheduled for 1995. Two conferences and an intersociety meeting are also scheduled for 1996. The PAC discussed one APS conference application, which was judged unacceptable and rejected. Other applications will be solicited and judged on an ad hoc basis with the intent of holding at least one APS conference in 1997.

Two program innovations are being implemented for EB '96: Physiology InFocus and "hot topic" symposia. Both ideas were the result of the APS Council retreat held in November 1994.

The Physiology InFocus Program will be a concentrated 2-day program that will address timely issues in an interdisciplinary format and will encompass varied levels of biological organization. It will resemble an APS Conference but be within the structure of the EB meeting. For EB '96, Raymond Frizzell is organizing the Physiology InFocus around the topic "Ion Channels and the Mechanisms of Disease."

The hot topic symposia were developed to circumvent the 14-month lead time normally needed for symposia proposals, thereby allowing for late-breaking science to be programmed for the EB meeting as well. Proposals will be due October 16 of the previous year rather than February 15.

The Program Committee recommended that the Society's reimbursement policy be changed to avoid discriminating against APS members, as it does currently.

The recommendation will be voted on by Council during their summer meeting.

Ethan R. Nadel, Chair

Public Affairs



The APS Public Affairs Committee advocates the professional interests of the membership on behalf of the Society. Much of the time this is done in concert with the other member societies of FASEB. This gives us a stronger voice with the Administration and Congress than if we acted independently. Thus, when you read of FASEB public affairs actions, these represent policies that have been developed with the APS

Public Affairs Committee and APS Council. A portion of APS dues goes to support FASEB public affairs activities.

The primary concern in the past year has been adequate funding for physiological research by various federal agencies such as the Veterans Administration, NASA, and others, but particularly by NSF and NIH.

A FASEB consensus conference in October 1994 recommended a 24% increase in NSF biological research funding and a 10% increase for NIH. Following the Republican victories in the November 1994 elections, these recommendations became unrealistic. Currently, there is an intense lobbying effort to prevent large reductions in federal funding for research. As of early June, we had been successful with the Hatfield amendment that limits cuts in NIH funding in the Senate budget resolution. This is an encouraging first step, but relentless pressure must be maintained throughout the actual appropriations process if severe cuts are to be avoided.

A central policy of APS and FASEB has been the support of peer-reviewed, investigator-initiated research. This policy has been upheld in letters and testimony repeatedly in the past year.

The Office of Management and Budget published a number of proposals in the February 6 *Federal Register* concerning indirect costs for research grants. FASEB opposed a proposal that the cost of research space be placed in the direct cost category. This would mean that individual investigators would have to justify their space costs to study sections and bargain with the university administrators for space. FASEB voiced concern over another proposal to create a federal bureaucracy to establish "benchmarks" that would limit Federal reimbursement for facilities, because universities and researchers would not be involved in the benchmark process.

The issue of federal oversight of research integrity is a continuing problem. The APS and FASEB strongly support the policy that the federal definition of research misconduct should be limited to fraud, fabrication and plagiarism. However, at present the definition includes overly broad and vague working (e.g., "other practices that seriously deviate from those that are commonly accepted within the scientific community for proposing, conducting or reporting

research"). FASEB is trying to have this language removed.

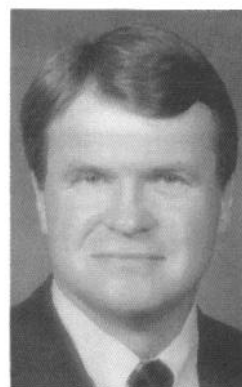
There is also a very troublesome proposal that the federal government would need to approve the policies and procedures that a university has for dealing with misconduct. The practice of science evolves over time, and the federal government should not be setting up "scientific norms."

In terms of our Society, we will be fostering research integrity by a new requirement for authors submitting manuscripts to our journals. In the near future, all authors will need to sign an affidavit that they have read the complete manuscript and that it is original work free from fraud, fabrication, or plagiarism.

The Public Affairs Committee is organized so that a question or problem may be raised by any member of the APS. We invite the membership to contact us by writing to the Public Affairs Officer, Alice Hellerstein, at APS headquarters.

Eric O. Feigl, Chair

Publications



The publications program of the Society had a busy and successful year in 1994. The department was successful in achieving financial self-sufficiency for all the research journals in 1994, as well as successfully launching its new electronic journal *APStracts*. The number of manuscripts submitted increased by 6% and pages published by 10%, but overall costs of the department only went up by 1%. The cost containment was achieved by moving to a

new printer with lower rates, editing more manuscripts on disk, and controlling reviewing expenses.

ISI Citation Statistics

The 1993 ISI Impact Factor rankings show that the consolidated *American Journal of Physiology*, *Journal of Applied Physiology*, *Journal of Neurophysiology*, *Physiological Reviews*, and *News In Physiological Sciences* are in the top 14 of a list of 55 physiology journals, with *PRV* ranking number 1. Unfortunately, ISI Impact Factors have never been available for the individual *AJP* journals because ISI chose not to cite the journals individually. However, under a special contract with ISI, the department was able to obtain seven-year cumulative citation statistics (1987–1993) for the individual *AJP* journals; they showed that the *AJP:Renal, Fluid and Electrolyte Physiology* was cited the most for *AJP*. The *AJP* individual journals were also shown to be very competitive with their respective "competitor" journals for which the same citation statistics were obtained. Thanks to our editors' efforts, the APS journals are very well positioned in the scientific field. (A report on the ISI statis-

tics appears in the June 1995 issue of *The Physiologist*.)

Appointment of Editors

A major activity of the committee during 1994 was the evaluation of four journals whose editors' terms were due to expire and the appointment or reappointment of editors. Penny Hansen was reappointed to a second 3-year term for *AJP: Advances in Physiology Education* beginning July 1, 1995. For the new positions, calls for nominations were published in the journals and recommendations were solicited from editors, associate editors, and section heads. Several candidates for each journal were interviewed by the Publications Committee and Presidents. The newly appointed editors are Jeffrey Pessin for *AJP: Endocrinology and Metabolism*; Peter Strick for *Journal of Neurophysiology*; and Steve Hebert for *AJP: Renal, Fluid and Electrolyte Physiology*. Pessin started his term September 1994; Strick and Hebert take over July 1, 1995. The Committee joins me in thanking former editors Desjardins, Shepherd, and Hruska, whose able leadership enabled such superb publications to be passed on to the new editors. William Dantzler's second term as editor of *AJP: Regulatory, Integrative and Comparative Physiology* ends December 1995, and the Publications Committee interviewed candidates in April 1995. John Hall was appointed as the new editor.



Keith A. Hruska, outgoing editor of *AJP: Renal, Fluid and Electrolyte Physiology*, receiving a plaque from Publications Chair Leonard R. Johnson.

News In Physiological Sciences

Stanley G. Schultz, the new editor of *NIPS*, is working toward improving the quality of the editorial content of the journal. He has also established a new style and format for the cover and inside pages. Paid subscriptions to the journal increased approximately 3% in 1994. The Dutch society is the first IUPS-affiliated society to buy subscriptions for all its members at the special half-price rate. Other societies,

however, have been very cooperative in promoting the journal by including *NIPS* flyers in mailings to their members.

Mandatory Submission Forms

At the Spring 1995 meeting, the Publications Committee made the decision to develop mandatory submission forms for all manuscripts, which will require signatures from all authors attesting to manuscript originality, transferring copyright, and indicating any potential conflict of interest, as well as enabling authors to suggest reviewers. The requirement that all authors sign the submission letter resulted from the recommendation of the Public Affairs Committee. The new submission form will be sent to previous authors, published frequently in all the journals, and will be placed on the World Wide Web (WWW) for downloading. The mandatory form will go into effect January 1, 1996. Currently, submission forms are published in the journals, which can be used on a voluntary basis and do not require author signatures for all the items mentioned above.

Submission and Acceptance Dates

The perception that APS is slow to publish an article once it is accepted is due in part to the failure of authors to meet the requirements that enable staff to put the article into production. Therefore, the Publications Committee has decided that the published submission date of a manuscript will be the date when everything necessary for the reviewing process has been supplied by the author, and that the published acceptance date will be when an author has supplied the final revised manuscript, the glossy figures, a disk, and the copyright transfer form. The chairman plans to publish an editorial in every journal concerning these changes and the new mandatory submission form.

New Reviewing Sheets

The committee and editors finalized the revisions for the new reviewing sheet, and it was circulated to the associate editors for use by reviewers. These new sheets will help the editors identify papers that, while technically correct, do not add significantly to the field.

Honoraria

In 1994 the Publications Committee, with approval from Council, instituted honoraria for editors and associate editors. In addition to providing a substantive thank you, honoraria reward editors for taking more control over the finances and organization of their field offices. In 1994, reviewing expenses only increased 1% to handle 6% more manuscripts.

New Charge for Paper Manuscripts

For manuscripts received after January 1, 1995, the decision was made to charge the author \$100 if a disk is not supplied with an accepted manuscript to cover the extra costs for typesetting a paper manuscript. Over 90% of authors are supplying disks. The submission of a disk with an accepted

manuscript not only reduces cost but allows the department to post the abstract in *APSTRACTS* three or four months before publication. Beginning with manuscripts submitted after January 1995, authors are asked to give permission for the posting via the Copyright Transfer Form; authors of 1994 and earlier manuscripts are asked for permission by a special form.

Journal of Applied Physiology Electronic Experiment for the Review Process

John Remmers, editor of *JAP*, is encouraging the submission of new manuscripts on disk as part of the *JAP* experiment to use electronic communication to speed up the review process and improve its efficiency. Manuscripts can now be sent electronically to the editor via PDF and then to the associate editors who select the reviewers. Remmers transmits the names and addresses of the reviewers to the Bethesda office and the hard-copy manuscript is sent out by APS staff. There are extra costs involved because of this experiment, but the Committee wants to gauge how the process will work, with a view toward eventual electronic communication for the reviewing process for all the other journals.

Conflict of Interest

The Publications Committee recommended that authors with potential conflicts of interest should acknowledge that fact in journal articles. They suggest that the *New England Journal of Medicine* be used as the model system. As mentioned, there will be a section on conflict of interest on the required submission form. The details of how this will appear in the Instructions for Authors and in a footnote to published articles are to be worked out by the Committee and staff.

Manuscript Submissions

Significant increases in submitted manuscripts occurred in the following research journals in 1994: *AJP:Lung, Cellular and Molecular Physiology* by 27%, *AJP:Cell Physiology* by 10%, *Journal of Applied Physiology* by 7%, and *Journal of Neurophysiology* by 24%. The overall rejection rate for the research journals is 42%. The large increase in *JN* submitted manuscripts concerned the Committee, and they have encouraged the editor to increase his rejection rate and decrease the length of accepted papers. However, for 1995, total submissions were still up 10% through April 1995.

Page Charges and Reprint Income

In 1994 page charge revenue and net reprint income increased significantly because of the increase in pages published and a stricter page charge waiver policy. To obtain a waiver authors must now submit a signature from the department head certifying that no funds for page charges are available. *AJP* reprint prices to authors were lowered by 15% in

1994, and expedited delivery was added as an extra service for all journal reprint delivery.

Subscriptions

The Publications Committee is concerned with the continual decrease in the number of institutional subscriptions to the four main APS journals (*PRV*, *AJP*, *JAP* and *JN*). However, they realize that APS is not unique in this trend, and that it is occurring throughout the biomedical field. Institutional subscription prices for 1995 were increased for the consolidated *AJP* and for four of the individual *AJP* journals whose pages were expected to increase significantly. The price of *JN* also had to be raised because of its continued growth. Nonmember prices are two-thirds of the institutional price, and member prices are one-third. The APS Marketing Department promotes the journals continuously through mailings and at meetings.

Nominations are invited for the 1996

YOUNG INVESTIGATOR AWARD IN REGULATORY AND INTEGRATIVE PHYSIOLOGY

The Awards Committee of the Water and Electrolyte Homeostasis Section of the American Physiological Society is accepting nominations for the 1996 Young Investigator Award in Regulatory and Integrative Physiology.

This award was established to encourage young investigators to continue research careers in regulatory and integrative physiology.

The award will be presented at the annual business luncheon of the Section at Experimental Biology '96 in Washington, DC. The award recipient will receive \$5,000, a plaque and free registration to Experimental Biology '96. The award recipient will be invited to present a short lecture on his/her research during a scientific session of the meeting.

Nominees must be APS members less than 40 years old who have made important contributions to our understanding of the integrative aspects of cardiovascular, renal, or neuroendocrine physiology in health or disease. Applications must include:

- a curriculum vitae
- a one-page summary and analysis of the research contributions of the nominee
- a complete list of publications
- two letters of nomination from APS members

Please send nominations and supporting documents
no later than December 30, 1995 to:

Ian Reid, PhD
Department of Physiology
Box 0444
University of California, San Francisco
San Francisco, CA 94143-0444
Tel. (415) 476-1585 Fax (415) 476-4929

Advertising

Because of our low circulation, it is difficult for the *AJP*, *JAP*, and *JN* to attract ads, although *NIPS* with a circulation of 10,000 has a greater potential to attract advertisers. However, the precipitous cancellation of our advertising contract by Williams and Wilkins caused a hiatus that resulted in a significant decline in income over the last two years. A new advertising agent, FASEB Adnet, has been chosen to solicit paid advertisements for the journals. They plan to be very active in obtaining ads and are working closely with the APS Marketing Coordinator.

