



The Physiologist

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Association of Chairs of Departments of Physiology 2005 Survey Results

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The Association of Chairs of Departments of Physiology annual survey was mailed to 184 physiology departments throughout the US, Canada, and Puerto Rico. A total of 72 surveys were returned, for a response rate of 39%. This rate is lower than that of the 2003 survey (47%). Of the 72 surveys returned, there were 22 public and 50 private medical schools.

The data provide the reader with general trends of faculty, overall departmental budgets, and space available for research. As a reminder, beginning in 2004, ACDP decided not to include faculty salary information in this report. Because of the limited response rate and variability in departments responding on a year-by-year basis and the completeness of the AAMC salary data, which is more generally used, the ACDP Council decided to no longer collect or report this data. Data are still provided though on tenure, gender, and

ethnicity of faculty (Table 1). Also included in Table 1 for the first time is information on the average number of contact hours for faculty and on the type of medical physiology course being taught.

Student/trainee information is provided by ethnicity for predoctoral and postdoctoral categories, as well as predoctoral trainee completions, stipends provided, and type of support (Table 2).

Institutional information is provided in Table 3. Departmental budget information (Table 4) shows type of support, faculty salaries derived from grants along with negotiated indirect costs to the departments. Table 5 ranks responding Institutions according to their total dollars, research grant dollars, and departmental space. Space averages are presented as research, administration, teaching and other.

For an update of AAMC salary data, please see the accompanying article. ❖

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Faculty Information

Faculty Summary (n=1,616)

	Male	Female	Total
Asian/Pacific Islander	147	42	189
Black (not Hispanic)	5	3	8
Hispanic	33	14	47
Native American	0	0	0
White (not Hispanic)	834	251	1,085
Foreign National	44	23	67
Total	1,063	333	1,396

Medical Physiology Course Type

	Yes	No	Total Responded
Integrated Disciplines	36	35	71
Traditional	41	30	71
Within Traditional	47	23	70

Tenure Status in each department by degree

	Tenured	Not Tenured	Not Eligible	Total
MD	0	0	27	27
PhD	274	842	257	1,373
2 Doctorates	5	43	62	110
Other	31	8	0	39
Total	310	893	346	1,549

For your faculty, what is the average number of hours of student contact (per year) for:

	Student Type	Average (hours)	Number (inst.)
Lab Hours	Graduate	346	41
	Medical	18	41
	Other	50	21
Lectures	Graduate	167	71
	Medical	582	70
	Other	51	45
Small Group	Graduate	69	48
	Medical	35	59
	Other	21	18

Teaching Interactions

MD/DO	69
DDS	19
DVM	6
Allied Health	41
Pharmacy	16
Other Biomedical	51
Life Science	40
Bioengineering	26
Other	19

Student/Trainee Information

Student/Trainee Summary

US citizen/resident aliens

Predoctoral male	463	Postdoctoral male	167
Predoctoral female	482	Postdoctoral female	145

Foreign

Predoctoral male	229	Postdoctoral male	394
Predoctoral female	228	Postdoctoral female	258

Ethnicity of each pre- postdoctoral student/trainee

	Pre-doctoral		Postdoctoral	
	Male	Female	Male	Female
Native American	2	4	1	0
Asian/Pacific Islander	39	41	25	36
Black (not Hispanic)	22	42	10	4
Hispanic	19	26	10	9
White (not Hispanic)	381	369	121	96

US Citizen/Resident alien postdoctoral trainee completions:

	Male	Female
Native American	0	1
Asian/Pacific Islander	7	13
Black (not Hispanic)	1	3
Hispanic	2	3
White (not Hispanic)	77	86
Total	87	106

Average Annual Stipend (US \$)

	Average	Number
Postdoctoral	36,429.57	69
Pre-doctoral	21,118.97	72

Predoctoral Trainee Completions Trainees completing doctoral work during year ending 6/30/2005.

Total	
Female	128
Male	119
Total	247

Foreign National predoctoral trainee completions:

	Male	Female
African	1	0
Asian/Pacific Islander	21	12
Central/South American	4	1
European/Canadian, etc.	5	4
Middle Eastern	1	4
Other	1	0
Total	33	21

Student/Trainee Information (continued)

	<u>Number of Foreign Pre- Postdoctoral Students/Trainees</u>			
	Predoctoral		Postdoctoral	
	Male	Female	Male	Female
African	2	3	11	1
Asian/Pacific Islander	125	139	241	136
Central/South American	15	9	15	22
European/Canadian, etc.	47	50	86	75
Middle Eastern	26	15	23	14
Other	14	12	18	10
Total	229	228	394	258

	<u>Number of Foreign Pre- Postdoctoral trainees whose primary source of support is:</u>	
	Pre-doctoral	Postdoctoral
Institutional	132	31
Research Grants	327	565
Private Foundations	12	25
Home (foreign) Gov.	12	6
Other	19	11
Total	502	638

Institution Summary

Type of Institution

Private	22
Public	50
Total	72

Space Controlled by Department (n=88)

	<u>Average</u>
Research Space	18,615
Administrative Space	3,776
Teaching Space	2,749
Other Space:	3,258
Total Space	25,827

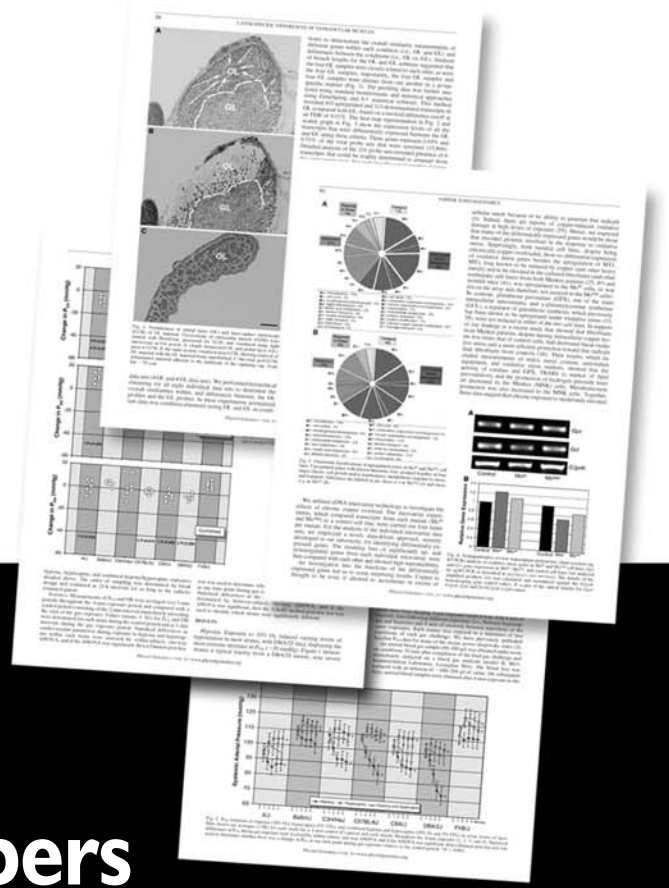
Institutional Financial Information

Budget by Institution

	<u>All</u>		<u>Private</u>		<u>Public</u>		<u>Nonmedical</u>	
	<u>Institutions</u>	<u>No.</u>	<u>Medical</u>	<u>No.</u>	<u>Medical</u>	<u>No.</u>		<u>No.</u>
Institutional (Hard money, e.g, operating costs, state allocations)	\$1,860,736	72	\$1,557,190	20	\$1,720,158	37	\$2,304,860	15
Outside Research Grants and Contracts (direct costs only)	4,922,442	72	5,997,265	20	3,330,565	37	5,439,495	15
Training Grants (direct costs only)	342,906	42	396,105	15	244,129	20	388,484	7
Endowments	252,508	34	262,913	8	402,965	18	91,646	8
Indirect Cost Recovery (amount returned to your department)	355,586	45	649,189	4	167,163	32	250,406	9
Other Budget Support (identify)	380,407	61	575,881	17	324,091	35	241,248	9
Average Departmental Budget	7,646,976		8,576,035		5,829,868		8,269,517	

Financial Information

Current fringe benefit rate most frequently used for Primary faculty	26.89	(n=75)
Federally negotiated indirect cost rate for FY 05-06 off campus	27.33	(n=58)
Federally negotiated indirect cost rate for FY 05-06 on campus	50.03	(n=72)
Percentage of allocated salary dollars directly returned to your department	71.81	(n=52)
Percentage of indirect costs returned to your department	19.13	(n=45)
Percentage of total faculty salaries derived from research grants (does not include fringe benefits costs)	36.55	(n=73)



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Complete Ranking According to Total Dollars

Rank Total Dollars	Total Dollars	Rank Research Grant Dollars	Research Grant Dollars	Rank Research Dollars/ Faculty	Research Dollars/ Faculty	Rank Total Research Space	Total Research Space	Rank Research Dollars/ sq ft	Research Dollars/ sq ft	No. of faculty
1	\$22,440,731	1	\$19,312,763	2	\$ 689,742	1	49,831	11	388	28
2	21,711,559	3	14,831,517	1	988,768	9	31,125	5	477	15
3	19,802,420	2	16,945,117	4	564,837	8	33,293	4	509	30
4	14,996,313	5	11,033,307	12	394,047	14	27,824	10	397	28
5	13,823,326	6	10,638,920	6	531,946	27	19,670	3	541	20
6	13,621,046	4	13,071,046	9	435,702	38	16,000	1	817	30
7	12,288,963	20	6,477,835	33	223,374	44	14,700	8	441	29
8	11,849,886	7	8,276,782	22	275,893	21	23,039	15	359	30
9	11,672,534	18	6,542,343	8	436,156	26	21,700	21	301	15
10	11,404,066	8	8,231,940	10	433,260	24	22,623	14	364	19
11	10,929,095	13	7,026,912	13	369,837	3	37,738	47	186	19
12	10,725,370	15	6,846,472	3	622,407	25	22,153	19	309	11
13	10,538,633	10	7,566,618	19	315,276	54	13,500	2	560	24
14	10,311,117	12	7,457,542	15	355,121	2	41,083	49	182	21
15	10,009,352	11	7,529,963	18	327,390	34	16,786	7	449	23
16	9,955,653	22	5,692,259	28	258,739	4	37,601	55	151	22
17	9,920,545	14	6,893,400	14	362,811	6	34,392	40	200	19
18	9,853,632	9	7,785,226	7	519,015	30	18,427	9	422	15
19	9,829,001	16	6,653,058	34	221,769	15	27,223	29	244	30
20	9,391,375	23	5,679,520	40	189,317	12	28,872	43	197	30
21	9,260,599	26	4,926,958	44	164,232	31	17,737	26	278	30
22	9,159,797	19	6,486,173	5	540,514	17	26,187	28	248	12
23	9,141,193	27	4,832,988	46	161,100	35	16,726	24	289	30
24	9,080,963	21	5,755,630	20	302,928	29	18,765	20	307	19
25	8,197,718	53	2,486,716	62	113,033	55	12,729	44	195	22
26	7,961,412	24	5,551,274	37	198,260	7	34,361	52	162	28
27	7,856,003	34	4,020,992	39	191,476	22	22,934	51	175	21
28	7,849,242	37	3,906,949	50	150,267	5	34,837	66	112	26
29	7,819,934	40	3,660,195	55	135,563	23	22,707	53	161	27
30	7,756,521	29	4,218,756	26	263,672	20	23,482	50	180	16
31	7,518,125	35	3,973,629	30	248,352	28	19,480	38	204	16
32	7,192,715	33	4,065,835	56	135,528	11	29,614	59	137	30
33	6,996,500	17	6,608,002	25	264,320	10	30,500	34	217	25
34	6,821,952	25	5,542,668	11	426,359	41	15,600	16	355	13
35	6,759,353	39	3,663,733	43	166,533	18	24,954	57	147	22
36	6,660,577	28	4,389,914	23	274,370	64	9,558	6	459	16
37	6,494,989	32	4,087,535	17	340,628	56	12,626	17	324	12
38	6,411,193	51	2,695,142	66	96,255	52	13,624	42	198	28
39	5,693,607	31	4,165,147	21	297,511	45	14,097	22	295	14