Books

Aging, edited by E.J. Masoro, the first Handbook published jointly by OUP and APS, was published in April 1995. Seven other Handbooks are in various stages of production. *Adaptation to the Environment and Comparative Physiology* are scheduled to be published in 1995, and *Integration of Motor, Circulatory, Respiratory and Metabolic Control During Exercise* is scheduled for 1996. In 1994 one book was published in the Clinical Physiology Series, *Flow-Dependent Regulation of Vascular Function in Health and Disease*. The first two books in the new Technical Book series were published: *Membrane Protein: Structural and Analytical Methods* and *Fractal Physiology*. In the History Book series, the *Biography of August and Marie Krogh* is scheduled for publication in 1995. For books published after 1987, APS only receives royalty income from Oxford University Press. For books published before 1987, income is based on sales, less royalties to Oxford University Press.

Hospital Practice

For 10 years the series "Physiology in Medicine" has been appearing in *Hospital Practice*, which is a "free" publication that depends solely on advertising for income. The editor of the series is chosen by APS, but royalties are paid to the editor and authors by *Hospital Practice*. Unfortunately, because of budgetary constraints, *Hospital Practice* is discontinuing the series. The Publications Committee is interested in continuing the series, because of its high quality and its benefit in educating clinicians about physiology. However, finding a new venue has been difficult. It was noted that it might be advantageous to link the series with a conference for clinicians at which CME credit could be given. *Hospital Practice* is to be approached to see if they would be willing to continue the series if APS contributed to the cost.

Electronic Publication

The new electronic journal, *APStracts*, which started as a pilot project with *AJP:Cell Physiology* in 1994, began publishing the abstracts of all APS journals in 1995. These abstracts appear on both the APS Gopher Server and the WWW. The abstracts are taken from the authors' disk, are unedited, and include submission and acceptance dates.

The department is actively involved in the Red Sage

Project at UCSF, which is an experiment to make a number of journals available to the UCSF faculty via the computer network operated by the university library in an effort to determine the utility of electronic journals. The experiment is being closely monitored by the Executive Director and staff. In July 1995, the project will be made available to UCLA as well as UCSF users. Information on the Red Sage Project and an alerting system is available to WWW users. APS is committed to the project through 1996.

Staff members have been attending symposia on electronic publishing and meeting with vendors as well as our own printers to keep abreast of this rapidly progressing field. The APS marketing coordinator arranged CD-ROM demonstrations at EB '94 by two printers, which were very successful. She also sent out several questionnaires to APS member and nonmember subscribers and librarians to attempt to determine market demand. The analyses of these questionnaires will be very helpful in defining the future path of electronic publications for APS. William Weems from the University of Texas Office of Academic Computing was invited to address the Publications Committee on the future of electronic publication. Because of their research, APS staff felt they were ready to publish one of the Society's journals electronically, and they presented a proposal with an economic model to the Committee for approval. The Committee accepted the proposal, which Council also approved. The *Journal of Applied Physiology* was chosen as the pilot journal, and it will appear in CD-ROM form and on-line beginning with the January 1996 issue.

Electronic Publishing of JAP

In 1996, several options will be offered to *JAP* subscribers for purchase of the journal: print journal only, print plus the on-line journal or CD-ROM, CD-ROM only, or on-line only. Prices will be set to cover costs, but if a subscriber continues to buy the print journal and adds CD-ROM or on-line access, the price will be the price of the print journal with only an incremental charge to cover the cost of producing the CD-ROMs or on-line access. The Committee plans to ask members to help the Society in an experiment by offering the on-line version at a very reasonable price for a limited time. This should help attract many new subscribers, including those who currently cannot afford to subscribe to the print journal, (e.g., postdoctoral fellows, graduate students) and yet are eager to use electronic communication. It is planned that access will be linked to a reprint service. The Committee is concerned about the potential loss of print subscribers, which are the Society's main source of revenue.

The project will be marketed at the APS meeting booth to increase the chances of a successful introduction of the new products. In addition, ads will be prepared for *JAP* and the relevant *AJP* journals. An announcement is being placed in *The Physiologist*, and a separate mailing will be sent to members and subscribers. During the last quarter of 1995, there should be a demonstration site available on-line for people to test.

Student Subscriptions

The Committee discussed a request from G.M. Shepherd, editor, and the editorial board of the *Journal of Neurophysiology* that a student discount rate for the journal be offered to student members of the Society for Neuroscience who are enrolled in an accredited graduate program. Presently APS student members can purchase one journal for half the member price. The Committee also discussed inviting student members from other societies to join APS to avail themselves of this special offer, although it is unlikely that many students will do so since at present very few APS student members buy the Society's journals. The Committee agreed that if a special offer is made to the Society of Neuroscience student members, it has to be made to students of other societies. The offer would be limited to students who reside in the US and perhaps Canada and Mexico.

Changes in Instructions for Authors

The Committee approved adding a statement on cell lines and reagent data to the Instructions for Authors based on a statement recommended by the Society for Viral Biology. It also instructed authors that letters to the editor should not include original data or figures and tables.

Conclusion

I wish to thank the members of the Publications Committee (DiBona, Benos, Mendell, Williams, and Rowell) and the Presidents of the Society who have worked so diligently and travelled so extensively to conduct publications business. APS staff have had a particularly busy year investigating electronic publications and coping with increased submissions and published pages, as well as launching our new electronics journal, *APSTRACTS*. Journal editors, associate editors, and reviewers have been instrumental in maintaining the quality of our highly rated publications. I extend to all of them my sincere appreciation. I am especially grateful to Brenda Rauner, our Publications Manager and Executive Editor, who makes carrying out my responsibilities both possible and a pleasure.

Leonard R. Johnson, Chair

Section Advisory



The SAC undertook a review of the retreat and a discussion of scheduling changes at EB including the Physiology InFocus Program and "hot topic" symposia. Some of the SAC members felt that it was important to have the Physiology InFocus symposia include young investigators as well as senior investigators. All members of the SAC are supportive of the Physiology InFocus

and "hot topics" sessions and look forward to seeing how these work. There is no doubt that members of the SAC did not care for the way programming and theme discussions were done at previous meetings, so this certainly represents a new and exciting direction. SAC members felt this was a good idea and certainly seemed willing to participate with these Physiology InFocus "hot topic" sessions.

The SAC reviewed the Distinguished Lectureships Program and was quite gratified to learn that there will be no Thursday Distinguished Lectures. The SAC recommended that individuals giving the Distinguished Lectureships should be brought in and be heavily involved with the entire program for about two days. The programs need to be built around Distinguished Lecturers, and perhaps even incorporate some of the Distinguished Lectureships in the Physiology InFocus groups when and where possible. APS gives \$750 to each section as an allotment to help support the distinguished lecturers and the programs surrounding those lecturers. The SAC has requested an increase to \$1,500, and is compiling a list of ways the \$1,500 would be used for educational programs surrounding the Distinguished Lectureships.

Each section is allotted money by the Society. These budgets are made available for the Sections to use for their educational and communication functions within the section. A recent issue has been the implementation of every section's restricted account being set up to be administered by APS. The sections will continue to have access to their own accounts. The reason these accounts need to be set up within the Society has to do with the financial management of Society and section funds from a governmental regulations point-of-view.

SAC discussed the electronic publishing plans of the Society. All sections were informed that the *Journal of Applied Physiology* will be the first journal to go on-line. All section leaders are waiting to see what the outcome is with this journal.

There was considerable discussion about nominations for APS committee memberships made from the sections, as well as identifying persons to sit on the Committee on Committees, Nominating Committee, candidates for Councillors, etc. While there was some discussion about a given individual being nominated for a position from two or more sections, the members of the SAC who sat on the Nominating Committee in past years put to rest any idea that that was the way to get people nominated. The final outcome was that how nominations are presently solicited seems to be working well.

Richard J. Traystman, Chair

Senior Physiologists

A major responsibility of the Senior Physiologists Committee is to correspond with members of the American Physiological Society who are 70 years old or older. During the year, letters were sent to members on their 70th birthdays and cards were sent to those turning 80, each with a person-



al note and a request for a reply to be published in *The Physiologist*. Approximately 150 members were sent letters, 43 of which submitted responses.

In addition, the members of the Committee reviewed one application for the G. Edgar Folk, Jr. awards. These awards are made to emeritus members 70 years or older for such purposes at attending a meeting, engaging in modest experiments, or

completing a manuscript. Names of the awardees are not made public.

Last year, members of the Senior Physiologists Committee were asked to comment on Steven Horvath's suggestion to increase efforts to encourage greater participation of senior physiologists in the activities of APS. Unfortunately, no consensus emerged. A new suggestion submitted by G. G. Pinter concerning the publication of senior physiologists' unexplored research ideas will be reviewed by the Committee during 1995-1996.

Suk Ki Hong, Chair

Women in Physiology



A major emphasis of the Women in Physiology Committee has been the continued development of the Women in Physiology Mentoring Program. The purpose of this program is to foster the development and retention of active women scientists in the Society by increasing the mentoring and networking interactions between junior women physiologists and other more established physiologists.

Currently, 58 mentees and 71 mentors have been recruited and feedback from mentees and mentors that have been matched has been positive.

The third annual Mentoring Workshop and Reception was held on April 10, 1995, at the Experimental Biology '95 meeting in Atlanta. The event was highlighted by a talk entitled, "Women Scientists and Engineers Employed in Industry: Why So Few?" given by Linda Skidmore, Study Director for the Committee on Women in Science and Engineering at the NAS's National Research Council.

Following Skidmore's talk, Marsha Lakes Matyas, APS Education Officer, provided a brief synopsis of the mentoring program. The reception following the program lasted approximately one hour, during which time committee members were available to answer questions about the mentoring program. The workshop and reception allow both current and potential mentors and mentees a chance to interact. Any individuals interested in learning more about the program and mentoring in general are invited to attend next year's workshop.

Information on the program and application forms for those interested in participating as mentors or mentees can be obtained from the APS office. For those already participating in the program, literature is available to facilitate the mentoring process. Questions about the program or mentoring in general can be directed to Matyas, or members of the Women in Physiology Committee.

Another major activity of the Women in Physiology Committee is administration of the Carolyn tum Suden/Frances A. Hellebrandt Professional Opportunity Award. This award provides \$500, complimentary registration for the meeting, and a waiver of the placement service fees to 12 male or female graduate students or postdoctoral fellows, who present a contributed paper at the meeting. In 1995, the award winners were recognized at the APS business meeting in Atlanta on April 11, 1995.

The chair of the Women in Physiology Committee represents the APS on the FASEB Excellence in Science Award Committee. Dossiers of 21 outstanding women from all FASEB societies were evaluated and the recipient of the award for 1996 is Zena Werb, Professor of Anatomy at the University of California School of Medicine in San Francisco. The competition for this award is rigorous and a well-prepared nomination dossier is critical.

APS members are encouraged to identify and nominate outstanding women in the society for this prestigious award. Contact the chair of the Women in Physiology Committee, the APS Education Officer, or the chair of your section for advice on preparing a competitive nomination packet. In addition to the honor of being recognized as an outstanding scientist, the recipient of the FASEB Excellence in Science Award receives an unrestricted research grant of \$10,000 provided by Eli Lilly and Company.

Cheryl M. Heesch, Chair

Moving?

If you have moved or changed your phone or fax number, or e-mail address, please notify the APS office at

301-530-7171

or

lbuckler@aps.faseb.org

Please be sure to include your name, degree(s), title, department, institution, complete mailing address, telephone and fax numbers, and e-mail address

Society Sections: How to Become Affiliated

In compliance with the Society's Bylaws, a number of sections have been organized encompassing various physiological specialty interests. These sections advise the Society on matters of interest to the speciality represented by the section, assist the Society in organizing scientific meetings, and nominate individuals to membership on Society committees.

Membership in the sections is open to all Society mem-

bers. The Statement of Organization and Procedures for each section established specific requirements for membership. APS members who wish to become affiliated with one or more of the listed sections should contact APS Membership Services, 9650 Rockville Pike, Bethesda, MD 20814-3991. Tel: (301) 530-7171.

Cardiovascular

Hermes A. Kontos (1995), Chair
Allyn L. Mark (1997), Section Advisory Committee
Donald D. Heistad (1996), Treasurer
James Bassingthwaite (1997), Secretary
Gary K. Owens (1997), Program Advisory Committee
Kathryn Lamping (1998), Program Advisory Committee
William M. Chilian (1996), James E. Faber (1995), and Julian Lombard (1997), Nominating Committee
D. Neil Granger (1996), Splanchnic Circulation Subsection
Frank C-P. Yin (1996), Cardiac Mechanics Subsection
Harris Granger, Editor, *AJP: Heart and Circulatory Physiology*, ex officio

Cell and General Physiology

Paul J. De Weer (1998), Chair and Section Advisory Committee
Janis M. Burt (1998), Secretary-Treasurer
Donald M. Bers (1996) and Peter M. Cala (1998), Councillors
Jack H. Kaplan (1996), Program Advisory Committee
Dales J. Benos, Editor, *AJP: Cell Physiology*, ex officio

Central Nervous System

Celia D. Sladek (1997), Chair and Section Advisory Committee
Helen Baghdoyan (1997), Program Advisory Committee
Beverly P. Bishop (1996), Richard A. Hawkins (1996), Bruce G. Lindsey (1998), Ralph Lydic (1996), and Novera H. Spector (1998), Steering Committee
Peter Strick, Editor, *Journal of Neurophysiology*, ex officio

Comparative Physiology

Larry I. Crawshaw (1997), Chair and Section Advisory Committee
Carol A. Beuchat (1996), Secretary
Gordon S. Mitchell (1997), Treasurer
Michael A. Castellini (1997), Program Advisory Committee

Endocrinology and Metabolism

Marian R. Walters (1997), Chair and Section Advisory Committee
Owen P. McGuinness (1998), Secretary-Treasurer
Susan K. Fried (1998), Program Advisory Committee
William W. Chin (1998) and Janice G. Douglas (1998), Councillors
Jeffrey E. Pessin, Editor, *AJP: Endocrinology and Metabolism*, ex officio

Environmental and Exercise Physiology

Carl V. Gisolfi (1997), Chair and Section Advisory Committee
Charles Tipton (1996), Secretary-Treasurer and Program Advisory Committee
Kenneth M. Baldwin (1996), Jack A. Boulant (1996), George A. Brooks (1997), Suzanne M. Fortney (1996), John T. Stitt (1996), and Ronald L. Terjung (1995), Steering Committee
Reed W. Hoyt (1996), Hypoxia Group Subsection

Gastrointestinal Physiology

Gilbert A. Castro (1997), Chair and Section Advisory Committee
Joseph D. Fondacaro (1997) Secretary-Treasurer
Patrick Tso (1997), Program Advisory Committee
Hannah V. Carey (1997), Catherine S. Chew (1997), and Kenton M. Sanders (1997), Councillors
David H. Alpers, Editor, *AJP: Gastrointestinal and Liver Physiology*, ex officio

Neural Control and Autonomic Regulation

Cheryl M. Heesch (1996), Chair and Section Advisory Committee
Lawrence P. Schramm (1995), Secretary-Treasurer

Michael C. Andresen (1997), Program Advisory Committee
William T. Talman (1998), Councillor

Renal Physiology

Roger G. O'Neil (1996), Chair and Section Advisory Committee
Keith A. Hruska (1998), Secretary
Ulla C. Kopp (1997), Treasurer
Leon C. Moore (1996) and Jeff M. Sands (1997), Program Advisory Committee
Lewis B. Kinter (1997), Industrial Liaison Representative
Joan A. Keiser (1996), Awards Committee Chair
Steven C. Hebert, Editor, *AJP: Renal, Fluid and Electrolyte Physiology*, ex officio

Respiration Physiology

Edward D. Crandall (1996), Chair and Section Advisory Committee
Thomas R. Martin (1997), Councillor and Chair-Elect
Jo Rae Wright (1997), Secretary
Steven G. Kelsen (1996), Treasurer
Richard D. Bland (1996), Program Advisory Committee
Ivan F. McMurtry (1996), Councillor and Program Advisory Committee Elect
D. Eugene Rannels, Editor, *AJP: Lung Cellular and Molecular Physiology*, ex officio
John E. Remmers, Editor, *Journal of Applied Physiology*, ex officio

Teaching of Physiology

David S. Bruce (1996), Chair and Section Advisory Committee
Dee U. Silverthorn (1998), Secretary
Allen A. Rovick (1997), Treasurer
Nels C. Anderson (1997), Program Advisory Committee
Roger E. Thies (1996), Education Committee Liaison
Penny Hansen, Editor, *AJP: Advances in Physiology Education*, ex officio

Water and Electrolyte Homeostasis

Ian A. Reid (1997), Chair and Section Advisory Committee
Virginia L. Brooks (1996), Secretary-Treasurer
Thomas E. Lohmeier (1997), Program Advisory Committee
William H. Dantzer, Editor, *AJP: Regulatory, Integrative and Comparative Physiology*, ex officio

Epithelial Transport Group

John Cuppoletti (1995), Chair and Program Advisory Committee

History of Physiology Group

Daniel L. Gilbert (1998), Chair
Giuseppe Sant'Ambrogio (1995), Program Advisory Committee
Henry Brown (1998), Secretary-Treasurer

Hypoxia Group

Judith A. Neubauer (1996), Chair
Reed W. Hoyt (1996), Secretary and Program Advisory Committee

Myobio Muscle Group

Thomas M. Nosek (1996), Program Advisory Committee

Physiologists in Industry

David P. Brooks (1995), Program Advisory Committee

Clinical Physiology Group

Richard J. Traystman (1995), Program Advisory Committee

1995 Award Recipients



Walter B. Cannon Lecture Award

President Duling presents the Cannon Award to **Kenneth R. Chien**.



Orr E. Reynolds Award

President Duling presents the Reynolds Award to **Jerod M. Loeb**.



Giles F. Filley Memorial Awards

Filley awardees **Anthony G. Durmowicz** and **Xiao-Jian Yuan** receive their awards from President Duling.



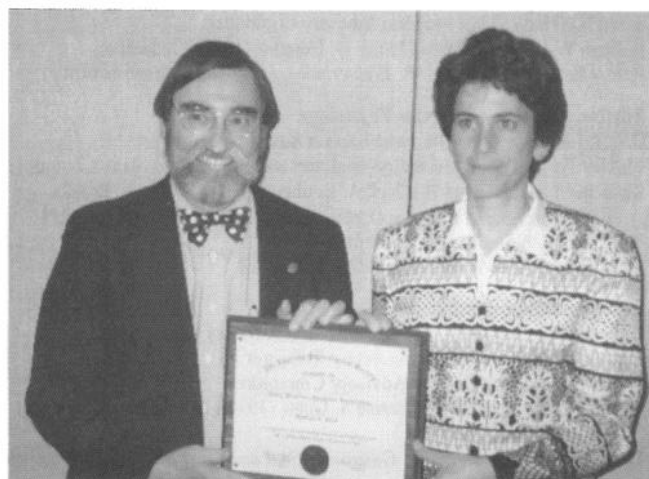
Marion Merrell Dow Excellence in Renal Research Awards

Awardees **Hideki Ikenaga**, **Roger O'Neil** (chair, Renal Section), **Craig Plat**, and **Jeffrey Garvin** (chair, awards committee). Not pictured: S. Ricardo and J. Grider.



Endocrinology and Metabolism Section Award

Margaret Able receives the Endocrinology and Metabolism Section Award from President **Brian R. Duling**.



Henry Pickering Bowditch Lecture Award

Past President **William H. Dantzler** presents the Bowditch Lectureship Award to **Barbara A. Block**.

Ray G. Daggs Award

Ray G. Daggs was the APS Executive Secretary-Treasurer from 1956 until his retirement in 1972. In tribute to his devotion to the Society, the Ray G. Daggs Award was established, and is given each year to a physiologist for distinguished service to the Society and to the science of physiology.

Brian Duling was pleased to announce that the recipient of the 1994 Ray G. Daggs Award is **Earl H. Wood**, who served as president of APS in 1980–81.

Born in Mankato, Minn., Wood began his medical studies at the University of Minnesota School of Medicine. Those studies were temporarily halted while he was trained in research under the tutelage of Maurice Visscher, receiving a masters degree in 1939. He returned to the School of Medicine, where in 1941 he was awarded both MD and PhD degrees, the latter for research on the water and electrolytes of cardiac muscle, especially muscles treated with digitalis. After a year as an NRC fellow in the Department of Pharmacology at the University of Pennsylvania under A. N. Richards and a year as an instructor in pharmacology at Harvard where he worked with Otto Kraye, Wood accepted a position in the Aeromedical Unit of the Mayo Foundation Laboratories. While there he was instrumental in developing the anti-G suit, for which he was awarded the Presidential Certificate of Merit by President Harry Truman in 1947. He advanced in rank first in the Mayo Graduate School and then in the Mayo Medical School, becoming professor of physiology and medicine in 1951. During his long career, Wood was the recipient of many awards, including an honorary DSc degree from Macalester College in 1950; Aerospace Medicine Association and Modern Medicine awards in 1963; Distinguished Citizen Award in 1974; lectureships from the American College of Chest Physicians (1974), the Mayo Foundation (1978 and 1984), and the Biomedical Engineering Society (1978); and honorary memberships in the Royal Netherlands Academy of Arts and Sciences (1977) and the American College of Cardiology (1978). After his official retirement in 1982, Wood continued to receive many honors, including a honorary doctor of medicine degree from the University of Bern (1982), the Humboldt Prize for Senior U.S. Scientists by the West German government (1983), and the John Phillips Memorial Award of the American College of Physicians (1983).



President Brian R. Duling presents the Daggs Award to Earl H. Wood.

Wood became a member of APS in 1943 and became active in the Circulation Group, serving as a member of the Steering Committee (1962–1964) and as chairman (1963–1964). In 1968, he was presented with the Carl J. Wiggers Award. He was elected to APS Council in 1977, became President-Elect in 1979, and served as the 53rd President in 1980. In addition, from 1978–1980, he served as chairman of the Centennial Celebration Committee, and from 1982 to 1985, he was a member of the Finance Committee.

During the same period he was so involved with APS, Wood was also active with FASEB, serving as president (1981–1982), a member of the Long Range Planning and Development Fund Committees (1982–1985), and a member of the Public Affairs Committee (1984–1985). In addition, Wood has served the American Heart Association in various capacities and was the recipient of their Research Achievement Award in 1973. He also is a member of the Biomedical Engineering Society and served as their president in 1983–1984. Because of his pioneering research on problems encountered in space flight, Wood has been a consultant to and on committees for several federal agencies and ad hoc groups throughout his career.

In presenting the Daggs Award, Duling noted that "Earl Wood's laboratory was the first I visited other than the one in which I was working. I fell in love with the equipment and have never lost that. Obviously, the Society and the discipline of physiology have been well served by Dr. Wood."

In accepting the Ray G. Daggs Award, Wood stated, "I appreciate very much this award. I attended my first meeting in 1948, and the change in both the Society and science since then is incredible. I don't know what is coming next, but I know it will be exciting."

Wiggers and Lampert Awards

The annual Cardiovascular Section dinner was well attended, with 120 participants. Dr. Stephen F. Vatner received the Wiggers Award and spoke on the future of integrated cardiovascular research. His lecture on this timely subject was well received.

Dr. Christopher D. Hardin, Assistant Professor of Physiology at the University of Missouri, Columbia, received the Lampert Award.

Minorities Awarded NIDDK Travel Fellowships to Attend EB '95

Since 1987, with the support of the National Institute of Diabetes, Digestive, and Kidney Diseases (NIDDK), the APS has awarded travel fellowships to underrepresented minorities to attend the Experimental Biology meeting each spring. The APS/NIDDK program provides awardees with reimbursement for meeting registration, transportation, meals, and lodging. This year, 29 minorities won awards enabling them to attend EB '95 in Atlanta, Georgia. At an orientation reception early in the meeting, the fellows were each assigned a mentor, who provided guidance on careers and the meeting, and introduced fellows to other scientists. The mentors, all of whom were APS members, helped the awardees to make the most of their experiences at the meeting. The fellows and their mentors also attended a closing luncheon during which they reviewed the week's scientific activities and heard an address by APS member Margaret Colden-Stanfield of the Morehouse School of Medicine in Atlanta. Colden-Stanfield spoke to the fellows about making a smooth transition from graduate school to a professional environment.

The Society received applications for Fellowships from 51 candidates. Over half of both applicants and awardees identified themselves as African-American. Approximately one-third of both applicants and awardees identified themselves as Hispanic. The remaining one-tenth of the applicants and awardees identified themselves as Native American, Pacific Islander, or Hispanic/Pacific Islander. (See table.)

The EB '95 NIDDK travel fellows were:

Azeez A. Aileru
Howard University

Reginald Baker
Tulane University

Reginald L. Berry
University of Alabama at Birmingham

Amadou K.S. Camara
Medical College of Wisconsin

Joel B. DeLeon
University of Texas at San Antonio

Maria Florez-Duquet
University of California, Davis

David W. Frederick
Howard University

Maria Lourdes Gemeniano
University of California, Santa Cruz

Melinda Gillus
Virginia Union University

Timothy A. Hawkins
Brigham & Women's Hospital

Omotola Hope
Albert Einstein College of Medicine

Joyce J. Jones
University of Missouri, Columbia

Angelique K. Lopez
University of Hawaii at Manoa

Julian Martinez
University of California, Santa Barbara

Zaira Mateo
University of North Texas

Tracy Richmond McKnight
University of California, Davis

Ronald K. McMillon
University of South Alabama

Mahealani K. Monteilh-Zoller
University of Hawaii

Alicia R. Glover Moore
Jackson State University

Evelyn F. Navarro
Northeastern Ohio Universities

Christopher Nunez
St. Luke's-Roosevelt Hospital

Deborah R. Rayfield
Howard University



EB '95 NIDDK travel fellows and luncheon speaker Margaret Colden-Stanfield.



EB '95 NIDDK travel fellows.