Rank Total Dollars	Total Dollars	Rank Research Grant Dollars	Research Grant Dollars	Rank Research Dollars/ Faculty	Research Dollars/ Faculty	Rank Total Research Space	Total Research Space	Rank Research Dollars/ sq ft	Research Dollars/ sq ft	No. of faculty
40	5,658,219	42	3,531,797	29	252,271	47	13,987	27	253	14
41	5,653,011	45	3,088,645	35	220,618	70	8,385	13	368	14
42	5,636,581	30	4,201,806	16	350,151	61	11,384	12	369	12
43	5,612,850	43	3,272,482	45	163,624	13	28,664	64	114	20
44	5,560,308	41	3,621,261	22	278,559	32	17,535	36	207	13
45	5,554,052	54	2,466,436	54	137,024	19	24,166	67	102	18
46	5,403,912	52	2,645,934	49	155,643	49	13,790	46	192	17
47	4,860,878	62	1,585,904	47	158,590	69	8,608	48	184	10
48	4,821,178	65	1,546,023	58	128,835	40	15,628	68	99	12
49	4,788,553	47	3,009,383	24	273,580	50	13,633	33	221	11
50	4,564,602	46	3,028,582	36	216,327	65	9,384	18	323	14
51	4,502,393	44	3,138,973	27	261,581	48	13,938	31	225	12
52	4,496,863	50	2,707,835	31	246,167	57	12,500	35	217	11
53	4,474,133	55	1,965,500	53	140,393	33	17,259	65	114	14
54	4,186,462	60	1,656,561	49	150,596	72	8,102	37	204	11
55	4,072,103	48	2,933,789	32	225,676	43	15,070	45	195	13
56	4,025,624	36	3,917,307	41	186,538	46	14,000	25	280	21
57	3,900,627	59	1,728,295	67	90,963	59	11,730	56	147	19
58	3,697,377	38	3,697,377	60	123,246	16	26,680	58	139	30
59	3,680,797	57	1,851,442	59	123,429	39	15,647	62	118	15
60	3,437,108	67	1,308,724	69	81,795	42	15,511	72	84	16
61	3,420,249	49	2,724,200	38	194,586	66	9,368	23	291	14
62	3,205,998	64	1,550,118	57	129,177	36	16,500	69	94	12
63	3,164,292	63	1,562,535	63	104,169	58	12,009	61	130	15
64	3,067,590	56	1,893,889	51	145,684	67	9,338	39	203	13
65	3,013,428	68	1,226,128	73	47,159	53	13,529	71	91	26
66	2,939,939	66	1,348,190	65	96,299	63	10,042	60	134	14
67	2,879,147	58	1,840,916	42	167,356	68	9,242	41	199	11
68	2,822,066	61	1,596,000	52	145,091	51	13,629	63	117	11
69	2,678,262	69	1,188,044	64	99,004	74	5,165	30	230	12
70	2,588,568	71	782,719	68	86,969	60	11,719	74	67	9
71	2,090,855	76	400,000	75	23,529	37	16,292	76	25	17
72	1,766,242	72	674,850	71	74,983	73	7,291	70	93	9
73	1,493,437	74	502,135	72	62,767	62	11,203	75	45	8
74	1,320,417	75	450,000	70	75,000	76	2,900	54	155	6
75	1,113,412	70	1,022,560	61	113,618	75	4,570	32	224	9
76	60,000	73	640,000	73	71,111	71	8,281	73	77	9

AAMC Medical School Faculty Compensation Survey

Each year the American Association of Medical Colleges (AAMC) surveys all the US medical schools as to faculty compensation. Because of this, the ACDP (see associated article) decided to no longer collect the same data from its members.

As a supplement to the ACDP survey, the AAMC has agreed to allow the APS to publish selected results from their survey.

Table 1 shows the regional distribution of medical schools responding to the AAMC survey in terms of public medical and private medical. Also shown is the number of physiology

departments in those regions that responded.

Summary statistics on faculty compensation in physiology departments for PhD faculty are given in Table 2. Table 3 shows the changes in salary that have occurred over the past 3 years. The summary statistics for separate regions of the country are given in Table 4.

Table 5 shows the salary comparison between PhD faculty in all basic science departments versus those in physiology departments. ♦

Table 1. Distribution of Medical Schools Responding to AAMC Medical School Faculty Compensation Survey.

		Northeast	Midwest	South	West	TOTAL
All	Private Medical	23	11	13	3	50
	Public Medical	12	20	30	13	75
Physiology	All Medical Schools	18	18	30	10	76

Table 2. Summary Statistics on Physiology Department PhD Faculty Compensation.

		25th	Median	75th	Mean	No. of Faculty
Chair	All Schools	167,000	201,000	239,000	205,700	76
	Medical Public	164,000	196,000	229,000	195,100	52
	Medical Private	181,000	220,000	283,000	229,000	24
Professor	All Schools	108,000	126,000	149,000	133,200	630
	Medical Public	107,000	122,000	144,000	130,300	427
	Medical Private	110,000	136,000	160,000	139,000	203
Assoc. Prof.	All Schools	79,000	88,000	98,000	89,600	351
	Medical Public	79,000	88,000	99,000	89,300	228
	Medical Private	79,000	89,000	97,000	90,000	123
Asst. Prof.	All Schools	60,000	72,000	83,000	72,000	377
	Medical Public	63,000	73,000	83,000	72,800	241
	Medical Private	58,000	70,000	81,000	71,000	136
Instructor	All Schools	41,000	46,000	52,000	46,800	57
	Medical Public	41,000	47,000	49,000	45,500	29
	Medical Private	42,000	46,000	52,000	48,000	28

Table 3. Change in Total Compensation for Physiology Department PhD Faculty.

2004 - 2005		2003 - 2004		2002 - 2003		% Change 2003 - 2004 to 2004 - 2005	
Mean	Median	Mean	Median	Mean	Median	Mean	Median
104,900	96,000	100,800	94,000	97,800	91,000	4.1	2.1

Mean and median values were combined for Assistant, Associate, and Professor

Table 4. Summary Statistics on Physiology Department PhD Faculty Compensation by Region.

		Northeast	Midwest	South	West
Chair	25th	191,000	184,000	144,000	195,000
	Median	211,000	200,000	178,000	224,000
	75th	243,000	247,000	229,000	254,000
	Mean	225,000	209,300	185,700	224,100
	Total faculty	18	18	30	10
Professor	25th	117,000	109,000	100,000	117,000
	Median	137,000	126,000	113,000	131,000
	75th	157,000	151,000	141,000	156,000
	Mean	141,000	135,000	122,000	143,000
	Total faculty	163	160	211	96
Assoc. Prof.	25th	82,000	78,000	79,000	81,000
	Median	91,000	87,000	87,000	92,000
	75th	99,000	98,000	96,000	103,000
	Mean	92,000	88,200	88,000	92,600
	Total faculty	86	103	126	36
Asst. Prof.	25th	67,000	56,000	60,000	65,000
	Median	78,000	70,000	71,000	75,000
	75th	86,000	78,000	80,000	89,000
	Mean	77,000	66,700	69,900	76,100
	Total faculty	112	98	128	42
Instructor	25th	44,000	43,000	39,000	
	Median	47,000	47,000	45,000	
	75th	51,000	52,000	50,000	
	Mean	48,000	47,900	44,500	
	Total faculty	20	14	22	1

Table 5. Salary comparison between all basic science departments and physiology departments.

		All Basic Science Depts	Physiology
Chair	25th	165,000	167,000
	Median	197,000	201,000
	75th	237,000	239,000
	Mean	202,800	205,700
	Total faculty	539	76
Professor	25th	109,000	108,000
	Median	130,000	126,000
	75th	157,000	149,000
	Mean	137,500	133,200
	Total faculty	3,958	630
Assoc. Prof.	25th	80,000	79,000
	Median	90,000	88,000
	75th	104,000	98,000
	Mean	93,400	89,600
	Total faculty	2,682	351
Asst. Prof.	25th	62,000	60,000
	Median	74,000	72,000
	75th	83,000	83,000
	Mean	73,700	72,000
	Total faculty	3,499	377
Instructor	25th	44,000	41,000
	Median	50,000	46,000
	75th	58,000	52,000
	Mean	52,400	46,800
	Total faculty	581	57

Gift Planning Opportunities

APS is pleased to invite the membership to consider including APS in their gift giving plans. In the past, the Society has received donations of land and securities, all of which have been used to launch the Society's young investigator award programs.

Many options exist if you are interested in including the APS and its Endowment Fund in your financial or estate planning. Some options include:

Immediate Gifts: Cash, gifts of appreciated securities, gifts of closely held stock, gifts of tangible

personal property, retirement assets, charitable lead trusts and gifts of real estate.

Life Income Gifts: Gift annuities, deferred payment gift annuities, charitable remainder trusts, charitable remainder unitrusts, and charitable annuity trusts.

Gifts of Insurance: Ownership of life insurance policies can be donated, or the APS can become the beneficiary of policies owned by others.

Designated Gifts: Gifts given to honor or memorialize an individual or an organization; can include

scholarships, programs, etc, which are specified for support and named for individuals.

Gifts by Will: Bequests of a percentage of estate, stated dollar amount or specific property or assets.

For more information on gift giving to APS, please contact Martin Frank, Executive Director (301-634-7118; mfrank@the-aps.org), or Robert Price, Director of Finance (301-634-7173; rprice@the-aps.org).

American Physiological Society

Strategic Plan 2006 – 2010

Introduction

The American Physiological Society (APS), the premier professional organization representing physiologists, is devoted to fostering education, scientific research, and dissemination of information in the physiological sciences. It does this through a diverse array of high quality scientific journals and other publications; its annual meeting, Experimental Biology, conducted jointly with other FASEB members; specialty conferences and meetings; awards and other incentive programs; and ongoing education programs.

Founded in 1887 with 27 members, APS today has more than 10,500 members. The Society is governed by an elected Council consisting of the President, President-elect, and Past President, plus nine Councilors. APS also offers members affiliation with a variety of sections and interest groups, created to bring members together around areas of common interest. An active committee structure addresses specific topics of importance to members. Headquartered in Bethesda, MD, on the campus of the Federation of American Societies for Experimental Biology (FASEB), APS employs approximately 70 staff.