EB '95 NIDDK Travel Fellowships Minority Status Percentages

Minority Status Subgroup	% of Total (No. of Applicants)	% of Total (No. of Awardees)
African-American males	35% (18)	31% (9)
African-American females	21% (11)	24% (7)
Hispanic males	20% (10)	21% (6)
Hispanic females	14% (7)	14% (4)
Pacific Islander females	4% (2)	7% (2)
Native American females	4% (2)	0% (0)
Hispanic/Pacific Islander females	2% (1)	3% (1)
TOTAL	100% (51)	100% (29)

Alex W. Rivera
University of Texas at San Antonio

Rebecca R. Rizo
University of Texas at San Antonio

Eduardo Rodriguez-Iglesias
University of Iowa

Arturo Stever
Ripon College

Derek M. Tate
Albert Einstein College of Medicine

Adrian E. Varela
University of Florida

Selene Virk
New Mexico State University

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

Approximately 90 graduate students and postdoctoral fellows submitted applications for the 1995 Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Award. The APS Women in Physiology Committee selected 12 awardees who attended the Experimental Biology '95 meeting in Atlanta, Georgia. Applicants were chosen based on the quality of their abstracts, and the content of letters

written by the applicants that explained their goals, research, and why they were particularly deserving of the award. Each awardee received \$500, a certificate of recognition, complimentary registration for the meeting, and a waiver of placement service fees. Awards were presented during the APS business meeting at EB '95 by the Chair of the Women in Physiology Committee, Cheryl Heesch. Awardees were:



1995 Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Award winners.

Laura E. Aloï
Duke University Medical Center

Mark O. Bevensee
Yale University

Larry D. Crouch
Louisiana State University Medical Center

Gregory A. Hand
University of Texas Southwestern Medical Center

Hua Mao
University of Illinois, Chicago

Lorraine McMurdo
St. Louis University

Diane H. Munzenmaier
Medical College of Wisconsin

Ravinder Pabla
Tulane University

Craig F. Plato
Medical College of Wisconsin

Bing Shi
Texas Tech University Health Sciences Center

Stephanie W. Watts
University of Michigan

Richard M. White
Albany Medical College

Predoctoral Students Win Procter & Gamble Professional Opportunity Awards

As the result of a generous contribution provided by the Procter & Gamble Company, APS has been able to recognize the valuable contributions of predoctoral students to the science of physiology. Students apply for the Procter & Gamble Professional Opportunity Award through one of the 12 sections of the Society, and selection of the awardees is made by the sections. The number of awards each section makes is based on the number of applications submitted. Seventeen awardees were selected to attend the Experimental Biology '95 meeting in Atlanta, Georgia. Each awardee received \$500, a certificate of recognition, and complimentary regis-

tration for the meeting. They were presented their awards at the APS business meeting at EB '95. Awardees were:



1995 Procter & Gamble Professional Opportunity Awardees with Ted Logan of the Procter & Gamble Company.

Cardiovascular
Bradley R. Berg
University of Rochester
Suneil K. Koliwad
Baylor College of Medicine
M. Jane Lalli
University of Cincinnati
Timothy M. Moore
University of S. Alabama
Rajabrata Sarkar
University of Michigan
Weiqun Shen
New York Medical College

Cell & General Physiology
Lynn Z. Fuller
University of Kentucky

Central Nervous System
Kori L. Brewer
East Carolina University

Comparative Physiology
Douglas Swank
University of Pennsylvania

Endocrinology & Metabolism
Jennifer B. Miller
University of Louisville

Marlei Walton
Presbyterian Hospital of Dallas

Environmental & Exercise Physiology
John R. Halliwill
Medical College of Virginia and McGuire VAMC

Neural Control & Autonomic Regulation
Susanne M. Pavelka
University of Oklahoma Health Sciences Center

Renal Physiology
Kenneth E. White
Dartmouth Medical School

Respiration
Ethan Carter
University of Minnesota
Christopher M. Penland
East Carolina University School of Medicine

Water & Electrolyte Homeostasis
John P. Skvorak
University of South Florida

NIH Awards Available for Students and Faculty

Scientist Development Award for New Minority Faculty

The National Institute of Mental Health is sponsoring an award to provide new minority faculty members with assistance early on in their careers in order to develop a strong research program and to become outstanding principal investigators in mental health research. The award provides salary, career development and research support, and requires necessary and appropriate mentoring and commitment from the applicant institution. Contact: Rodney R. Cocking, PhD, Office of Special Populations, NIMH, 5600 Fishers Lane, Room 17-C-14, Rockville, MD 20857, (301) 443-3641, fax (301) 443-8552, email rc4@cu.nih.gov.

Predoctoral Fellowship Awards for Students with Disabilities

NIH is sponsoring an award to encourage students with disabilities to seek graduate degrees, which would

further the goal of increasing the number of scientists with disabilities in the fields of biomedical and behavioral research. The award provides up to five years of support for research training leading to research degree in the biomedical or behavioral sciences. Contact: Dr. Walter Schaffer, Research Training Officer, National Institutes of Health, (301) 496-9743, email ws11q@nih.gov.

Predoctoral Fellowship Awards for Minority Students

NIH is sponsoring an award to encourage students from minority groups that are underrepresented in biomedical or behavioral sciences to pursue graduate degrees, which would further the goal of increasing the number of minority scientists in the fields of biomedical and behavioral research. The award provides up to five years of support for research training leading to research degree in the biomedical or behavioral sciences. Contact: Dr. Walter Schaffer, Research Training Officer, National Institutes of Health, (301) 496-9743, email ws11q@nih.gov.

Professor Pierre Rijlant Academic Foundation of Cardiac Electrophysiology Award

The Professor Pierre Rijlant Academic Foundation of Cardiac Electrophysiology Award recompenses a scientist who has made a major contribution to the field of cardiac electrophysiology, particularly regarding hybrid computers in electrocardiography, application of computers to electrocardiography and vectography, and analog simulation.

The Foundation announces the opening of the 1997 award competition.

Applicants should send the following to the Foundation, to the attention of the Secretary, in triplicate: a curriculum vitae, a summary (less than five pages) of the applicant's last five years of work, and main publications. Applications may be made in French, Dutch, German, or English and must be postmarked no later than December 30, 1996.

Applicants must not have won an award greater in value than the Foundation's award in the previous three years.

Additional information can be obtained by contacting the Secretary of the Foundation:

Dr. Marc Renard
Royal Academy of Medicine of Belgium
Palais des Académies
Rue Ducale 1
1000 Brussels BELGIUM

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The American Physiological Society Gopher Information Network

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Tables of Contents from recent issues
Employment Opportunities
Public Affairs updates and alerts
Announcements and Meetings
Bylaws...**and much more!**

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➤ **gopher gopher.uth.tmc.edu 3300**

If you do not have access to a "Gopher" and would like free information, send E-mail to:

➤ **aps_server@oac.hsc.uth.tmc.edu**

APS and Section Awards

Society Awards

Applications for Society awards can be obtained by contacting APS, 9650 Rockville Pike, Bethesda, MD 20814-3991, (301) 530-7118. When requesting an application, please address your request to the contact name given after the award descriptions below.

Research Career Enhancement Awards

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

The awards can be used to support short-term visits to other laboratories to acquire new specific skills, and to support attendance at special courses devoted primarily to methodologies appropriate for both new investigators and more senior investigators entering a new field of research.

Members in good standing interested in applying should submit an application form; a curriculum vitae; justification for requesting an award; a description of the enhancement activity and current research program; and the anticipated budget for the proposed program of enhancement. Applicants must also include a letter of support from their department chair, laboratory host, or other appropriate individual. Deadlines are February 15 and August 15. (Contact: Martin Frank, Executive Director)

Caroline tum Suden/Francis A. Hellebrandt Professional Opportunity Awards

The APS Caroline tum Suden Professional Opportunity Awards (\$500, complimentary registration to Experimental Biology, and fees for the FASEB placement service) are granted to as many as 12 graduate students or postdoctoral fellows who present a contributed paper at the Experimental Biology meeting. Candidates must be the first author of an abstract submitted to APS. An accompanying letter, signed by the sponsor of the abstract, must contain certification that the author is a student or postdoctoral fellow, and the approximate date the nominee will be available for employment. Awardees are notified by the Selection Committee prior to February 15. Award presentations are made during the APS business meeting. (Contact: Marsha Lakes Matyas, Education Officer)

Giles F. Filley Memorial Awards for Excellence in Respiratory Physiology and Medicine

The Giles F. Filley Memorial Fund was established in

1993 to recognize excellence in respiratory physiology and medicine. The awards are made to investigators who hold an academic rank no higher than assistant professor and are pursuing research in respiratory physiology and medicine. Each award is for approximately \$12,000 and is designated for use by the awardees in their research programs. Awards do not include any indirect cost reimbursement.

Awards are made annually to individuals demonstrating outstanding promise based on their research program in respiratory physiology and medicine. Applications are accepted from members of APS working within the United States, reflecting Filley's contributions to the national research community through his membership in APS. Because of Filley's long association with the University of Colorado, Denver, preference for one award, on a competitive basis, is given to individuals affiliated with that institution.

The awards are announced during the APS business meeting, held at the Experimental Biology meeting, and at the Respiration Section dinner. Recipients receive reimbursement for their expenses to attend the meeting and plaques recognizing their designation as Filley awardees. Awardees are selected by a committee composed of APS Respiration Section members. Applications must be received by December 1. (Contact Martin Frank, Executive Director)

G. Edgar Folk, Jr. Senior Physiologist Award

The G. Edgar Folk, Jr., Senior Physiologist Fund has been set up through the generosity of family and former graduate students and postdoctoral fellows of G. Edgar Folk, Jr. to provide modest but helpful assistance to senior physiologists (70 years or older) who no longer have grant funds available to them.

The awards, in the amount of \$500, may be used for activities such as attending an APS meeting to present a paper, engaging in a series of modest experiments, or completing a manuscript (e.g., paying for typists or page charges).

Recipients will be selected with the assistance of the Senior Physiologists Committee throughout the year. Names of awardees are not made public. The purpose of the fund is for the Senior Physiologists Committee "to have *fun* assisting colleagues and for emeritus APS members to keep in closer touch with APS." (Contact: Martin Frank, Executive Director)

NIDDK Travel Fellowships for Minority Physiologists

NIDDK Travel Fellowships for Minority Physiologists are open to advanced undergraduate, predoctoral, and postdoctoral scientists who have obtained their undergraduate

education in Minority Biomedical Research Programs and MARC-eligible institutions, as well as students in the APS Porter Development Program. Applications may also be submitted by minority faculty members at the above institutions. Funds provide transportation, meals, and lodging to attend Experimental Biology.

The specific intent of this award is to increase participation of pre- and postdoctoral minority students in physiological sciences. Applicants need not be members of APS, but should be U.S. citizens or hold permanent resident visas.

CALL FOR NOMINATIONS

BOWDITCH LECTURE AWARD

The annual Bowditch Lecture honoring the first elected President of the American Physiological Society, Henry Pickering Bowditch, has been given at the annual meeting since 1956. The first Bowditch Lecture, "Role of the Red Blood Corpuscles in the Regulation of Renal Blood Flow and Glomerular Filtration Rate," was presented by John R. Pappenheimer.

The lecturer is selected by the President with the consent of Council from among the regular members who have achieved outstanding work and are under 40 years of age at the time of presentation. The award is for original and outstanding accomplishments in the field of physiology. Originality of approach, clarity of data presentation, and the general significance of the results are important criteria. The award conveys an honorarium of \$2,500 plus travel and per diem expenses to attend the spring meeting, and the recipient is invited to submit a manuscript for publication in one of the Society's journals.

Nominations should be accompanied by letters from two nominators describing the importance of the candidate's work, a brief sketch of the nominee's professional history, papers or manuscripts that substantiate the excellence of the candidate, and a curriculum vitae. The nominators should clearly state the contributions of candidates to any jointly authored manuscripts and papers, documenting the independence of the nominee's work.

Nominations should be submitted by October 1 to:

The APS Bowditch Lecture Award

9650 Rockville Pike

Bethesda, MD 20814-3991

Applications should include information on academic background and experience; a written statement of interest in research in physiology; a letter of recommendation from the applicant's mentor; a list of publications, if available; a statement indicating the underrepresented minority (Black, Hispanic, American Indian, etc.) with which the applicant identifies himself/herself; and an estimate of required travel and per diem expenses. The deadline for receipt of completed applications for Experimental Biology '96 is December 8. (Contact: Marsha Lakes Matyas, Education Officer)

John F. Perkins, Jr. Memorial Fellowship

John F. Perkins, Jr., Memorial Fellowships are designed primarily to provide supplementary support to foreign physiologists who have already arranged for fellowships or sabbatical leave to carry on scientific work in the United States.

The supplementary support is intended to help foreign scientists bring their families to the United States and thus enable them to take fullest advantage of other cultural benefits inherent in international exchange. Preference will be given to physiologists working in the fields of respiratory physiology, neurophysiology, and temperature regulation. Applications from scientists in developing countries will also be given special attention.

Applications should be made by both the visiting scientist and his/her host. To qualify, the host must be an APS member. The application should contain an account of these arrangements with a brief description of the proposed scientific work, and an account of how visitors and their families intend to make use of cultural opportunities during their stay. Deadlines for receipt of applications are May 1 and November 1. (Contact: Martin Frank, Executive Director)

Orr E. Reynolds History Award

The Orr E. Reynolds Award is given annually for the best historical article submitted by a member of the Society.

Articles may deal with any aspect of the history of physiology, including the development of physiological ideas and their application, instrumentation, individual and collective biography, departmental and institutional history, history of societies including APS, and physiology in its public context. Manuscripts submitted for the award should represent original research and be adequately documented. Articles published in APS journals or books during the prior calendar year are also eligible for the award upon request of the author(s). The award is open to all classes of APS membership except for those members who have advanced degrees in the history of science and medicine. A member may receive the award only once.

The awardee will receive \$500 plus expenses to attend Experimental Biology. If the awardee wishes, and there is a suitable place on the program, an oral presentation may be

made at EB or a subsequent conference at the beginning or an appropriate scientific session. It is hoped that, after appropriate peer review, the article will be published in one of the APS journals.

Manuscripts will be evaluated by a committee consisting of three members of APS appointed annually by Council in consultation with the chair of the History of Physiology Group. At least one member will be a professional historian.

Manuscripts should be typed and double spaced with wide margins on 8.5 x 11 paper and should conform to the style used in APS journals. (Instructions will be sent on request.) Three copies should be submitted for use of the review committee. The deadline is December 1. The recipient of the award will be announced at the APS business meeting at EB. (Contact: Martin Frank, Executive Director)

Section Awards

Procter & Gamble

Professional Opportunity Awards

The Procter & Gamble Professional Opportunity Awards (providing \$500 and complimentary registration for Experimental Biology) are granted to at least 17 predoctoral students who present a contributed paper at the meeting. Candidates must be the first author of an abstract submitted to APS and within 12–18 months of completing their PhD degree. All recipients must be US citizens or hold a permanent resident visa. An accompanying letter, signed by the sponsor of the abstract, must contain certification that the author is a predoctoral student, and the approximate date of degree completion. Awardees will be notified before February 15. Awardees are selected by the following sections of APS: cardiovascular, cell and general physiology; comparative physiology; endocrinology and metabolism; environmental and exercise physiology; gastrointestinal physiology; central nervous system; neural control and autonomic regulation; renal physiology; respiratory physiology; teaching of physiology; and water and electrolyte homeostasis. (Contact: Marsha Lakes Matyas, Education Officer)

Cardiovascular

The Cardiovascular Section presents three awards annually, Fellowship Awards, the Lamport Award, and the Carl J. Wiggers Award.

Nominations for Fellowship Awards must be made by at least two existing fellows via supporting letters sent to the steering committee for a vote. The total number of fellows cannot exceed 5% of regular APS members who have published meritorious research in cardiovascular physiology.

The Lamport Award is presented to a young investigator under the age of 36 showing outstanding promise in their field of cardiovascular research. The recipient, who receives a certificate and a \$200 check, is selected by the Wiggers

awardee of the previous year. The Carl J. Wiggers Award honors a founder of the section and is presented to a scientist who has made outstanding and lasting contributions to cardiovascular research.

Central Nervous System

The Van Harreveld Memorial Award (\$250) recognizes outstanding research in neuroscience by a graduate student or postdoctoral fellow. The recipient must be first author on an abstract presented at Experimental Biology.

Comparative Physiology

The Comparative Physiology Section Scholander Award is presented annually to recognize an outstanding young investigator presenting a paper in the Scholander Award slide session at Experimental Biology. Candidates must be graduate students or postdoctoral fellows, not more than five years beyond their highest degrees. The recipient receives a cash award and a certificate.

Environmental and Exercise Physiology

The Environmental and Exercise Physiology Section presents two annual awards. The Young Investigator Award (\$150) recognizes excellence in research by a graduate student. The Honor Award (\$200) is given to a member of the section who has had a lifetime of outstanding research. Candidates must be first author on a paper presented at a previous APS meeting. Honoring Harwood S. Beling, the awards are presented at the section dinner.

Gastrointestinal Physiology

The Gastrointestinal Physiology Section Student Prize is designed to challenge and reward students and postdoctoral fellows who are conducting their research efforts in gastrointestinal research. Two awards—one for work done while a doctoral student, and the other for work performed during the first through third postdoctoral years—are presented at Experimental Biology.

Applicants must be first author on abstracts submitted for EB. A letter from the applicant's advisor indicating whether the applicant is a graduate student or postdoctoral fellow must accompany the application. Each award consists of a certificate and \$300. The Steering Committee chooses a senior physiologist as the recipient of the Marion Merrell Dow Distinguished Prize for research in gastrointestinal physiology. The awardee receives \$500 and presents a lecture at the section's annual banquet.

Renal Physiology

The Renal Physiology Section presents annually the Marion Merrell Dow Excellence in Renal Research Awards.

NOMINATIONS ARE INVITED FOR THE FOURTH ANNUAL

ARTHUR C. GUYTON PHYSIOLOGY TEACHER OF THE YEAR AWARD

The Teaching of Physiology Section of the American Physiological Society is again sponsoring the Arthur C. Guyton Physiology Teacher of the Year Award, supported by the W.B. Saunders Company. Nominees must be full-time faculty members of accredited colleges or universities and members of the American Physiological Society. They must be involved in classroom teaching and not exclusively the teaching of graduate students in a research laboratory.

Nominations must be made by a member of the American Physiological Society. The nominator is responsible for providing three copies of the following application materials to the Chairperson of the Award Selection Committee, postmarked no later than November 30, 1995:

1. A letter of nomination from the nominator.
2. Letters of support from three other colleagues familiar with the nominee's teaching career, including one from the nominee's chairperson if possible.
3. Letters of support from up to ten current and/or former students.
4. Scores on standard student evaluations of teaching effectiveness.
5. Competitive teaching honors received, such as the Golden Apple.
6. Evidence of educationally-related activities outside the classroom, such as developing laboratory exercises or teaching software; authoring textbooks or educational research articles; education-related presentations at professional meetings; membership on educational committees within the institution; education consultation with other organizations; public appearances, etc.
7. A copy of the nominee's curriculum vitae.
8. Any additional documentation that the nominee wishes to include, such as number of graduate students trained, number of undergraduate students pursuing careers in physiology, teaching innovations introduced, etc.

The award will be presented at the banquet of the Teaching of Physiology Section during the next annual meeting of the American Physiological Society during Experimental Biology '96 in Washington, DC, in April 1996. The Arthur C. Guyton Physiology Teacher of the Year will receive a framed, inscribed certificate, an honorarium of \$1,000, and expenses of up to \$750 to attend the meeting. The awardee is requested to write an essay on his/her philosophy of education for publication in *The Physiologist* and is expected to deliver this essay as an address at the annual Section dinner.

SEND NOMINATIONS TO:

LOIS JANE HELLER, PHD
DEPARTMENT OF MEDICAL AND MOLECULAR PHYSIOLOGY
UNIVERSITY OF MINNESOTA SCHOOL OF MEDICINE
109 RESEARCH LABORATORY BUILDING
10 UNIVERSITY DRIVE
DULUTH, MN 55812
TEL. (218) 726-7905 FAX (218) 726-6181

The awards promote and develop excellence in research related to molecular, cellular, and organ mechanisms expressed by the kidneys. Annual awards are presented to graduate medical and postdoctoral students, with judging based on abstract submission (25%) and meeting presentation (75%). Papers are evaluated by three judges in renal hemodynamics, epithelial transport, and metabolism. A certificate and \$200 are presented to the recipients at the annual renal dinner.

Teaching of Physiology

The Teaching of Physiology Section sponsors the Arthur C. Guyton Physiology Teacher of the Year Award. The award is sponsored by the W. B. Saunders Company. Nominees must be full-time faculty members of accredited colleges or universities and members of APS. They must be involved in classroom teaching and not exclusively teaching graduate students in a research laboratory. Each nominee must be nominated by a member of APS. The nominator is responsible for completing application materials and forwarding three copies to the chairperson of the Award Selection Committee. The deadline for receipt of applications is November 30.

The award is presented at the Teaching of Physiology Section banquet at Experimental Biology. The Teacher of the Year will receive a certificate, a \$1,000 honorarium, and expenses of up to \$750 to attend the meeting. The awardee is requested to write an essay on his/her philosophy of education for publication in *The Physiologist* and is expected to deliver this essay as an address at the section dinner.

Water and Electrolyte Homeostasis

The Young Investigator Award in Regulatory and Integrative Physiology was established to encourage young investigators to continue research careers in cardiovascular, renal, and neuroendocrine integration. The award is presented annually at the business luncheon of the Water and Electrolyte Homeostasis Section to a young investigator (less than 40 years old) who has made important contributions to the understanding of the integrative aspects of cardiovascular, renal, and neuroendocrine physiology in health and/or disease. The award consists of \$500, a plaque, and complimentary registration to Experimental Biology. The awardee will also be invited to present a short lecture on his/her research work during one of the scientific sessions at EB.

Any APS member in good standing may apply to be nominated for the award. Applications will be reviewed by the Awards Committee of the Water and Electrolyte Homeostasis Section and should include a curriculum vitae of the nominee, a brief (one-page) summary and analysis of the research contributions of the nominee, a complete list of publications, and two letters of nomination from members of APS.

The nomination and supporting documents must be received no later than November 1.

Positions Available

VICE PRESIDENT FOR RESEARCH. The Association of American Medical Colleges seeks a Vice President for Research reporting directly to the president as a member of the executive staff. Areas of responsibility of the Division of Research encompass development of research policy relating to all sectors of the research enterprise, including basic biomedical research, clinical research, behavioral issues as assessment of needs and policies governing research training; issues related to the financing and management of research and the research infrastructure, including plant, equipment, human subject regulations, the use of animals, and the recovery of research costs; technology transfer; scientific integrity; and relationships between academic medical centers and industry. The incumbent has lead responsibility for the program and activities of the Council of Academic Societies, the component of the AAMC governance representing medical center faculty through 92 professional and specialty organizations. The Division also provides staffing for the Advisory Panel on Biomedical Research. Candidates should possess an MD or PhD and have a strong background as an investigator. Experience at an academic medical center and knowledge of the National Institutes of Health (e.g., through service on study sections or committees) are desirable. Applications, including CV and bibliography, will be received through August 15, 1995. Send applications to Jordan J. Cohen, MD, President, Association of American Medical Colleges 2450 N Street NW, Washington, DC 20037-1126. [EOAAE]

POSTDOCTORAL / RESEARCH ASSOCIATE POSITION IN PHYSIOLOGY. A position is available immediately to join a group studying the neurophysiology of breathing. The primary area of research is "brainstem neural networks and airway defensive reflexes". More specifically, we are investigating the mechanisms by which the cough motor pattern is produced by the respiratory neural network. The spike trains of many simultaneously discharging neurons are monitored and cross-correlational techniques are utilized to determine functional connectivity in the network. The plausibility of network models derived from this approach will be tested with computer simulations. Background in the control of breathing and neuroscience is desirable. Salary is competitive and commensurate with experience. Applications will be accepted until the position is filled. Please send resume and names of two references to Roger Shannon, PhD, Physiology and Biophysics, MDC Box 8, College of Medicine, University of South Florida, Tampa, FL 33612. USF is an EO/AA/EA institution. Applicants requiring special accommodations to participate in the interview process must call Dr. Shannon at 813-974-3723 five days in advance.

POSTDOCTORAL POSITION. A postdoctoral position with F.E. Curry and R.H. Adamson will be available September 1995. We are seeking an individual with expertise in endothelial cell-cell adhesion, cell-matrix adhesion, or cytoskeleton. Experiments will focus on measurement of single capillary permeability and the cellular mechanisms which lead to modulation of permeability. Methodology includes photometric in vivo intracellular calcium measurement, confocal microscopy for structural and permeability analysis of single capillaries, electron microscopy, in vivo transfection of vascular cells, parallel analysis of cultured endothelial cells. A PhD or MD in relevant areas of physiology, cell biology or molecular biology is required. For details, contact rhadamson@ucdavis.edu. Send curriculum vitae and names of three references to Dr. R.H. Adamson, Department of Human Physiology, University of California, Davis, CA 95616. The University of California, Davis is an EOAAE. Minority and female applicants are encouraged to apply.

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 three 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 space 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 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 with payment to:

THE PHYSIOLOGIST
APS
9650 ROCKVILLE PIKE
BETHESDA, MD 20814-39911

People and Places

Donald R. Dengel has accepted a position as Research Assistant Professor in the Department of Geriatrics, Ann Arbor, MI. Prior to his new position, Dengel was a Research Associate with Geriatric Service, Baltimore VA Medical Center, Baltimore, MD.

Formerly, the Director of the Cardiothoracic Research Labs, Chandler Medical Center, University of Kentucky, **David R. Gross** has been appointed Department Head, Department of Veterinary Biosciences, University of Illinois at Urbana-Champaign.

William L. Henrich is presently Professor and Chairman, Department of Medicine, Medical College of Ohio, Toledo, OH. Prior to his new post, Henrich was Professor of Medicine, University of Texas Southwestern Medical Center, Dallas, TX.

Ozuem Paul Mgbonyebi recently moved from the Department of Physiology, University of Pittsburgh School of Medicine, Pittsburgh, PA, to the Breast Cancer Research

Laboratory, Philadelphia, PA.