Strategic planning is crucial for APS in today's complex and changing environment. Among the many factors influencing APS today are decreased overall financial support for research and the changing definition of physiology. In addition, there is a diminished emphasis on science education, and concern that the "pipeline" of future scientists—and in particular women and minorities—is not as robust as desired. Open access and the evolving information environment are having major impacts on scientific publishing, one of the Society's major strengths. And a changing political environment, including a perceived "anti-science" trend, is influencing funding and support for research.

As it addresses this challenging and changing environment, APS has the opportunity to build on its assets, particularly its publications, meetings, and educational programs. Its financial and organizational resources, history, and

respect position it to move forward with strength. At the same time, APS recognizes the need to address its dependence on publications revenue and the changing publishing models. It also is committed to addressing the diversity of science within physiology and to ensuring that its organization and governance reflect the interdisciplinary nature of the science and are attractive to those entering the field.

The Planning Process

APS has previously developed and implemented strategic plans, most recently in 2000. These plans have provided guidance to the Society and helped shape its operations. As APS fulfilled its existing plan and the external and internal environments changed, the Council determined that it was time to develop a new strategic plan to guide the Society for the next several years.

The focal point of the process was a strategic planning retreat held in Houston, Texas, from October 29-31, 2005. Participants included the Council, Section Representatives, members of the Long Range Planning Committee, members of the Trainee Advisory Committee, Chairs of major APS committees, and senior staff. Over the course of the retreat, the group discussed APS's current situation, including its strengths and weaknesses and significant environmental trends; evaluated and refocused its mission; agreed on strategic directions for the future; identified preliminary strategies and outcomes; and discussed the organization and governance implications of the plan. A list of retreat attendees is included in the Appendix.

Following a review of the initial draft, the Council and senior staff met again February 22-24, 2006 to further refine the plan and discuss specific actions that might be undertaken to implement it. This document integrates the results of that meeting into the plan.

Cambridge Concord Associates provided strategic planning consultation throughout the process; consultants included CCA principals Jane Fisher and Elaine Kuttner, and CCA Associate Paul Kuttner.

Mission of the American Physiological Society (APS)

APS promotes discovery, disseminates knowledge, and advances education in physiology.

In addition, APS will continue to use the tag line:

"Integrating the life sciences from molecule to organism"

Definition of Physiology

A working definition of physiology was proposed to help communicate the discipline and provide a common basis for understanding:

Physiology is the study of the function of organisms as integrated systems of molecules, cells, tissues, and organs, in health and disease.

Overarching Goal of the Strategic Plan

The overarching goal of the strategic plan is to position physiology as a central and critical biomedical discipline and strengthen its relationships with the other life sciences.

Achieving this goal will require strategic focus in advancing physiological science, supporting new scientists, increasing understanding and support of physiology, ensuring relevance to a diverse membership, and having adequate and appropriate organizational resources.

Achieving this goal is of critical importance to the future of physiology and the future of APS. The strategic directions that follow are all aimed at this repositioning of physiology at the center of biomedicine. Some of the outcomes that would indicate success in achieving this goal include:

Maintaining physiology as a separate discipline and/or department in medical schools

Increased participation of APS members on NIH study sections

Increased recognition by other organizations:

- o Increased representation of physiologists on National Board test committees
- o Increased nominations for National Academies of Science
- o Increased interaction with Liaison Committee for Medical Education and Association of Chairs of Departments of Physiology on issues relevant to physiology.

Strategic Directions, Strategies, and Potential Actions

Direction 1: APS will be the leader in advancing the life sciences that investigate biological function.

Rationale: As the life sciences evolve and the field expands to include systems biology and other new and emerging disciplines, there is a need to ensure that physiology is appropriately positioned and its central role understood. Biological function—of molecules, cells,

and organisms—is at the heart of physiology and this knowledge is critical to the broader life sciences.

As the premier society representing physiology and physiologists, APS is well positioned to provide leadership to the evolving life sciences. Building on the strengths of its programs and its long history, APS can embrace new and emerging disciplines and be a leader in redefining and advancing the field, partnering with related societies when appropriate.

APS journals and meetings are the principal ways in which the Society provides leadership in advancing the life sciences that investigate biological function. This direction has at its core the desire to make the journals and meetings the first choice for the dissemination of knowledge in physiology.

Success in advancing the field is also dependent on APS's continued ability to attract and retain members who represent the breadth and depth of the field, including emerging areas that are important for the future. Society offerings must be flexible and diverse enough to meet the needs of all who are involved in the life sciences that investigate biological function, from trainees to senior professionals.

Direction 1: Strategy 1: Build on the strength of APS journals and leverage them to have the greatest impact in the scientific community.

Make APS journals the first choice journals by increasing the selectivity of content.

Broaden the scope of APS journals by increasing the proportion of interdisciplinary articles.

Engage the editorial boards to be advocates for the journals.

Promote the idea that APS journals are the best journals for members, striving to increase the journals' impact factors and citations for our authors.

Direction 1: Strategy 2: Redesign APS meetings and conferences to enhance quality, participation, and recognition.

Broaden programs to include related disciplines such as systems biology and integrative and quantitative sciences.

Increase cross-sectional, cross-societal, and cross-disciplinary programming at EB.

Add a true plenary opening session for APS at the EB meeting with a high

APS Strategic Plan Overview

Mission of the American Physiological Society (APS)

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Strategic Directions

Direction 1: APS will be the leader in advancing the life sciences that investigate biological function.

Direction 2: APS will enhance the future of the field, ensuring that next generation physiologists are supported through all stages of their careers.

Direction 3: APS will drive understanding of and appreciation for physiology and strengthen public and private support.

Direction 4: APS will be dynamic and relevant to an increasingly diverse and global membership.

Direction 5: APS will be a mission-directed, adaptable, and fiscally sound organization.

profile speaker and recognition of accomplishments and volunteers.

Develop a strategy to increase international participation and presentation at EB and other APS meetings.

Increase utilization of the word “physiology” in promoting EB and other APS conferences.

Establish a new committee to assess and strengthen APS conferences and small meetings to better serve diverse audiences and to increase recognition of physiology.

Direction 1: Strategy 3: Develop a strategic approach to partnerships to benefit the Society and its goals and help broaden APS’s reach and audiences.

Define criteria for the creation of partnerships with other societies and a means to evaluate their success.

Increase APS’s visibility with other specialty societies, including developing bi-directional or joint meetings with other groups related to physiology.

Direction 1: Strategy 4: Create a worldwide technological resource for physiology knowledge and collaboration.

Invest in the web site to create a dynamic resource that will draw people from around the world into the Society.

Create an interactive knowledge environment/community that will support collaboration across physiology.

Direction 2 APS will enhance the future of the field, ensuring that next generation physiologists are supported through all stages of their careers.

Rationale: The field of physiology will thrive only if it can continue to

attract and retain top quality trainees and young professionals. APS is well positioned to be a leader in promoting and supporting careers in physiology. To do this, it will need to help attract more high quality, diverse researchers to the field; influence education and training at all levels; and provide encouragement and support for trainees and early career professionals.

APS sees its education role broadly, from ongoing professional education to K-12 programs. Building awareness of the field among potential scientists and sustaining interest in physiology are two major challenges that APS must address as it moves forward.

Efforts to build the pipeline may be enhanced by local outreach and involvement. Expanding the number and role of APS chapters might enhance the Society’s ability to connect with students at all levels, from K-12 through graduate school.

Over time, the goal is to see increased numbers of students in graduate programs, as well as increases in undergraduate physiology education, evidenced by more courses and curricula. In addition, success in moving in this direction should bring increases in APS membership and participation by students and early career physiologists, as well as a rising proportion of student members who convert to regular members.

Direction 2: Strategy 1: Support trainees and early career physiologists in career development and transitions to help them become successful and competitive physiologists.

Enhance award programs to ensure that they provide opportunities for physiologists at all levels.

Develop awards based on authorship.

Advocate for increased graduate student and postdoctoral stipends and benefits.

Strengthen professional skills programs online, including on the web, through podcasts and webinars, making information available 24/7.

Identify and promote traditional and non-traditional career tracks to appeal to a broad range of scientists and educators.

Enhance mentoring programs for trainees and early career physiologists. Involve faculty in physiology departments with APS programs, committees, chapters, and other leadership groups and work with them to support and engage trainees.

Encourage participation of trainees in APS committees, sections, chapters, and other leadership positions, and consider representation of the Trainee Advisory Committee on Council.

Direction 2: Strategy 2: Increase the visibility and presence of physiology in undergraduate education.

Encourage and support the creation of undergraduate physiology courses and ways to build physiology into undergraduate curriculum so that students understand the field and its potential.

Take advantage of newly developed health career programs; find ways to partner with these programs to incorporate physiology into their content.

Develop ways to engage students in physiology research early in their education, including strengthening undergraduate summer research programs.

Target undergraduate faculty as partners in developing the physiology pipeline.

Build awareness of career opportunities in physiology.



Front Row: Gregory Florant, Simon Lewis, Dale Benos, Irving Zucker; Back Row: Marsha Matyas, William Talman, Virginia Miller, Susan Gunst.



Front Row: Caroline Sussman, Catherine Fuller, David Brooks; Back Row: Peter Friedman, Curt Sigmund, Carole Liedtke, Mayer Resnick.

Provide incentives for undergraduates to attend EB.

Direction 2: Strategy 3: Continue to develop and expand K-12 outreach by strengthening member involvement in K-12 education and supporting high school teachers.

Continue support of existing programs.

Consider increasing chapter support and activities to develop local resources to participate in K-12 programs.

Develop web-based programs and other technological tools (animation, computer games, etc.) to facilitate understanding of physiology and to reach young audiences.

Direction 3: APS will drive understanding of and appreciation for physiology and strengthen public and private support.

Rationale: Closely related to Direction 1, Direction 3 focuses on the need to ensure a broad understanding of and appreciation for physiology and the work of physiologists. Public and private support includes both financial support and policy support around such issues as the use of animals in research. APS's advocacy efforts, both on its own and in partnership with FASEB and others, are key to success in this area and must be continued and strengthened.

A principal desired outcome for this direction is that physiology be recognized for its key role in biomedical research. In recent years physiology has gone from being at the center of biomedical research to being on the periphery; a recent major NIH RFA on translational medicine did not acknowledge the role of

physiology in clinical medicine, and there is no longer a physiology study section. In the post-genomic era, physiology, as the study of function, is more important than ever, but, possibly because of the increased importance, some aspects of physiology are being co-opted, contributing to an erosion of funds and support for the discipline. This direction is aimed at building recognition of the important role of physiology in biomedicine by enhancing advocacy and outreach efforts.

Other specific desired outcomes include a reduction in legislation that impedes the use of animals in research and educational settings, and increased media coverage of new physiological research from EB and other APS meetings and journals.

Concurrent with its advocacy efforts, APS will focus on building public awareness of the importance of physiology research, since awareness is so closely linked to government support. These efforts include school-based programs as well as new web-based approaches and collaborations. Ties with industry provide another means of building awareness and support and should be further developed. Finally, as noted in Direction 1, APS has the opportunity—and the obligation—to promote the value of physiology among other scientific disciplines and ensure its continued strength in the broad life sciences.

Direction 3: Strategy 1: Improve the effectiveness of APS advocacy for public policy and funding in support of physiological research.

Increase APS advocacy efforts, with an emphasis on more active involvement of Council and members on Capitol Hill.



APS President Douglas Eaton.

Develop and promote position papers on important issues such as the role of physiology in biomedical research or the importance of physiology in medical school curriculum.

Continue to work with FASEB to leverage APS's own advocacy capacity:

Strengthen APS's representation in FASEB to ensure that the Society is best able to leverage this resource; assess the best way to provide for APS representation on the FASEB Board.

Consider working with FASEB to develop a PAC in support of research policy.

Pursue other appropriate partners, using the "DC Principles" model, to help advance APS's advocacy agenda:

Partner with clinical societies and patient groups to emphasize the impact



Front Row: Pamela Carmines, Robert Price, Rudy Ortiz; Back Row: Jeff Sands, Gerald Meininger, D. Neil Granger, John Williams, Lisa Harrison-Bernard.



Front Row: Susan Barman, Kevin Kregel, William Martin; Back Row: Francis Belloni, Margaret Reich, Rob Carroll, Linda Dresser, Charles Tipton.



Front Row: Alice Ra'anan, William Galey, Thomas Lohmeier; **Back Row:** Kim Barrett, Ron Terjung, Milton Hamblin, Heather Drummond.



Front Row: Barbara Horwitz, Chahrzad Montrose, Alan Sved; **Back Row:** Paul Welling, Sean Stocker, Martin Frank, Gary Sieck, Douglas Eaton.

of funding cuts in research and eventually on health care.

Partner with groups such as the American Heart Association, the American Thoracic Society, and other disease-specific groups to lobby with them on common issues.

Develop chapter programs in support of public affairs issues in local regions.

Make the Chair of the APS Public Affairs Committee an ex-officio member of Council.

Direction 3: Strategy 2: Increase participation and representation of APS members at all levels of decision making at NIH and other funding agencies.

Develop a focused program for NIH advocacy.

Identify groups that are drafting RFAs and ensure that there is appropriate input of physiologists into the process.

Direction 3: Strategy 3: Strengthen and expand existing programs, and create new approaches to enhance public awareness of the physiological sciences.

Implement "Physiology Understanding Week."

Increase and enhance the Society's web presence, with an emphasis on user-friendly information about physiology.

Continue to support and expand K-12 education programs (see Direction 2).

Devise novel outreach materials such as games or contests for downloadable presentations by physiologists about their research, labs, etc.

Align APS with groups such as the National Network of Health Libraries and provide them with quality materials on physiology.

Direction 3: Strategy 4: Build alliances with government,

industry, and clinical sciences to promote research and education and develop policy in the physiological sciences.

Promote the value of physiology to other scientific disciplines by improving the quality of science at EB and sponsoring sessions at meetings of other disciplines.

Work with other scientific and clinical societies to advocate for supportive research policies and increased funding for biomedical research.

Consider establishing a Task Force with industry representation to develop ways to promote research and education.

Direction 4: APS will be dynamic and relevant to an increasingly diverse and global membership.

Rationale: As science becomes truly



Front Row: Patricia Molina, Angela Grippo, Linda Allen; **Back Row:** Bruce Lindsey, Ken Baldwin, Helen Raybould.



Front Row: Peter Wagner, Hannah Carey, James Hicks; **Back Row:** L. Gabriel Navar, Sue Sabur, Joey Granger, Irving Joshua.

international and barriers between and among nations are reduced, APS is becoming a more global society. At the same time, its traditional US membership is becoming more diverse, in both its research interests and its demographics. APS's continued strength depends on its ability to meet the evolving needs of its members and potential members, which will require that its membership programs and policies actively encourage a broad range of constituencies. Constituencies include those based on science, geography, career track (research, education, industry), career stage, demographics, etc.

Research to determine member needs, followed by programs that provide value to targeted constituencies, will be important moving forward. New technology offers possibilities for reaching out to new audiences and enhancing the benefits APS can provide. This direction should lead to an increase in new products and services aimed at a more diverse APS membership, as well as growing diversity in membership and enhanced participation in APS meetings and conferences.

Success in accomplishing this direction will result in a more engaged and expanded membership, both in the US and globally. Over time, there should be measurable changes in membership demographics such as racial diversity, average age, gender, and career stage. It is also expected that efforts to increase minority participation in the Society—and evaluation of the success of these efforts—will lead to increased diversity in APS leadership.

Direction 4: Strategy 1: Strengthen programs to recruit, retain, and fully engage underrepresented minorities and women in physiology and in APS.

Instruct all programs to address diversity proactively.

Develop programs to attract minority students to the field of physiology and to support their career development.

Develop programs to promote career development for women in physiology.

Evaluate the success of programs, committees, sections, and other APS entities in addressing the Society's diversity goals.

Direction 4: Strategy 2: Develop the capacity to regularly assess the needs of APS's diverse members and potential members.

Establish ongoing surveys and other tools to stay in touch with members and determine their changing needs.

Regularly conduct focus groups with potential members to explain what physiology is and what the Society can offer them.

Carry out spot surveys of potential members in related disciplines to determine what might attract them to APS.

Direction 4: Strategy 3: Utilize new technologies to enhance the appeal of, and access to, scientific meetings, publications, and programs for diverse members.

Develop web-based courses available 24/7 for people who cannot attend face-to-face meetings or who prefer this form of education.

Continue to enhance the APS web site to meet the diverse needs of members, potential members, and scientific colleagues.

Direction 4: Strategy 4: Broaden APS membership to embrace a wider variety of constituencies in the life sciences, creating new membership categories if needed.

Create a new membership category for undergraduate students, focusing on providing them with information through web access, electronic communications, Podcasts, and webinars.

Create new membership categories for allied health professionals such as nurses, physical therapists, nutritionists, and others.

Consider a form of membership for high school students and teachers.

Promote chapters within the US as vehicles for membership development.

Direction 4: Strategy 5: Develop a global discourse on physiology and support international members.

Partner with other national societies to promote the physiological sciences.

Increase emphasis on the web for international communications, including such offerings as teaching symposia at EB.

Create country-specific APS member listservs to facilitate communication among physiologists.

Develop a plan to increase international membership and enhance the participation of international members on significant committees and in APS leadership.

Direction 5: APS will be a mission-directed, adaptable, and fiscally sound organization.

Rationale: As publications models change, APS will need to continue to adapt its business model and determine the best ways in which to diversify its income streams to ensure a smooth transition. Ensuring appropriate diversification of income, as well as continued wise use of resources, will be essential as APS moves forward.

Organizational adaptability will also be important. APS's organization and governance have served it well, providing strong and experienced leadership for the Society and contributing to its success. However, the combination of a new and ambitious strategic plan, the growing diversity of members, and changes in the publications business model, make it an opportune time to look at APS's organization and governance and determine if new approaches might be more effective moving forward.

Some of the topics to consider include the role of the Council, the structure and roles of the sections, and the number, role, and composition of committees.

Direction 5: Strategy 1: Explore ways to diversify APS revenue sources, including adapting the publications model to respond to changes in the publishing and research environments.

Consider hiring a development officer to raise funds for the Society's various award programs and activities.

Identify ways to utilize the Society's web presence and offerings to develop a revenue stream for the Society.

Develop a plan to transition from a subscription based publishing model to an author pays model as required by the marketplace.

Direction 5: Strategy 2: Assess the APS governance model and approaches to ensure that the APS continues to be responsive to external trends, is able to adapt to changing needs, and does support the strategic plan.

Review the composition and role of Council and revise as necessary to meet current requirements.

Review the roles and structure of

Sections to ensure that they support the evolution of the field and the diverse interests of members and prospective members.

Review the roles and composition of committees and determine whether any new or changed committees are needed to implement the strategic plan.

Develop a plan to increase the diversity and breadth of committee

membership, including ways to involve trainees and next generation professionals.

Consider broadening the charge to the Public Affairs Committee by making the Committee the focal point for discussions of all public policy issues of concern to the Society.

Strengthen participation and engagement in APS through a focused leadership development program. ❖

October 2005 Strategic Plan Meeting Participants

Council

Douglas C. Eaton, President
D. Neil Granger, Past President
Dale J. Benos, President-Elect
Susan M. Barman, Councillor
Irving G. Joshua, Councillor
Carole M. Liedtke, Councillor
Thomas E. Lohmeier, Councillor
Helen E. Raybould, Councillor
Jeff M. Sands, Councillor
Gary C. Sieck, Councillor
Irving H. Zucker, Councillor
Robert G. Carroll, Educ. Comm. Chair
Peter D. Wagner, Finance Comm. Chair
Curt D. Sigmund, JPC Chair
Kim E. Barrett, Publications Comm. Chair
Kenneth Baldwin, SAC Chair
Barbara Horwitz, Past President
John Williams, Past President
Virginia Miller, Past member of Council
Charles Tipton, Past member of Council

Section Representatives

Gerald Meininger, Rep., CV Section
Simon Lewis, Chair, Cell & Molecular
William Martin, Chair, CNS Section
James Hicks, Chair, Comparative Physiology
Ronald Terjung, Chair, EEP Section
Alan Sved, Chair, NCAR
Pamela Carmines, Chair, Renal Section
Susan Gunst, Chair, Respiration Section
Francis Belloni, Chair, Teaching Section
Joey Granger, Chair, WEH Section

Long Range Planning Committee

L. Gabriel Navar, Chair
David Brooks
Heather Drummond
Catherine Fuller
Bruce Lindsey
Paul Welling

Trainee Advisory Committee

Caroline Sussman, Chair
Milton Hamblin
Angela Grippo
Sean Stocker
Rudy Ortiz

APS Committee Representatives

William Talman, Chair, Public Affairs
Kevin Kregel, Chair, Animal Care & Experimentation
Hannah Carey, Chair, Communications
Peter Friedman, Chair, Awards
William Galey, Chair, Career Opportunities
Patricia Molina, Chair, International Physiology
Chahrazad Montrose, Chair, Liaison w/ Industry
Lisa Harrison-Bernard, Chair, Membership
Gregory Florant, Chair, Porter Physiol. Develop.

APS Staff

Martin Frank, Executive Director
Robert Price, Director of Finance
Margaret Reich, Director of Publications
Marsha Matyas, Director of Education Programs
Linda Allen, Manager, Meetings & Membership
Alice Ra'anan, Public Affairs Officer
Sue Sabur, Marketing Manager
Mayer Resnick, Communications Officer
Linda Dresser, Executive Assistant

Cambridge Concord Associates (Planning consultants)

Jane Fisher
Elaine Kuttner
Paul Kuttner



The APS Journal LEGACY CONTENT

1898-1998 • OVER 100 YEARS OF



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THE APS JOURNAL LEGACY CONTENT is an “online package” of over 100 years of historical scientific research from the American Physiological Society’s (APS) 14 research journals. • It can be purchased separately at a one-time charge for perpetual use. This Legacy Content is **FREE** to APS Members (\$2,000 for nonmembers). • It is a separate program from the Subscription Program in that you pay once for the perpetual access to the online content from all APS journals from 1898 to 1996-1998, depending on the journal (see chart below). This content goes back to the first issue of each of the APS journals—including the *American Journal of Physiology*, first published in 1898. This legacy content can be viewed as completely searchable scanned images of the printed pages.