Suzanne S. Palmer recently accepted a position with the Department of Physiology, St. George's University School of Medicine, Grenada, WI. Previously, she was with the Department of Physical Therapy, Texas Tech University Health Science Center, Lubbock, TX.

J. Andrew Taylor has moved from the Cardiovascular Physiology Department at the McGuire Medical Center of Richmond, Virginia, and is now with the Cardiovascular Physiology Department of the Hebrew Rehabilitation Center for the Aged, Boston, MA.

Christopher A. Dawson, Professor of Physiology at the Medical College of Wisconsin and Professor of Biomedical Engineering at Marquette University was elected to the College of Fellows of the American Institute of Medical and Biological Engineering for his seminal contributions to the field of pulmonary circulation.

Senior Physiologists

To **John Blinks**, **Anwar Hakim** wrote the following: "What am I doing now? I am trying to stay informed of the strong currents in physiological sciences, especially in the molecular and cellular aspects of physiology, so that I may complete my book *My Personal Concept of the Breast Cancer Cell*. ...

"I live outside of Chicago with my wife Paula, a native of Switzerland. We have a son Anwar, a daughter-in-law Bernadette, and granddaughter Nicole, the sunshine of our lives. Anwar is an architect. Our daughter, Ava Maria, is a graphic designer/art director."

Daniel Tosteson wrote, "I am still busy serving as Dean of the Faculty of Medicine at Harvard. I spend less time than I would like in the lab. But I do have one!"

From McMaster University in Ontario, **E.J. Moran**

Campbell wrote to **Harold Weiss**, "I retired five years ago, but continue to 'work' half-time. Every day I seem to have some teaching session or other and I have made four visits abroad, spending much longer periods at schools than is possible before retirement.

"I spent two months in Kenya, two months in South Africa, and six weeks in Brazil. I find that these visits are more rewarding than dashing in, giving a lecture, and dashing out again. One is able to develop a much better relationship with what one might call the middle rank people—those actually doing the work.

"I don't do any 'hands on' research, but have frequent informal discussions with those who do in which I try to help them define what they are trying to do and, particularly, help them to write their papers."

Denton Named to NAS

Derek A. Denton, an honorary APS member since 1987, was recently elected to the National Academy of Sciences as a foreign associate.

Since 1971, Denton has served as the director and originating board member of the Howard Florey Institute of Experimental Physiology and Medicine at the University of Melbourne. In 1977, he was appointed Research Professor of Experimental Physiology and Medicine at the University of Melbourne.

Denton's area of interest can be described by the titles of his lectures: "The Physiology of Thirst and Sodium Appetite," "Sodium Homeostasis," "Effect of Alternations of Cerebrospinal Fluid Composition on Sodium Appetite," and "Salt and High Blood Pressure," among others.

People and places

notices come almost exclusively from information provided by members and interested institutions. To ensure timely publication, announcements must be received two months (by the 15th of the month) before the desired publication date. Send all information to:

The Physiologist

APS

9650 Rockville Pike

Bethesda, MD 20814-3991

Honorary Membership Awarded

Max F. Perutz, best known for his work on the structure of hemoglobin, was elected to honorary membership during APS' April business meeting.

Perutz began his education at the University of Vienna, where he studied chemistry. From there, he went on to graduate studies at the Cavendish Laboratory at Cambridge University and received his PhD in 1940.

He was an Imperial Chemical Industries Research Fellow from 1945 to 1947. He next served as director of the Medical Research Council Unit for Molecular Biology at the Cavendish Laboratory until 1962. From 1963 to 1979, he was chairman of the MRC Laboratory of Molecular Biology, and then served another four years on the laboratory's scientific staff. Since then, he has continued to work at the Laboratory of Molecular Biology as a recipient of NSF and NIH research grants.

Throughout his career, Perutz has been recognized for his scientific contributions. In 1954, he was elected a fellow of the Royal Society. In 1962, he won a Nobel Prize for chemistry. He was awarded the Royal Society's Royal Medal in 1971, and its Copley Medal in 1979. In 1988, he was awarded both the Order of Merit from Queen Elizabeth and Pour le Mérite from the German Federal Republic president. He is also a foreign associate of the National Academy of Sciences.

In addition to his work on the structure of hemoglobin, Perutz has shown how single amino acid substitutions affect the behavior of hemoglobin, particularly its oxygen affinity. His work in this area was among the first demonstrating how single substitutions in a complex protein can predictably alter physiological function in a critical molecule.

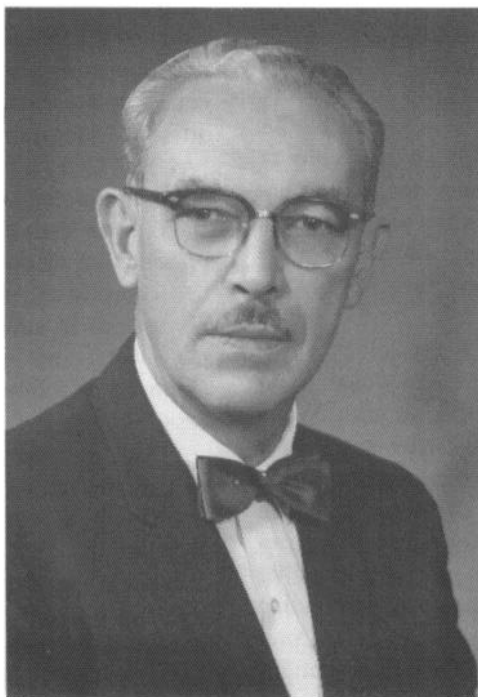
In Memoriam—Ray G. Daggs (1904–1995)

Ray G. Daggs, former Executive Secretary-Treasurer of the American Physiological Society, died April 23, 1995, in Livingston, NJ.

Daggs served as APS Executive Secretary-Treasurer from 1956 to 1972. During his tenure he was responsible for publishing the newly formed *The Physiologist*; bringing the financial management of APS in house through the hiring of a business manager; establishing a Publications Committee and hiring a Publication Manager, Executive Editor and associated staff; the preparation of the APS Operational Guide; and the establishment of the APS logo.

Because of Daggs' many contributions to the Society, the Ray G. Daggs Award was established in his honor at his retirement to acknowledge annually individuals who "have provided distinguished service to the science of Physiology and to the American Physiological Society." Daggs himself wrote, "I thoroughly enjoyed my years as executive secretary-treasurer of the APS. I came to know many physiologists and greatly appreciate their friendship. Perhaps the greatest tribute they could have paid me was the establishment of the Ray G. Daggs Award."

Born and raised in McKees Rocks, Pennsylvania, Daggs graduated cum laude from Bucknell University in 1926. During his coursework, he concentrated on biology,



Ray G. Daggs

human anatomy and physiology, leading him to become a medical student at the University of Rochester School of Medicine and Dentistry. However, after two years he was awarded a research fellowship, and he then went on to receive a PhD in physiology in 1930. He served as instructor and assistant professor of physiology at the University of Rochester from 1930 to 1936. He then moved to the University of Vermont as an associate professor and in 1941 was made chair of the Department of Physiology.

From 1941 to 1946, Daggs served in the Army as a nutrition officer with the 8th Service Command in Texas. After the war, he became the supervisor of the Army Medical Research Laboratory in Fort Knox, Kentucky, and also continued lecturing in physiology at the University of Louisville Medical School. It was during the time Daggs was at Fort Knox that

Milton Lee invited him to become the executive secretary-treasurer of APS in 1956.

Daggs married Mary Dwyer in 1929. After his retirement from APS in 1973, they moved to New Jersey to be near their children. Mary Dwyer Daggs predeceased him in 1992. He is survived by a son, William Daggs; a daughter, Vertie Kunkle; six grandchildren; seven great-grandchildren; and one great-great-granddaughter.

Renal Physiology

Fifth Edition

Arthur J. Vander

New York, NY: McGraw-Hill Health Professions, 1994,
238 pp., illus., index, \$27.00

ISBN:0-07-067009-9

Those who teach renal physiology to medical students may feel forced to choose between two suboptimal teaching styles. The topics can be presented in their full complexity. This comprehensive approach is almost certain to overwhelm, and may leave the student unable to absorb even the most fundamental concepts. The alternative is to present a diluted version which gives a false sense of simplicity. Vander strikes an excellent balance between these two unattractive extremes in his fifth edition of *Renal Physiology*.

This small but comprehensive book is well organized. Each chapter begins with a set of objectives that identifies main points the student should master. The text contains a multitude of simple figures, flow diagrams, and tables which add to the clarity of the text. Chapters are supplemented with study questions which focus on areas the author identifies as being potentially difficult for students. Issues in renal physiology not felt to be essential at this point in the student's learning, but which are interesting or new, are explored in end-of-chapter notes along with concepts which other instructors might want to emphasize. Most of the notes refer the interested student to more detailed references included in a fairly extensive list of suggested readings for each chapter.

Vander's experience in teaching renal physiology is evident throughout the book. Concepts are presented, reinforced, and critical points clearly identified as such. When reading through the chapters one gets the sense that Vander pauses at topics which have been troublesome for students in the past. He emphasizes and clarifies the point, and then moves forward. He also assumes that the student will frequently lose a firm grasp on information presented in earlier chapters. If this information is critical for the understanding of a new topic, the student is encouraged to review the previous information before proceeding. Clinical correlations are frequent and appropriate.

When concepts are simplified for the sake of clarity, the author makes it clear that this is being done. The curious are not left to wander without guidance through the literature should they wish a deeper level of understanding. They are referred instead to the fairly extensive endnotes and/or suggested readings.

I found little to be critical of in this well written text. The study questions might be more user-friendly if included at the end of each chapter rather than being relegated to the back of the book. There were rare typographical errors. This text appears an ideal resource for new students of renal phys-

iology. It is also a valuable tool for more seasoned students who want to quickly remind themselves of basic concepts in renal physiology.

Karen MacKay

Department of Medicine
West Virginia University

Physiological Basis of Aging and Geriatrics

Second Edition

Paola S. Timiras (Editor)

Boca Raton, FL: CRC Press, 1994, 326 pp., illus., index,
\$79.95.

ISBN: 0-8493-8979-8

This well-illustrated book provides a broad coverage of the biology of aging. Although the emphasis is on physiology, significant consideration is given to basic cell biology, demography, pharmacology, and geriatrics. Most of the chapters were written by Paola Timiras, the editor, and are structured in a logical and clear way. The basic cell biology or systems physiology that is the subject of the chapter is concisely presented. Indeed, this aspect of the presentation attests to her skill as a teacher of physiology and to the breadth of her knowledge. Even a student who has no background in biology or physiology should gain a good understanding of the elements. Each chapter contains a concise presentation of our current knowledge of the age changes that occur in the biological or physiological system under discussion. In addition, age-associated diseases related to the subject area of the chapter are discussed. The other authors also follow this plan with varying degrees of success.

Although the book is generally of high quality and remarkably free of errors (of course, there are some minor errors as in all books), there are problem areas that require mention.

First, the three chapters by Brian Merry and Anne Holehan are written for advanced students, whereas the rest of the book is not. Their chapter on the effects of diet on aging cites 201 references and is at a level that would be appropriate for an article in *Physiological Reviews*. Their chapter on the female reproductive system is at almost as high a level. Their chapter on the male reproductive system is somewhat more in line with the rest of the book. This unevenness detracts from the book.

Second, the coverage of the cardiovascular system is scattered over three chapters and is neither coherent nor adequate. Too much attention is paid to atherosclerosis and not nearly enough to age changes in cardiovascular physiology.

Third, the handling of the evolutionary biology is a problem area. Evolutionary biology is playing an increasingly important role in our understanding of aging, which

makes it important for students to gain a good understanding of it. Chapter 2 by Timiras is ambiguous as to whether aging is an evolutionarily adaptive or nonadaptive phenomenon and can easily be construed as suggesting the former. Because the concepts held by most evolutionary biologists are based on aging being nonadaptive, this chapter does not provide those unfamiliar with this field with an appropriate framework. Fortunately in Chapter 12, Merry and Holehan clearly discuss the evolutionary biology of aging in nonadaptive terms. Nevertheless, this book may confuse students about the evolutionary biology of aging, and instructors using the book for their courses should discuss this problem with their students.

Last, it is unfortunate that the last chapter was not deleted because it provides little of value and is not the way to end a good book.

Despite these problems, this book is recommended to gerontologists who are not biologists but who wish to gain a basic understanding of the physiological aspects of aging and to biologists who have been trained in cellular and molecular biology but who have little knowledge of systems physiology. The book cannot be recommended to biologists who have a basic understanding of systems physiology nor to geriatric dentists and physicians; a more advanced coverage of physiological aspects of aging would better serve their needs.

Edward J. Masoro
University of Texas

Health Science Center at San Antonio

The Tachykinin Receptors

Stephen H. Buck (Editor)

Totowa, NJ: The Humana Press, 1994, 630 pp., illus., index, \$125.00

ISBN: 0-89603-266-3

This 630-page book is one of nine on receptors published from 1983 to 1994 in a series edited by David B. Bylund, and S. J. Enna, Morley D. Hollenberg, Bruce S. McEwen, and Solomon H. Snyder on the board of editors.