JOURNAL TITLE	LEGACY CONTENT DATES
<i>Journal of Applied Physiology</i>	July 1948 - Sept 1996
<i>Journal of Neurophysiology</i>	Jan 1938 - Dec 1996
<i>American Journal of Physiology (AJP)</i>	Jan 1898 - Dec 1976
<i>AJP-Cell Physiology</i>	Jan 1977 - Sept 1997
<i>AJP-Endocrinology & Metabolism</i>	Jan 1977 - Sept 1997
<i>AJP-Gastrointestinal & Liver Physiology</i>	Jan 1980 - Sept 1997
<i>AJP-Heart & Circulatory Physiology</i>	Jan 1977 - Sept 1997
<i>AJP-Lung Cellular & Molecular Physiology</i>	Aug 1989 - Sept 1997
<i>AJP-Regulatory, Integrative & Comparative Physiology</i>	Jan 1977 - Sept 1997
<i>AJP-Renal Physiology</i>	Jan 1977 - Sept 1997
<i>Advances in Physiology Education</i>	June 1989 - Nov 1997
<i>Physiological Reviews</i>	Jan 1921 - Dec 1997
<i>News in Physiological Sciences</i>	Jan 1986 - Jan 1998
<i>Physiological Genomics</i>	Not applicable because first published in 1999

Contact us for more info:
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Journals of The American Physiological Society and participants in the Washington DC Principles for Free Access to Science (www.dcpinciples.org)

PLEASE NOTE: All online content published after the end dates for the journals above is free to all 12 months after publication.



IUPS – A Retrospective

Allen W. Cowley, Jr.

President of IUPS, 2001-2005

Every four years since inception in Basel in 1889, International Congresses of Physiological Sciences have been held (interrupted only by two World Wars). Each Congress has been a unique event, reflecting the exciting new discoveries of the time and shaped by the current political and economic events surrounding the meeting. The International Congress of 2005, hosted by the United States and held in San Diego, California, was no exception. Once again, the Congress provided a unique venue for physiologists from around the world to create new and rekindle old friendships, communicate their scientific findings and ideas, and discuss ways to advance the physiological sciences globally through education and research. Undoubtedly, each of us who attended the San Diego Congress carried away our own impressions and opinions about the state of our scientific discipline and its direction at the dawn of this new millennium.

General Reflections. My own memories of this IUPS Congress are quite vivid at the moment, having been involved for several years in the planning and organizational efforts. However, details fade quickly so this memoir provides an opportunity to reflect on the joys and agonies of being involved in the creation of such an event. For those who have not participated in organizing such a meeting, this description may provide some measure of insight into the process.

When the theme of the 2005 congress, "From Genome to Function," was proposed at the US National Organizing Committee meeting in November 2001, the choice was based on the hope that our discipline would be deeply engaged in physiological genomics by the time of the meeting in 2005 and that we could showcase how our discipline was moving forward into these exciting new arenas of science in the new millennium. The first complete draft sequence of the human genome had just been published in February of that year so this was a bold theme indeed for a meeting only four years in the future.

One of the most gratifying and successful aspects of the San Diego congress was the fact that not only was the designated scientific track for physiological genomics well attended, but that the

application of genomics to physiological functions was abundantly integrated throughout a large number of the tracks and sessions. It is apparent that many within our discipline of physiology are taking the lead in relating genomes to complex areas of function, from cells to whole organisms. Physiology is reinventing itself once again, as has been done many times since the first International Congress, and incorporating biology's newest discipline to better understand the integrated function of complex systems and disease. The 2005 congress was exciting; an encouraging harbinger of a vital resurgence for physiology as a central discipline in 21st century science.

Each Congress is obviously very different and each host nation must develop its own unique resources and strategies to solve the challenges and create a special gathering with its own local flavor. All Congresses, however, have benefited from the self-less efforts of numerous physiologists within the host nation working with their colleagues around the globe to make happen what seems, at times, to be impossible. Since the IUPS is not a large professional organization with individual members and a full-time staff to plan the meeting time after time, the task falls to a largely novice group each time to a new group of scientists that together begin a four-year learning experience for the host organization. We are grateful for the continued efforts of Sue Orsoni, the Executive Director of the IUPS located in Paris, who has helped shepherd the Congress organizers for the last 20 years. Her "cooperate memory" and experience were invaluable and a great resource to the planning and execution of this Congress.

Many things went on behind the scenes as the local organizing committees interacted with the international community of scientists. It would take a book to capture these many stories and there were so many people involved in the process that it is impossible to acknowledge and thank each individually, but I do wish to thank everyone who helped in the 2005 International Congress. Many, but not all, of these names can be found in the IUPS General Program and at the IUPS website of the 2005 Congress.

The success of our Congress, however, must in the end be judged by the quality of the science that was exchanged at the talks and posters throughout the meeting. Assuring that this vital ingredient of high-quality, contemporary science is added to the meeting mix is most important and a challenging part of developing events like this. Because the physiologists involved are well-intended, generous individuals who devote many hours of their time to make it happen, this vital ingredient is brought to bear on the final structure and format of the meeting. The fact that this process works every four years and results in successful International Congresses is remarkable, and is a real tribute to the character of our scientists and their continued desire and effort to make these meetings successful.

It was this spirit of good will and cooperation among the physiologists from diverse regions of the world involved in its planning and execution that was the most gratifying part of my experience related to this meeting. Although there is considerable competition for selection of the host country, once the IUPS General Assembly has made the decision, a rapid consolidation of efforts occurs among all countries to ensure the success of the Congress.

The hosting of the IUPS International Congress in the United States came with its own special set of challenges. One of the persistent concerns was over the issue of how the IUPS International Program Committee and the US National Organizing Committee could utilize the many scientific strengths, resources, and experience available within the United States without completely dominating the Congress. Additionally, would this experiment of coupling an international Congress to the Experimental Biology meeting in San Diego dilute the focus of our IUPS event? Finally, in the early planning phases of this Congress, the United States and the world were shaken by the devastating events of September 11, 2001 in New York City. Would the meeting and travel plans be derailed by international conflicts and terrorism? How could we assure visas for our international colleagues and security for their visits?

All of these issues weighed on my

mind as plans began to form for this Congress. As the IUPS President throughout this time, I participated in nearly all of the various planning meetings. The target dates for each of our tasks were generally met, but most importantly, I came away from each with a feeling of the pride for the equanimity and the high standards of excellence that were achieved. Although I was confident that this could be a successful gathering, it needed to be demonstrated to many around the world, especially in light of the international political environment, that such an international communion of scientific colleagues could gather and advance the state-of-the-art in a collegial fashion. Based on the responses of those who attended the Congress I believe we can declare it was a success on many levels. Once a meeting is planned and the participants arrive, the success of any meeting is determined by the participants themselves. The real success of this Congress was clearly the result of the series of excellent invited lecturers and the presentation of a wide array of original science.

A remarkable spirit of internationalism prevailed throughout the entire planning process of this congress, both in the US and in the international planning committees. One of the real rewards of science is that it knows no boundaries. I am proud that so many scientists from throughout the world were able to work so effectively together. As we had worked so hard to achieve, I believe that the international body of scientists participating in this congress felt that the US Organizing Committee and the US and IUPS Program Committees achieved the highest level of science while still maintaining very strong international representation.

Behind the Scenes. One of the first things that occurred was the development of an expanded international IUPS website to serve as a central repository for the scientific ideas and recommendations that were developed within the newly-structured IUPS commissions and committees. For the first time in the planning of IUPS Congresses, this provided a rapid communication link between the various disciplines represented by the IUPS Commissions/Committees, and the US National Program Committee. In parallel, recommendations from the various Sections of the APS were emerging as part of their well-organized annual

process of programming for the Experimental Biology meetings. All of these recommendations were assessed and molded into themes and the "tracks" of the Congress.

Clearly, an important feature of the successful planning process was the overlapping and interwoven fabric of representation between the various US scientific societies and the IUPS Commissions. Despite my own concerns about potential conflict of interest with having the IUPS President residing in the host country and deeply involved with the local planning Committees, this turned out to be a great advantage for expediting communications quickly and assessing and solving problems as they arose. And since the APS played the central role in both the financial aspects and in the coordination/organization of the daily activities of the Congress, the many formal and informal communications between the leadership of the IUPS and the APS were greatly facilitated by my long working relationship with Martin Frank, Executive Director of the APS, and his marvelous staff. The US National Committee could not have been guided by a more committed and internationally knowledgeable individual than Virginia Huxley. Furthermore, a better chairman could not have been selected for the US National Organizing Committee for the congress than Shu Chien of San Diego.

Chien possessed all of the intellectual and diplomatic skills needed to bring about a successful Congress in the midst of a very unsettling national and international political environment. He worked tirelessly at every level to help plan and mediate differences of opinions ranging from the selection of the location for the meeting site (originally planned for Washington, DC in August), to both broad and detailed issues related to the social and scientific venue of the Congress. He organized and worked effectively with the local organizing committee headed by Frank Powell. In the midst of the congress, the evening dinner hosted by Shu Chien and his wonderful wife KC at their beautiful home in San Diego will long be remembered. Several buses transported the entire US National Organizing Committee, the local Organizing Committee, the IUPS Program Committee, and the leadership and the Councils of the IUPS and the APS to the Chien home, where more than 70 national and international guests spent

a wonderful evening together.

During the two years just prior to the San Diego Congress, Shu and I were in touch constantly by phone and Email as we dealt with issues large and small. They included planning and finalization of details related to travel, visa, and housing issues, the opening and closing ceremonies and their related social events, interviews with the press, response plans dealing with animal rights demonstrators, and many other details that are already beginning to fade from mind.

Walter Boron's role as Chairman of both the US and the IUPS Program Committees was undoubtedly the most strenuous of responsibilities during the final two years leading up to the Congress. His broad understanding of the physiological sciences, his unbending insistence upon scientific excellence above all else, his remarkable organizational and leadership skills, and his dogged determination to bring forth the best possible scientific venue for this congress, were at the heart of its success. This task required not only a broad grasp of the physiological sciences, but also someone who would be accepting of the many national and international "masters." Walter ultimately handled all of this with great diplomacy and without compromising the scientific excellence of the program.

Early in the planning process, it was proposed by Boron that the Congress be developed around "tracks" in which various selected topics (tracks) would be discussed throughout the congress from elementary levels to clinical applications. This suggestion was adopted and Boron relentlessly pursued this challenging task. The organizational process established by the International Program Committee of the IUPS set the overall guidelines for planning the scientific sessions. However, this international committee could affordably meet only a few times, once to formulate the general guidelines (two years prior to the meeting) and six months before the Congress to evaluate and approve the final program. In the intervening years, proposals were communicated through Emails, telephone and the IUPS website among the Commissions and Committees of the IUPS. These proposals were integrated with the APS website and the many proposals emanating from the APS sections and other adhering societies.

Herein was a great challenge, since

each of the APS sections were accustomed to having a designated number of symposia each year and their organizational process was already established. Additional steps were necessary in the final selection and planning process to integrate the APS proposals with those proposed by the IUPS. These additional layers of planning naturally slowed the process and added an element of confusion within the ranks of the APS membership and leadership. In the end, however, it was a very ecumenical process and although this organizational stage was cumbersome and required great leadership, persistence, patience, skill and finesse to move it forward, it worked. It worked because Boron and his able co-chairman, Ole Pederson, were able to work effectively with the leadership and staff of the APS.

Curt Sigmund, Chairman of the APS Program Committee and a member of the IUPS Program Committee, was deeply engaged in all of these activities. He understood completely the dynamics required to navigate among the tensions created within the APS Sections as the final control of the scientific sessions were subsumed by the International Program Committee. The interactions among Curt and Walter's international committee were sometimes difficult, but the overriding goal of excellence and the urgency of completing this task prevailed at these critical junctures and the Congress benefited enormously from

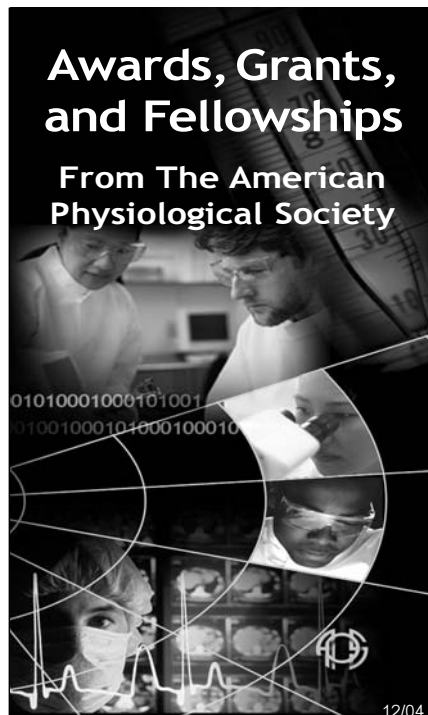
combined strength of these two individuals.

Thanks to the APS. Central to all of the planning activities for the San Diego IUPS Congress was the leadership and unflagging support of the APS. The Congress took flight under the leadership of many successive APS Presidents (Stan Schultz, Jim Schaffer, Gabriel Navar, Allen Cowley, John Williams, and Neil Granger), each of whom strongly supported the Congress and the considerable APS resources that were required to make it a success. The APS directly allocated \$175,000 and IUPS \$25,000 for travel for non-US scientists to attend the congress. It is of special note that nearly 2,000 APS members sent personal donations to help support this Congress. The IUPS is deeply appreciative of this warm and generous gesture. Throughout the years of planning, Martin Frank, the remarkable and dedicated APS Executive Director, responded in every conceivable way to enable the IUPS to benefit from his own great strengths and those of his staff. Working tirelessly, he helped turn the APS offices and experienced staff into the professional conference planners of the IUPS Congress. The contributions of Marty Frank to the success of this Congress were enormous. I have no doubt that without his continuing efforts over nearly a decade; the success that the Congress achieved could not have been accomplished.

All's well that ends well. The science was strong, the special lectures were uniformly outstanding, and the track system provided an effective structure and guide to major themes of interest. The social events were genuinely enjoyable. The original symphony composed by APS member Hector Rasgado-Flores for the closing ceremonies and performed by the San Diego Chamber Orchestra was an event that will be long remembered and appreciated.

Our Japanese colleagues are now deeply engaged in making plans for the next congress, to be held in Kyoto in 2009. Knowing how they are feeling at this point, I can only wish them well and say I am confident that it will all coalesce for them too, into a unique and memorable congress.

I believe there remains a place for these special Congresses in this busy world of cookie-cutter meetings. If the science is maintained at high levels in each area of subspecialty, these unique gatherings will continue to attract an audience. It has been a great privilege and honor to have served as President of the IUPS during these exciting times of change in the physiological sciences. I wish our new President, Akimichi Kaneko, the greatest success in carrying on the wonderful traditions of our international union. It will be a joy for me to attend the next congress with nothing to do but renew friendships and hear good science! ♦



Awards, Grants, and Fellowships From The American Physiological Society

The American Physiological Society (APS) provides leadership in the life sciences by promoting excellence and innovation in physiological research and education and by providing information to the scientific community and to the public.

The Awards, Grants, and Fellowships programs are designed to strengthen and shape the discipline through awards that support, recognize, and publicize the scholarly and research activities of APS Members.

For Full Details or Questions

...on all awards, grants and fellowships,
visit the APS web site at:

www.the-aps.org/awards

Ohio Physiological Society Meeting Held at Wright State University

The 20th annual meeting of the Ohio Physiological Society was held on October 27-28 of 2005 at Wright State University. The meeting began Thursday evening with an anniversary reception sponsored by the Department of Neuroscience, Cell Biology & Physiology, the College of Science & Mathematics and the Boonshoft School of Medicine. This anniversary celebration allowed the many out of town and local members to unwind from their busy day, renew acquaintances and meet the featured speaker.

Michele Wheatly, Dean of the College of Science & Mathematics at Wright State University, delivered the welcome address for the meeting. In her address, she told of her own experience in attending a scientific meeting early in her education and how that motivated her toward physiological research. Her message underscored the core motivation for the society's activities, namely to present recent scientific findings while continually striving to inspire student engagement in research activities. A brief history of the society was presented by Peter Lauf, the first president of OPS, recounting the spirit of the original organizers for starting the society. Several of these 22 founding members were in attendance. In particular, the OPS would serve to enhance and advance the field of physiology including all of molecular, cellular, organ and organismal as well as basic and applied disciplines of research. Lauf also provided highlights from the prior annual meetings as it has traveled to various sites around Ohio over the last 20 years.

Celia Sladek, Department of Physiology & Biophysics at the University of Colorado Health Science



Michele Wheatly delivers the welcome address for the OPS meeting.

Center, presented the featured lecture, sponsored by the American Physiological Society. Her lecture was titled, "Cardiovascular regulation of vasopressin secretion: Impact of co-released neurotransmitters and unique signaling cascades," and provided an understanding of the physiological basis for vasopressin secretion as well as recent research findings concerning the interrelationships among the intracellular signaling events. In addition to her active research program, Sladek has contributed at many levels to the activities of the American Physiological Society.

The morning session on Friday, October 28 included presentations by seven investigators from around Ohio. The first group of speakers were Phyllis A. Callahan, Miami University, Oxford, presenting, "Orphanin FQ regulation of prolactin secretion;" David D. Kline, Case Western Reserve University, Cleveland, presenting, "Homeostatic plasticity in the nucleus tractus solitarius following intermittent hypoxia;" and Kathrin L. Engisch, Wright State University, Dayton, presenting, "Get your adrenaline going: Measuring adrenaline release from single adrenal chromaffin cells." After a break the second group of speakers were, ZiJian Xie, Medical University of Ohio, Toledo, presenting, "Na/K-ATPase signalosome: The organization and its membership," J. Gary Meszaros, Northeastern Ohio Universities College of



Peter Lauf addresses the OPS meeting attendees.

Medicine, Rootstown, presenting, "Cellular determinants of cardiac remodeling: Focus on fibroblasts and myofibroblasts;" Bryan Mackenzie, University of Cincinnati, Cincinnati, presenting, "The divalent metal-ion transporter," and Candice C. Askwith, The Ohio State University, Columbus, presenting, "Acid-sensing ion channels: The connection between pH, peptides and stroke."

The afternoon poster session allowed the 70 attending members of the society to view the 30 submitted abstracts. Many of the poster abstracts were presented by undergraduate students as well as graduate students, postdoctoral fellows and faculty members from 12 colleges and universities in Ohio. The exuberant activity at the poster session was evidence of the enthusiasm of all these investigators, regardless of the point in their careers, and may have succeeded in truly inspiring students as had occurred for Wheatly and many of the rest of those in attendance.

The brief business meeting began with a thank you to the several sponsors of the meeting, from Wright State University and the APS. A thank you also was given to Norma Adragna for her many years of service as she ended her term as the treasurer for the society. Chris Gillen from Kenyon College was introduced as the president-elect and organizer of the next meeting, and he graciously invited all to come to the 2006 OPS meeting to be held on the campus of Kenyon College in Gambier Ohio on Saturday, November 4, 2006.

Dan Halm, President OPS, 2005 ❖



Poster Session at the OPS meeting.

New Regular Members

*Transferred from Student Membership

- Guy E. Alvarez***
Guidant Corp., MN
- Frances Mary Ashcroft**
Univ. of Oxford, United Kingdom
- Anthony Azakie**
Univ. of California, San Francisco
- Hari Prasada Rao Bandla**
Medical College of Wisconsin
- Andriy I. Batchinsky**
US Army Inst., Fort Sam Houston, TX
- Christoph Beglinger**
Univ. Hospital, Basel, Switzerland
- Dalle R. Bergren**
Creighton Univ., NE
- Luc Bertrand**
Univ. Catholique De Louvain, Belgium
- Rikke Birkedal**
Univ. of Manchester, United Kingdom
- Vijay Boggaram**
Univ. of Texas Health Ctr.
- Jennifer Melinda Bomberger**
Dartmouth College, Hanover, NH
- Emmanuel Bourdon**
Univ. La Reunion, France
- Yan Burelle**
Univ. of Montreal, PQ, Canada
- Hui Cai**
Johns Hopkins Univ. Sch. Med., MD
- Manuel A. Castro-Alamancos**
Drexel Univ., PA
- Wolf Hayo Castro**
Universitat Regensburg, Germany
- Christine Elaine Chapman**
Universite De Montreal, PQ, Canada
- Wei R. Chen**
Yale Univ., CT
- Jie Cheng**
Johns Hopkins Univ. Sch. Med., MD
- Magnus Cinthio**
Lund Inst. of Technology, Sweden
- J. Craig Cohen**
Stony Brook Univ., NY
- Farhad R. Danesh**
Northwestern Univ., IL
- Christophe Delclaux**
Georges Pompidou Euro. Hosp., France
- Martin G. De Vries***
Rijksuniversiteit Groningen,
The Netherlands
- Murray Esler**
Baker Medical Res. Inst., Melbourne,
Australia
- Mark Estacion**
MetroHealth Med. Ctr., OH
- Yongxin Gao**
Univ. of Florida
- Daniela Grigore**
Univ. of Mississippi Med. Ctr.
- Steven Grinspoon**
Massachusetts General Hosp.
- Norbert Hajos**
Inst. Exper. Med., Budapest, Hungary
- Lynn Kristine Hartzler***
Wright State Univ., OH
- John P. Horn**
Univ. of Pittsburgh Sch. of Med., PA
- Oksana Horyn**
Children's Hosp., Philadelphia, PA
- Kimberly Ann Huey***
Univ. of Illinois
- Govindasamy Ilangovan**
Ohio State Univ.
- Thomas J. Kelley**
Case Western Reserve Univ., OH
- Graham J. Kemp**
Univ. of Liverpool, United Kingdom
- Jonghan Kim**
Ohio St Univ.
- Bruce M. King**
Univ. of New Orleans, LA
- Ryuta Kinugasa**
Musashino Univ., Tokyo, Japan
- Sherry O. Kospser**
Univ. of Tennessee, Knoxville
- Matthew C. Kostek***
Children's Nat'l Med. Ctr., DC
- Hiroshi Kubo**
Tohoku Univ., Sendai, Japan
- Wing-Kee Lee**
Univ. Witten/Herdecke, Germany
- Pierre-Marie Lepretre**
Univ. of Evry-Val D'Essonne, France
- Piotr Liguzinski**
Jagiellonian Univ., Krakow, Poland
- Yuliang Liu**
Univ. of Alabama, Birmingham
- Ayako Makino**
Univ. of California, San Diego
- Jaleh Malakooti**
Univ. of Illinois, Chicago
- Olivia Manfrini**
Univ. of Bologna, Italy
- Lesley Marson**
Univ. of North Carolina, Chapel Hill
- Guillaume S. Masson**
CNRS, Marseille, France
- Vladimir Matchkov**
Univ. of Aarhus, Denmark
- Brandi J. Mattson**
Ecole Polytech Fed De Lausanne,
Switzerland
- Stefan Matyas**
Comenius Univ. Bratislava, Slovenia
- Dmitry N. Mayorov**
Baker Heart Res. Inst., Australia
- Christopher Mazzochi***
Univ. of California, Los Angeles
- Glenn K. McConell**
Monash Univ., Australia
- Claire E. Michaels**
Portland State Univ., OR
- Susumu Minamisawa**
Yokohama City Univ. Grad SM, Japan
- Satoshi Mohri**
Okayama Univ., Japan
- Patricia L. Morris**
Rockefeller Univ., NY
- Walter G. Olivera**
Univ. La Repub. Med. Sch., Uruguay
- Horst Onken**
Washington St. Univ.
- Hartman Osswald**
Univ. of Tuebingen, Germany
- Alexander H. Penn***
Univ. of California, San Diego
- Georgi V. Petkov**
Univ. of South Carolina, Columbia
- Consuelo Plata-Ramos**
Case Western Reserve Univ., OH
- Todd A. Ponzio**
Natl. Inst. of Health, Bethesda, MD
- Beatriz U. Ramirez**
Univ. De Santiago, Santiago, Chile
- Stacey A. Reading***
Univ. of Vermont, Burlington
- Carl L. Reiber**
Univ. of Nevada, Las Vegas
- Carmelle V. Remillard**
Univ. of California, San Diego
- Silvia C. Resta-Lenert**
Univ. of California, San Diego
- Michael Charles Riddell***
York Univ., Toronto, ON, Canada
- Robert D. Roghair**
Univ. of Iowa
- Serge J. Rossignol**
Univ. of Montreal, Canada
- Michel E. Safar**
Hopital Hotel-Dieu, Paris, France
- James M. Samet**
US EPA, Chapel Hill, NC
- Max G. Sanderford***
Tarleton State Univ., Stephenville, TX
- Julio C. Sartori-Valinotti**
Univ. of Mississippi Med. Ctr., Jackson
- Shin-ichi Sekizawa**
Univ. of California, Davis
- Kamal Sen**
Boston Univ., MA
- William C. Sessa**
Yale Univ. Sch. Med., CT
- Matthew J. Sharman***
Edith Cowan Univ., Joondalup,
Australia
- Jane Shearer***
Univ. of Calgary, Canada
- Robert S. Sherwin**
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Srinivas D. Sithu