There were 40 contributors, including Susan Leeman and Fred Lembeck, to the 19 chapters.

The book consists of five parts: Historical Perspective of Tachykinins, Characterization of Tachykinin Receptors, Mechanisms of Tachykinin Receptor Action, Tachykinin Receptor Function, and Summary and Future Perspectives.

Chapter 1, the History of Tachykinin Peptides by Maggio and Mantyh, highlights the discovery and investigation of substance P, which appears to have had the longest scientific history and is probably the most thoroughly characterized of the brain-gut peptides. In any case, substance P is the oldest neuropeptide in the sense that it was the first active substance from neural tissue that was later proven to

be a peptide. For about 50 years after the discovery of substance P, it was generally believed to be the only tachykinin in mammals.

Ultimately, tachykinins were isolated not only from mammals, but from birds, mollusks, amphibians, insects and reptiles.

Substance P is an undecapeptide of the following structure: H-Arg-Pro-Lys-Pro-Gln-Gln-Phe-Phe-Gly-Leu-Met-NH₂. Of structural interest, the undecapeptide of "chicken substance P" has Arg₃ in place of Lys₃ in the mammalian substance P.

Part II on the Characterization of Tachykinin Receptors consists of seven chapters that highlight the molecular biology and the structures of receptors.

Part III on Mechanisms of Tachykinin Receptor Action consists of two chapters that highlight receptors in the inositol phosphate-calcium signaling system and the signal transduction mechanisms of tachykinin effects on ion channels.

Part IV on Tachykinin Receptor Function has seven chapters. Even the organic structural chemistry of the peptides in this field have significant structure-activity relationships of both agonists and antagonists that have been intellectually advanced by Harberson and Rovero. A representative of this structural chemistry is the recognition that there are five anchoring peptides in as many positions between substance P and the NK1 receptor, which are the guanidinium function of Arg₁, the aromatic rings of Phe₇ and Phe₈, and the sulfur atom and the carboxamide function of the COOH-terminal Met.

Fred Lembeck and Stephen H. Buck, authors of Chapter 19, the Summary, Thoughts, and Future Perspectives, write that a most exciting aspect of receptor pharmacology is seeing laboratory science lead to the development of receptor active molecules that can be effective in human therapeutics. They note that "there are now several peptide antagonists of some tachykinin receptors, and these will contribute greatly in the study and understanding of the nature of the receptors." They praised the 1987 report by Masu et al. The structure of the bovine stomach NK1 receptor marked the first neuropeptide receptor of any kind to have its primary structure determined. They concluded that the impact of the new nonpeptide tachykinin antagonists on CMS functions is likely to be more complex than in the periphery, in congruence with the greater neuronal complexity of the CMS.

Surely the significance of Arg₁, Phe₇, and Phe₈ can be of importance to peptide chemists who are doing research on other peptides to influence biological activity.

This book is comprehensive and should be perused by peptide chemists doing research in any field of biologically important peptides in the life functions of many species.

Karl Folkers
University of Texas at Austin

The Pulmonary Circulation and Gas Exchange

Wiltz W. Wagner, Jr. and E. Kenneth Weir (Editors)
Armonk, NY: Futura Publishing Company, Inc., 1994,
424 pp., illus., index, \$75.00.
ISBN: 0-87993-572-3

For this book, the editors assembled 21 experts on gas exchange and the pulmonary circulation and asked them to expound on their research and careers. The editors asked the authors, each of whom had to have at least 25 years of experience, to start from the beginning and "tell it like it was." The list of authors is remarkable: all are renowned authorities on lung biology, and each completes the task with which they were charged.

By design, the content of this text stands in contrast to other, similarly titled, books. It is not a progressive exposition and explanation of the relationship between the pulmonary circulation and gas exchange. Rather, it is an adventure through the lives of some of the most notable of contemporary physiologists: their initial attraction to medicine and human biology, their enthusiasm for their life's work, and the frustrations and triumphs they experienced. Many chapters include the earliest experiments performed by these pioneers, some include the experiments that they consider the most important, and a few conclude with their most recent investigations.

In the Introduction, the editors have constructed categories into which many of the chapters might be placed. Three chapters summarize work on the diffusion of gases and the gas-exchanging properties of the lung; four chapters explain how the pulmonary circulation is remodeled in disease; three chapters review work on the pulmonary circulation at altitude; and 11 chapters encompass work in the lung exploring pressure, flow, pharmacology, anatomy, and lung fluid balance.

Because there was no apparent attempt to coordinate the content of chapters with each other, one might suspect that the transition from one chapter to another would be disruptive. However, because each author's chapter is a complete work in and of itself, continuity is not an issue. Instead, the text assumes the quality of a collection of short stories—albeit scientific in nature. Each contributor has a different style of presentation. Some authors tell their stories in a straightforward manner, whereas some take a more circuitous route. All are entertaining and explain the basis for and interpretation of their experiments in a easily understood manner.

Although there are a number of insightful comments made about science and research by each contributor, a few are repeated more often than others. One of these themes, that discovery and understanding is aided by interested and willing colleagues, is a common thread to all the chapters. As one author puts it, "The greatest lesson I have learned is that exciting research needs partnership...." Rightfully so, each author gives much credit to numerous mentors and col-

leagues that helped make his or her career successful.

In summary, this book is a collection of brief, autobiographical commentaries on science in general and the pulmonary circulation and gas exchange in particular. Anyone interested in this area of physiological history will find it fascinating to pull back the drapes and catch a glimpse of "how it really was."

David P. Carlton
University of Utah

The Human Brain Circulation: Functional Changes in Disease

R.D. Bevan and J.A. Bevan (Editors)
Totowa, New Jersey, Humana Press, 1994, 456 pp., illus.,
index, \$89.50
ISBN: 0-89603-271-X

This multiauthor book consists of 35 chapters contributed by participants in a conference entitled, "The Human Brain Circulation: Functional Changes in Disease," which was held in Vermont in October 1992.

The majority of studies which have addressed mechanism of regulation of cerebral blood vessels have been performed using experimental animal models. In many cases, subsequent studies using human vessels have confirmed findings obtained initially using animal models. However, as stated in the preface of the book, there are also numerous examples where responses of the cerebral circulation exhibit species differences. The presence of such differences emphasizes the importance of studies which measure cerebral vascular responses in humans in vivo or using human cerebral vessels in vitro. The book's real value is its emphasis on data obtained using human vessels, pointing out important areas where data for the human cerebral circulation is lacking.

The book focuses on structure and function of cerebral blood vessels. Subjects related to the cerebral circulation that are covered include: vascular anatomy and mechanics, methodology for measurement of vascular responses both in vivo and in vitro, effects of hypoxia and hypercapnia, autoregulation, flow-mediated responses, circumventricular organs (choroid plexus and pituitary), endothelium, ion channels, and neural mechanisms. In addition, specific chapters deal with cerebral circulation in newborns and changes that occur during aging and following ischemia and subarachnoid hemorrhage.

Neural regulation of cerebral vascular tone receives the most. Approximately one-third of the chapters deal with the role of perivascular innervation of cerebral vessels including trigeminal, sympathetic, and parasympathetic innervation as well as the role for neuropeptides released by these nerve fibers. Two of the chapters focus on neural mechanisms that may contribute to vascular headache. This combined review of neural regulation of cerebral vascular tone is excellent.

There are a few areas which received little attention, such

as the role of endothelium-derived relaxing factor (nitric oxide) and endothelin. The chapter on endothelium-derived relaxing factor is excellent, but deals primarily with non-cerebral blood vessels. Although the title emphasizes changes in cerebral vessels in disease states, none of the chapters dealt with changes that occur during diabetes or atherosclerosis.

While the printing quality of the book is very good, the use of illustrations varies through the text. Some chapters are well-illustrated while other chapters contain no figures at all. The chapters are relatively well referenced and current until approximately 1992.

Overall, this is a very good review text for studies of human cerebral blood vessels. The book provides background information related to what is currently known regarding human brain vessels and will be especially useful to those interested in neural mechanisms that regulate cerebral vascular tone.

Frank M. Faraci

University of Iowa College of Medicine

Work Related Musculoskeletal Disorders (WMSDs): A Reference Book for Prevention

Ilkka Kuorinka and Lina Forcier (Editors)

Bristol, PA: Taylor & Francis, 421 pp., illus., index, \$37.50
ISBN: 0-7484-0132-6

Rarely does one find a textbook or reference material so eloquently written and organized that it is a pleasure to read. But the new reference book on work related musculoskeletal disorders is just such a tome.

At first glance the material looks imposing, but a closer look reveals that much thought went into its preparation. We are fortunate that so much effort was expended, because the topic of WMSDs is a very important issue today. The book is a combination of several skilled and knowledgeable authors from the United States and Canada. Each author's own research is generously cited throughout the book. As mentioned in the first chapter, "The content of the book is a result of a collective effort by everyone, experts and scientific editors alike. Numerous face-to-face meetings have shaped the organization and the content of individual chapters."

The term "work related musculoskeletal disorders" comes from a World Health Organization definition. The authors chose this term because it avoids the cause and effect bias noted in many commonly used terms (e.g., repetitive strain injury, cumulative trauma disorder). The authors admit that the work related aspects of low-back pain are important, but they decided that low-back issues were adequately covered elsewhere.

Chapter 2 covers the pathogenesis of human disease and the association with WMSDs. A generic model for WMSDs is presented as a synthesis of several different models. Another section in this chapter covers the problems associat-

ed with WMSD research and the interpretation of such research. Basically, the authors describe the four major types of bias: selection; response; information measurement and detection; and confounding bias. The brief review of these terms helps the reader achieve a better appreciation for the book and its contents.

In Chapter 3, the authors outline the process for assessing work relatedness to upper-limb injury, covering the numerous upper-limb disorders in depth. A table reports the various research cited, study design, findings and comments. This format provides an extensive review of literature on each of these topics. The reader can appreciate the nuances associated with each study and begin to develop his or her own opinion regarding the data.

While Chapter 3 presents a review of the various problem areas, Chapter 4 begins to delve into actual known risk factors that have been attributed to injury. These include factors such as cold, vibration, cognitive demands and posture to name a few. This chapter looks at injury risk from the perspective of the individual, rather than the injury itself. For example, when looking at mechanical load, the authors graciously cover topics pertaining to possible mechanisms linking force to the development of the WMSD; muscle response to the load or force; and the tendon response to the load. The other salient feature of Chapter 4 is the discussion regarding the different measurements for WMSDs. The authors briefly review concepts related to exposure, dose, acute response and effect, information which is valuable when the authors begin to review the various tools for assessing WMSDs in a later chapter.

The remaining chapters cover a variety of topics ranging from surveillance to medical management. The reader is given the chance to review information regarding passive and active surveillance systems and the impact on WMSD assessment. Passive surveillance utilizes records and information already collected for other purposes, whereas active surveillance is directed at a specific problem. Besides the clinical and research aspect of WMSDs, the authors present interesting information regarding organizational psychology and the social structure of the work environment.

The last two chapters direct attention to training requirements and medical management. The benefits derived from training programs are well presented with a five-step method suggested for achieving worker compliance and success. Noting that "medical management can mean different things to different professionals in different countries," the authors provide an overview of what can be deemed the minimal level of medical management for WMSDs. The text ends with very instructive appendices on terminology and definitions.

In summary, the organization and content of the book is an excellent primer for work related musculoskeletal disorder information management and assessment. Besides serving as an excellent reference source for health professionals, I believe that this book has great promise as a classroom textbook as well.

Robert L. Hesslink

Books Received

- Brain and Memory: Modulation and Mediation of Neuroplasticity.* James L. McGaugh, Norman M. Weinberger, and Gary Lynch (Editors). New York, NY: Oxford University Press, 1995, 350 pp., index, \$75.00. ISBN: 0-19-508294-X.
- Exercise and Intracellular Regulation of Cardiac and Skeletal Muscle.* Michael I. Kalinski, Alexander Ye. Antipenko, Christopher C. Dunbar, and Donald W. Michielli. HK Sport Science Monograph Series, Vol. 7. Champaign, IL: Human Kinetics, 1995, 82 pp., illus., \$27.95. ISBN: 0-87322-725-5
- Forrest Canopies.* Margaret D. Lowman and Nalini M. Nadkarni (Editors). New York, NY: Academic Press, 1995, 625 pp., index, \$69.95. ISBN: 0-12-457650-8.
- GenEthics: Technological Intervention in Human Reproduction as a Philosophical Problem.* Kurt Bayertz. New York, NY: Cambridge University Press, 1995, 342 pp., index, \$64.95. Translated from the German by Sarah L. Kirby. ISBN: 0-521-41693-0.
- Hepatobiliary and Pancreatic Disease: The Team Approach to Management.* Henry A. Pitt, David L. Carr-Locke, and Joseph T. Ferrucci. Boston, MA: Little, Brown and Company, 1995, 493 pp., index, \$99.95. ISBN: 0-316-70915-8.
- Higher-Order Processing in the Visual System.* Ciba Foundation. Ciba Foundation Symposium 184. New York, NY: John Wiley & Sons, 1994, 347 pp., index, \$76.00. ISBN: 0-471-94412-2.
- In Vitro Toxicity Testing Protocols.* Sheila O'Hare and Chris K. Atterwill (Editors). Methods in Molecular Biology, Vol. 43. John M. Walker (Series Editor). Totowa, NJ: Humana Press, 1995, 352 pp., illus., index, \$69.50. ISBN: 0-896-03282-5.
- Neural Control of Movement.* William R. Ferrell and Uwe Proske (Editors). New York, NY: Plenum Publishing Corporation, 1995, 311 pp., illus., index, \$89.50. ISBN: 0-306-45016-X.
- The Organism.* Kurt Goldstein. Cambridge, MA: The MIT Press, 1995, 422 pp., index, \$26.95. ISBN: 0-942299-96-5.
- Patch-Clamp Applications and Protocols.* Alan A. Boulton, Glen B. Baker, and Wolfgang Walz (Editors). Neuromethods 26. Alan A. Boulton and Glen B. Baker (Program Editors). Totowa, NJ: The Humana Press, 1995, 336 pp., illus., index, \$89.50. ISBN: 0-89603-311-2.
- The Physiology and Biochemistry of Prokaryotes.* David White. New York, NY: Oxford University Press, 1995, 378 pp., illus., index, \$45.00. ISBN: 0-19-508439-X.
- Research Proposals: A Guide to Success.* Second Edition. Thomas E. Ogden and Israel A. Goldberg. New York, NY: Raven Press, 1995, 462 pp., illus., index, \$49.00. ISBN: 0-7817-0313-1.
- Visual Stress.* Arnold J. Wilkins. Oxford Psychology Series, No. 24. New York, NY: Oxford University Press, 1995, 194 pp., illus., index, \$55.00. ISBN: 0-19-852174-X.
- Work and Aging: A European Prospective.* Jan Snel and Roel Cremer (Editors). Bristol, PA: Taylor & Francis, 1995, 417 pp., illus., index, \$49.50. ISBN: 0-7484-0165-2.

Revised PHS Grant Application Form Available

The Public Health Service announced in the May 26 *NIH Guide for Grants and Contracts* that a revised PHS grant application kit, PHS 398, is available. Applicants must use the new forms starting with the following dates: September 1, 1995, receipt date for AIDS applications; September 10, 1995, receipt date for NRSA Institutional Training Grant applications; October 1 and November 1, 1995, receipt dates for research grant and Research Career Award applications. Responses to requests for applications (RFAs) are to use the new form if the receipt date is September 1, 1995, or later.

According to NIH, the more important changes in the form are, "applicant organization signature certifies compliance with all applicable assurances and certifications in the application; other support has been redefined and a format and sample is provided; several personnel items have been deleted for new applications; instructions have been

expanded to accommodate all research career (K) awards."

Copies of the revised PHS 398 are available by contacting:

Administrative Services Office
Division of Research Grants
National Institutes of Health
6701 Rockledge Drive MSC 7760
Bethesda, MD 20892-7760
e-mail: amrg@drgeo.drg.nih.gov

When requesting copies, provide a complete mailing address, the number of copies requested, and an e-mail address or telephone number. NIH is expected to announce shortly that the revised form will be available via the NIH's World Wide Web server.

FASEB Report Now Available

The Life Sciences Research Office of FASEB has completed a report entitled "The Evaluation of the Human Health Aspects of Using 25-Hydroxyvitamin D3 as a Broiler Poultry Feed Ingredient."

The report was prepared for Amoco BioProducts Corporation by an ad hoc expert panel convened by FASEB. The expert panel examined data on the process of synthesis and product specifications as well as potential human exposures and possible biological effects in humans consuming meat from broiler chickens raised on feed containing 25-hydroxyvitamin D3. Based on the data available, the expert panel concluded that the scientific information supported a Generally Recognized As Safe (GRAS) classification of 25-hydroxyvitamin D3 when supplied as a source of vitamin D activity in broiler feed at the intended level of use (68.8 mg per kg of feed).

The report is available at a cost of \$55.00 prepaid from the FASEB Special Publications Office, 9650 Rockville Pike, Bethesda, MD 20814-3998, (301) 530-7027. Maryland residents need to add 5% sales tax to the cost of the report.

Future APS Meetings

1995

APS Conference: New Discoveries within the Pancreatic Polypeptide Family: Molecules to Medicine

Nov. 8-11, Newport Beach, CA

1996

Experimental Biology '96

April 14-17, Washington, DC

APS Conference: pHysiology of Acid-Base Regulation: From Molecules to Humans
July (date TBA), Colorado/Rocky Mountain area

APS Conference: Neural Control of Breathing: Molecular to Organismal Perspectives
July (date TBA), Madison, Wisconsin

APS Intersociety Meeting: The Integrative Biology of Exercise
October 16-19, Vancouver, British Columbia

1997

Experimental Biology '97

April 6-10, New Orleans, LA

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Scientific Meetings and Congresses

Inflammation '95: World Congress on Inflammation, September 17-22, 1995, Brighton, UK. *Information*: Kay Dorelli, Inflammation '95, Triangle House, Broomhill Rd., London SW18 4HX, UK. Tel: 81-877-9920; fax: 81-877-9308.

Targeting of Novel Therapeutics to the Liver and GI Tract, September 21-22, 1995, Bethesda, MD. *Information*: The Digestive Diseases Interagency Coordinating Committee Office, 11426 Rockville Pike, Suite 410, Rockville, MD 20852. Tel: 301-594-5168; fax: 301-594-1171.

Second Symposium on Applied Physiology of the Peripheral Circulation. The Pulmonary Circulation: Moving From Passive to Active Control, September 22-23, 1995, Barcelona, Spain. *Information*: Michael R. Pinsky, MD, Organizing Committee, Department of Anesthesiology and Critical Care Medicine, University of Pittsburgh, 604 Scaife Hall, Pittsburgh, PA 15261. Tel: 412-647-5387; fax: 412-647-8060; e-mail: pinsky@smtp.anes.upmc.edu.

Regulation of Oxidative Metabolism and Blood Flow in Skeletal Muscle: Physiological, Biophysical, Biochemical, and Molecular Aspects, September 28-30, 1995, Indianapolis, IN. *Information*: American College of Sports Medicine. Tel: 317-637-9200; fax: 317-634-7817.

Biomedical Engineering Society 1995 Annual Fall Meeting, October 6-9, 1995, Boston, MA. *Information*: Kate Straus, BMES Fall Meeting 1995, 45 Avon Rd., Wellesley, MA 02181. Tel/fax: 617-237-2277; e-mail: bmes95@aol.com.

Transcriptional Activation in Response to Cytokines and Growth Factors, October 6-9, 1995, Keystone, CO. *Information*: American Society for Biochemistry and Molecular Biology, 9650 Rockville Pike, Bethesda, MD 20814. Tel: 301-530-7145; fax: 301-571-1824; e-mail: asbmb@asbmb.faseb.org.

Specificity of Growth Factor Signaling, October 13-16, 1995, Granlibakken, Lake Tahoe, CA. *Information*: American Society for Biochemistry and Molecular Biology, 9650 Rockville Pike, Bethesda, MD 20814. Tel: 301-530-7145; fax: 301-571-1824; e-mail: asbmb@asbmb.faseb.org.

The Role of Lipid Messengers in Signal Transduction Pathways, Cellular Regulation, and Disease, October 20-23, 1995, Keystone, CO. *Information*: American Society for Biochemistry and Molecular Biology, 9650 Rockville Pike, Bethesda, MD 20814. Tel: 301-530-7145; fax: 301-571-1824; e-mail: asbmb@asbmb.faseb.org.

11th Annual Meeting of the American Society for Gravitational and Space Biology, October 25-29, 1995, Crystal City, VA. *Information*: Donald R. Beem, AIBS, Special Science Programs, 730 11th Street, NW, Washington, DC 20001. Tel: 202-628-1500.

National Indonesian Physiological Society, October 26-28, 1995, Semarang, Central Java, Indonesia. *Information*: Dr. Adrianta, Dinoyo 42, Surabaya, Indonesia. Fax: 31-511585 (country code 62).

Tracer Methodology Course, October 29-November 3, 1995, Galveston, TX. *Information*: University of Texas Medical Branch, PO Box 55176, Galveston, TX 77555-5176. Tel: 409-

770-6605; fax: 409-770-6825.

International Congress on Alternative Medicine, November 19-25, 1995, LaPaz, Bolivia. *Information*: Mr. Darius Morgan, Crillon Enterprises, 1450 S. Bayshore Drive, Costa Bella Cond., Suite 815, Miami, FL 33131. Fax: 305-372-0054.

Third International Glycobiology Symposium, November 29-December 1, 1995, San Diego, CA. *Information*: Paddy Batchelder, California Separation Science Society, PO Box 370, Pleasanton, CA 94566. Tel: 510-426-9601; fax: 510-484-3024.

Fourth National Symposium on Biosafety: Working Safely With Research Animals, January 27-31, 1996, Atlanta, GA. *Information*: Fourth National Symposium on Biosafety, c/o Exposition and Meeting Concepts (EMC), PO Box 250381, Atlanta, GA 30325-0381. Tel: 404-355-4884; fax: 404-355-6765.

Medical Imaging 1996, February 10-15, 1996, Newport Beach, CA. *Information*: Society for Photo-Optical Instrumentation Engineers, P.O. Box 10, Bellingham, WA 98227-0010. Tel: 800-483-9034 or 360-676-3290; fax: 360-647-1445; e-mail: spie@spie.org.

17th Annual International Gravitational Physiology Meeting, April 14-19, 1996, Warsaw, Poland. *Information*: Professor Hilding Bjurstedt, Environmental Physiology Laboratory, Karolinska Institute, 171 77 Stockholm, Sweden. Tel: 46-8334012; fax: 46-8339702.

12th International Symposium on Flavins and Flavoproteins, June 30-July 6, 1996, Calgary, Canada. *Information*: Dr. Kenneth J. Stevenson, Department of Biological Sciences, University of Calgary, Calgary T2N 1N4, Alberta, Canada. Fax: 403-284-4184.

Bioartificial Organs: Science and Technology, July 21-26, 1996, Nashville, TN. *Information*: Barbara Hickernell, Engineering Foundation Conferences, 345 E. 47th Street, New York, NY 10017. Tel: 212-705-7836; fax: 212-705-7441; e-mail: engfnd@aol.com.

VI World Conference on Clinical Pharmacology and Therapeutics and VI Congress of the Interamerican Society for Clinical Pharmacology and Therapeutics, August 4-10, 1996, Buenos Aires, Argentina. *Information*: CPT96 and ISCPT VI, Marcelo T. de Alvear 1880, 1122 Buenos Aires, Argentina. Tel: 54-1-81-6650; fax: 54-1-814-2733.

Bernstein's Traditions in Motor Control, August 23-25, 1996, University Park, Pennsylvania. *Information*: Dr. Mark Latash, Pennsylvania State University, Biomechanics Laboratory, University Park, PA 16802. Tel: 814-863-5374, fax: 814-865-2440, e-mail: mll11@psu.edu.

Second World Congress on Alternatives and Animal Use in the Life Sciences, October 20-24, 1996, Utrecht, The Netherlands. *Information*: World Congress Alternatives 1996, FBU Congress Bureau, PO Box 80.125, 3508 TC Utrecht, The Netherlands. Tel: 31-30-53-5344/2728; fax: 31-30-53-3667; e-mail: l.donkers@pobox.ruu.nl.

*Look where APS
is going this Fall!*

☞ **Federation of European Physiological Societies**
September 9–12 – Maastricht, The Netherlands

☞ **National Association of Biology Teachers**
October 25–28 – Phoenix, AZ

☞ **American Society of Nephrology**
November 5–8 – San Diego, CA

☞ **APS Conference: New Discoveries within the
Pancreatic Polypeptide Family: Molecules to
Medicine**
November 9–11 – Newport Beach, CA

☞ **Society for Neuroscience**
November 11–16 – San Diego, CA

☞ **American Society for Cell Biology**
December 9–13 – Washington, DC

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Announcing the First APS Chapters

At the APS Council meeting in Atlanta, GA, during the EB'95 meeting, the APS Chapter Program became a reality with the official acceptance of one chapter and the provisional acceptance of a second.

The Ohio Physiological Society (OPS) became the first APS chapter. The OPS was founded in 1986 as a professional association of Ohio physiologists. It was established with the purpose of enhancing and advancing the field of physiology as a coordinated discipline consisting of the many sub-disciplines working at the molecular, cellular, and organ system levels of organization in both basic and applied areas. The current membership roster lists 95 regular and 30 student members from a variety of academic institutions and industry across Ohio and western Pennsylvania.

The second APS Chapter will be the Iowa Chapter, which has been provisionally accepted pending approval of

their bylaws. The Iowa Chapter currently is composed of 25 physiologists from around Iowa with a diverse research background in both basic and applied physiology.

The APS Chapter Program is designed to promote interdisciplinary contacts among research workers interested in the physiological sciences and education of the general public, including future physiologists. Chapters of the Society should represent a given region of the country and must consist of at least 20 regular members. As an incentive to the formation of an APS Chapter, the Council has allocated some modest start up funds and will work with the Chapter to support an APS lecturer at their annual meeting.

APS regular members interested in organizing chapters in their region should contact the APS Executive Director for information and application materials.

APS Sustaining Associate Members

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



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