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Peter G. Snell

Univ. of Texas Southwestern Med. Ctr.

Nair Sreejayan

Univ. of Wyoming, Laramie

Stasinos Stavrianeas

Willamette Univ., OR

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Harvard Medical Sch., MA

Edwin A. Verde

Maine Maritime Academy

Dejan Vucinic

The Salk Inst., La Jolla, CA

Hao Wang

Duke Univ. Med. Ctr., NC

Jianjie Wang*

Univ. of Missouri, Columbia

Rebecca Reiko Watson*

Univ. of California, San Diego

Xuejun Wen

Clemson Univ./Med. Univ. S. Carolina

Helen E. Wood

Inst. Exercise & Env. Med., Dallas, TX

Dong Xu

Children's Mercy Hospital,

Kansas City, MO

Kimura Yasuhiro

Mississippi State Univ.

Hong Zhu

Emory Univ., GA

New Student Members

Marcia Abbott

Univ. of Southern California

Oluseyi Agbesanya

Ladoke Akintola Univ. of TEC, Nigeria

Khalid Al Awam

King Saud Univ., Saudi Arabia

Irving Allen

Univ. of North Carolina, Chapel Hill

Jing Bai

Univ. of Iowa

Sonia Bareiss

East Carolina Univ., NC

Pavan Battiprolu

Idaho State Univ.

Eric Berglund

Vanderbilt Univ., TN

Charles Bosworth

Univ. of Alabama, Birmingham

Valdir Braga

Univ. of Sao Paulo, Brazil

Patrice Brassard

Univ. of Laval, Canada

Stephanie Busque

Yale Univ., CT

Justin Dials

Ohio State Univ.

Christina Dieli-Conwright

Univ. of Southern California

Ciprian Dospinescu

The Robert Gordon Univ., UK

Matthew Douglass

Anderson Univ., IN

Jonathan Dugas

Univ. of Cape Town, Africa

Kirsten Farrand

Univ. of Adelaide, Australia

Caitlin Filby

Monash Univ., Australia

Glenn Foster

City College of San Francisco, CA

Amit Gaggar

Univ. of Alabama, Birmingham

Cathy Graham

Wright State Univ., OH

Jeffrey Grim

Ohio Univ.

Kristin Hennessy

Univ. of Alabama, Birmingham

Matthew Hewitt

Univ. of Alabama, Birmingham

Ben Hinton

Edith Cowan Univ., Australia

Michael Hovater

Univ. of Alabama, Birmingham

Kathryn Jaques

Rutgers Univ., NJ

Ravi Jayanti

Medical College of Virginia

Andrew Joy

Dalhousie Univ. Canada

Roisin Kelley

Univ. College, Cork, Ireland

Kyle Kinnell

Western Michigan Univ.

Susan Krzysik-Walker

Pennsylvania State Univ.

Matt Larson

Univ. of Alabama, Birmingham

Tait Lawrence

Florida State Univ.

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Elsa Lee

Univ. of California

Lu Li

Vanderbilt Univ., TN

Li Liu

Univ. of Cincinnati, OH

Emily Louis

Ball State Univ., IN

Melissa Lowe Bates

Pennsylvania State Univ.

Jason Lucas

Univ. of Alabama, Birmingham

Edgar Martinez

Long Island Univ., NY

David Mayhew

Univ. of Alabama, Birmingham

Shelley Mettler

Univ. of California, Berkeley

Nathan Miller

Michigan State Univ.

Shawn Morgan

Univ. of Colorado, Boulder

Krupali Patel

Pennsylvania State Univ.

Gabriel Paulino

Univ. of California, Davis

Catherine Privat

Univ. Peruana Cayetano Heredia, Peru

Yawar Qadri

Univ. of Alabama, Birmingham

Wilton Remigio

Loma Linda Univ., CA

Jeremy Roy

Dalhousie Univ., Canada

Tadashi Saitoh

Hokkaido Univ., Japan

Swapnil Sonkusare

Univ. of Arkansas for Med. Sci.

Foula Sozo

Monash Univ., Australia

Eugene Tikh

Univ. of Massachusetts Med. School

Guermarie Velazquez

Univ. of Puerto Rico Med. Sci.

Bradley Wall

Edith Cowan Univ., Australia

Jerry Wong

Univ. of California, Irvine

Lakeshia Wright

Univ. of Alabama, Birmingham

Weihua Xu

Medical Sch. of Zhejiang Univ., China

Elham Zarrinpushneh

Univ. Catholique De Louvain, Belgium

New Affiliate Member

Carlos A. Moreno

Mayo Clinic

Recently Deceased Members

Bernard C. Abbott

South Pasadena, CA

Patrick Nicholas Colleran

Columbia, MO

Harry G. Downie

Guelph, ON Canada

Francis M. Forster

Cincinnati, OH

John K. Leach

Albuquerque, NM

Milton Mendlowitz

New York, NY

Kim E. Barrett, Chair of the Publications Committee, announces the journal's Star Reviewers of 2005. Editors were asked to select up to three editorial board members who consis-

tently provide outstanding service to the journals. Criteria for selection were editor-dependent, but included timeliness, number of MSS reviewed, consistent willingness to accept review invites.

The following is the list of Star Reviewers for 2005, by journal:



APS Star Reviewers for 2005



The American Journal of Physiology-Cell Physiology

Karl Jacobs
George Dubyak
Kathryn Meier

The American Journal of Physiology-Endocrinology and Metabolism

William Winder
Laurie Goodyear
Bettina Mittendorfer

The American Journal of Physiology-Gastrointestinal and Liver Physiology

Gianfranco Alpini
Shanthi Sitaraman
Tak Yee Aw

The American Journal of Physiology-Heart and Circulatory Physiology

Kathryn Gauthier
Marc Kaufman
Benedict Lucchesi

The American Journal of Physiology-Lung Cellular and Molecular Physiology

Hans Folkesson
Arnold Johnson
D.B. Jacoby

The American Journal of Physiology-Regulatory, Integrative and Comparative Physiology

Shaun Morrison
Jens Jordan
Nicola Montano

The American Journal of Physiology-Regulatory, Integrative and Comparative Physiology

Eleanor Lederer
Lori Birder
John Imig

Journal of Applied Physiology

Hirofumi Tanaka
William Kraemer
Wayne Mitzner

Journal of Neurophysiology

Rob Brownstone
John Kalaska
Yuri Kvanenko

Physiological Reviews

Rick Aldrich
Eduardo Rios

Advances in Physiology Education

Terrence Favero
P.K. Rangachan
Nicole Mullins

Physiological Genomics

Yan Xu
Carol Moreno Quinn
Alan Deng

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APS Submits Testimony on Funding for Federal Science Agencies

The overriding theme in Congressional efforts to shape the fiscal year (FY) 2007 budget is an effort to reduce the federal deficit by limiting all discretionary spending, including funding for biomedical and scientific research. The funding cuts this would entail have proved divisive, and the House adjourned for its Easter recess without passing a budget resolution. It is not clear whether the House will continue trying to approve a budget or proceed to the next step in the process without a formal agreement on spending. If there is a budget resolution, many fear that it will set limits on spending that will make it extremely difficult to provide increases for federal research programs. To stave off this scenario, FASEB and other advocacy organizations have been working hard with allies in Congress to build support for raising the overall budget level to allow for increases in research and other vital programs.

The first step in the budget process is to provide spending targets under broad categories such as science, health, education, and defense. The next step is for Appropriations subcommittees in both houses of Congress to set actual funding levels for the individual federal agencies. Each year, the American Physiological Society (APS) makes recommendations for funding of the federal science agencies, including the National Institutes of Health (NIH), National Science Foundation (NSF), the National Aeronautics and Space Administration (NASA) and Veterans Affairs (VA). These recommendations are developed in conjunction with other advocacy organizations including FASEB and the Ad Hoc Group for Medical Research Funding, and are submitted to Congressional appropriators in the form of written testimony.

The following are excerpts from testimony submitted to the House of Representatives Appropriations subcommittees. Links to the full text are provided. Excerpts from APS recommendations concerning VA medical research will appear in the August edition of *The Physiologist*.

NIH

"The doubling of the agency budget that took place between fiscal years

1996 and 2002 allowed the NIH to expand its efforts to address old and new challenges in biomedical science. Our nation's investment in basic, translational, and clinical research plays an important role in the continued health and prosperity of our people. Increases in NIH funding have allowed researchers to explore scientific opportunities on an unprecedented scale. However, to build on existing knowledge and explore new areas, NIH must be able to provide research support for innovative ideas. In FY 2006 the NIH budget was cut for the first time since 1970, and the administration's FY 2007 budget proposal would keep the agency at the same level. Taking inflation into account, the President's budget plan represents another budget cut that will reduce the number of research grants funded. As funding falters, the best and brightest minds will turn away from careers in medical science. If NIH cannot fund new ideas, this will not only hamper efforts to find cures, it will also discourage up and coming researchers who could become the next generation of basic and clinical scientists. **The APS urges you to make every effort to provide the NIH with a 5% funding increase so we can take advantage of more scientific opportunities that will lead to ways to alleviate the suffering and burdens of disease and strengthen the nation's scientific workforce to face future challenges.**

"NIH's task is both to cure specific diseases and to look broadly at scientific opportunities that may help us expand our understanding of biological problems that affect health. Basic research contributes to a body of knowledge whose importance will only be determined over time. Physiology, which is the study of biological function, provides the foundation for much of the translational research that turns discoveries into therapies and prevention strategies.

"In addition to supporting research, the NIH must also address workforce issues to be sure our nation's researchers are ready to meet the challenges they will face in the future. Last year the NIH announced a new program to encourage clinical and translational research at universities. The new Clinical and Translational Service Awards (CTSAs) will provide a total of \$30 million in FY 2006 to develop new research and training programs at aca-

demical institutions around the country. This will allow researchers to capitalize on knowledge generated from basic research through the development of clinical applications and treatments.

"Another example is the newly developed Genes and Environment Initiative (GEI). The GEI is a multi-institute effort to identify genetic and environmental risk factors that contribute to common diseases such as asthma, diabetes, heart disease, cancer and Alzheimer's disease. The planned research will build on the Human Genome Project and take advantage of new technologies developed in the pursuit of basic research. With its wide range of expertise, the NIH is uniquely suited to undertake broad projects such as this.

"The APS joins the Federation of American Societies for Experimental Biology (FASEB) and the Ad Hoc Group for Medical Research Funding in urging that NIH be provided with a 5% funding increase in FY 2007 to permit the agency to maintain its current wide-ranging and important research efforts. This forward-looking approach to our nation's biomedical research efforts is much to be preferred over the administration's proposal to fund the agency at last year's level, which would force the NIH to contract its research portfolio, thus leaving many important projects unfunded."

<http://www.the-aps.org/pa/action/news/fy2007funding.htm>

NSF and NASA

"Scientific research plays an important role in technological innovation and economic development and therefore is vitally important to the future of our nation. The APS applauds the proposed budget increase for NSF, and recommends implementation of the plan to provide the agency with \$6.02 billion in Fiscal Year (FY) 2007 and double its budget in the coming years. In contrast, while the proposed overall budget increase for NASA is 3.2%, the Human Systems Research and Technology (HSR&T) theme would be cut by 56%. The APS recommends the restoration of funds to basic life sciences and countermeasures research at NASA to ensure the safety of humans both on the International Space Station and in any future space endeavors.

"The basic science initiatives funded by the NSF are driven by the most fundamental principles of scientific inquiry. Although at times NSF-funded research

may seem to be exploring questions that lack immediate practical application, we have learned again and again that the relevance of the knowledge gained becomes apparent over time. The NSF provides support for approximately 20% of federally funded basic science and is the major source of support for non-medical biology research, including integrative, comparative, and evolutionary biology, as well as interdisciplinary biological research. The majority of the funding NSF provides is awarded through competitive, merit-based peer review, which ensures that the best possible projects are supported. NSF has an excellent record of accomplishment in terms of funding research endeavors that have produced results with far-reaching potential.

"NSF also supports outstanding science and math education programs, which was one of the themes in the President's State of the Union address. NSF programs enhance education at every level from elementary school through graduate school and therefore should have merited funding increases for FY 2007. Nevertheless, education programs at the NSF have suffered from recent budget cuts, and FY 2007 budget proposal similarly fails to give them the priority they deserve. The President's budget recommends shifting funding for some NSF educational programs to the Department of Education. We believe that the NSF is uniquely qualified to foster excellence in science and math education and urge that funding for these programs remain at the NSF.

"The APS urges Congress to support the important work being carried out at NSF by funding the agency at its requested level of \$6.02 billion. In addition, the APS recommends restoration of funding for education programs at NSF.

"The Human Systems Research and Technology (HSR&T) Theme within NASA was created to focus on the health and safety of humans involved in space exploration. During prolonged space flight, the physiological changes that occur due to microgravity, increased exposure to radiation, confined living quarters, and alterations in eating and sleeping patterns can lead to health problems and reduced ability to perform tasks. Given NASA's current focus on manned space exploration, it is critical that resources be devoted now to research into the health effects of prolonged space flight. NASA is the only agency whose mission includes address-

ing the biomedical challenges of manned space exploration. Moreover, this research has already produced findings with potential application to medical problems that occur in other connections.

"The APS is concerned about the proposed 56% decrease in the allocation for FY 2007, which is inconsistent with NASA's increased focus on manned space exploration. The APS joins the Federation of American Societies for Experimental Biology (FASEB) in urging both a restoration of the cut and an increase in support for peer-reviewed research into the health risks of long-term space flight and development of appropriate countermeasures.

"Investment in the basic sciences is critical to our nation's technological and economic future. The APS strongly supports federal funding for biological and biomedical research at the NSF and NASA, as it does for funding at the National Institutes of Health, another agency whose budget is in need of Congressional attention to counter the real decline in its ability to fund medical research. The APS urges you to make every effort to provide these agencies with increased funding for FY 2007." <http://www.the-aps.org/pa/action/news/fy2007funding-nasa.htm>

PETA Censured

The British Advertising Standards Authority (ASA) has censured People for the Ethical Treatment of Animals (PETA) for making misleading and unsubstantiated claims. PETA asserted in a fundraising mailer that animal research is cruel and useless because animal data are irrelevant to human health. The ASA is an independent agency in the UK that enforces honesty in advertising. Its censure of PETA came in response to a complaint raised by RDS, a pro-research group (<http://www.rds-online.org.uk>).

Upon reviewing information provided by both sides, the ASA found that PETA could not adequately prove its claims, which it had presented as facts in a leaflet. The ASA therefore found PETA in violation of the truthfulness, substantiation and denigration codes. It ordered PETA not to repeat the claims.

Investigating the PETA statement that millions of animals die each year in "painful experiments," the ASA found no proof that millions of "painful" experi-

ments were conducted. PETA also said that "animal experiments are crude and unreliable" because animal "physiologies are vastly different from humans." The ASA found this claim to be "misleading." PETA further said that researchers "continue using barbaric animal experiments out of habit and inertia" and animal research is a "grave train fuelled by millions of pounds from taxes," to which the ASA said that animal experimentation is a "regulatory requirement" and that it was unfair to insinuate researchers are motivated by profit.

None of PETA's assertions stood up to unbiased scrutiny.

Of the 70 complaints regarding animal research filed with the ASA in the last fifteen years, only seven investigations were resolved in favor of animal rights groups. In another recent case, the ASA censured Europeans for Medical Advancement for its false assertions about the science and safety of animal research. To support its claim that recent advancements in childhood leukemia were made entirely based on alternatives to animal research, the EMA cited evidence from the 1940s and 1950s as well as the treatment Gleevec. The ASA did not consider the 1940s and 1950s to be "recent" and determined that Gleevec's development involved animal research.

According to Simon Festing, executive director of RDS, the PETA decision "demonstrates how animal rights activists attempt to raise funds through deceiving the public about the medical benefits of animal research."

Wisconsin Newspaper Supports Dog Labs

Less than a week after publishing a front page story critical of the Medical College of Wisconsin's physiology dog lab, the *Milwaukee Journal Sentinel* took an editorial position in support of the labs as an educational tool.

A letter from the APS President-elect **Hannah V. Carey** and the Society Education Committee Chair, **Robert G. Carroll** appeared in the *Journal Sentinel* the same day. Their letter praised MCW's "commitment to the highest quality medical education." Making note of the dwindling number of hands-on learning experiences in physiology classes today, Carey and Carroll lauded the MCW for continuing to offer

what they called a “valuable educational experience.”

The *Journal Sentinel* editorial relied in part on the APS position statement on animals in education (<http://www.the-aps.org/pa/action/news/animalsinteaching.htm>). While acknowledging the arguments made by opponents to the lab, the editorial said that those who support the lab make “a stronger case.”

The earlier article primarily based its analysis on information from the inaccurately-named Physicians Committee for Responsible Medicine (PCRM). In reality only a small fraction of PCRM’s members are actually physicians. The group receives substantial financial support from the animal rights group PETA and consistently takes positions objecting to the use of animals in research or education.

After the original article appeared, representatives of MCW contacted the

newspaper’s editorial board and brought to their attention the resources APS has developed on the educational value of animal labs. The resulting editorial expressed the view that the animal laboratory exercise provided “the kind of firsthand experience [students] could not get by using other techniques.” The editorial also noted that cost, not usefulness, has been the primary reason many other medical schools have stopped offering dog labs.

Although the MCW dog lab is voluntary, over 90% of students consistently participate in the exercise. One student interviewed in the original article described as invaluable the opportunity to experience first hand “the force required to move blood around the body.”

Living Proof Shows How Research Impacts Lives

States United for Biomedical Research has launched a new website called “Living Proof” (<http://www.living-proof.us>) that uses personal stories to illuminate the contributions of biomedical research. The site, which is intended to reach individuals age 55 and older, was developed with support from the NIH.

The Living Proof project will also highlight the contributions of medical researchers themselves. Their stories will be posted in a “Senior Scientists’ Hall of Fame” at <http://www.living-proof.us/senior.htm>. The site already includes profiles of several scientists and has a web form that can be used to suggest the names of others whose contributions should be recognized. ♦

Communications

From Snail Venom to the Complex Flu Story, Intrepid Fellow Learns TV’s Take on the News

Kirsten Sanford
APS/AAAS 2005 Mass Media Fellow

“Snail venom,” I said innocuously to the promotions director.

“What?” he replied, his question laced with confusion.

He needed us to come up with a story for the next day’s newscast—fast. The 11:00 news had “scooped” our story about baby boomer health, and we were left with nothing for the next day. The promo department wanted to do an early “teaser” on something, so we needed a story idea on the spot, or be denied our five-minute health segment the next day.

I suggested snail venom. It was a fascinating story about the use of venom from a poisonous marine snail as an analgesic painkiller for people suffering from chronic pain, and for whom over-the-counter pain medications do little good. Unfortunately, I didn’t have a proper “pitch” prepared.

The promos guy scowled when my answer didn’t come quickly enough. I imagine his mind filled immediately with images of giant snails with big

fangs dripping with sticky poison. And, what would that kind of story have to do with health or medical issues?

“What else do you have?” he asked impatiently.

That was it. I had in one moment utterly destroyed any chance of airing a really interesting, useful piece of science. We spent about an hour working on a compelling venom pitch that could work as a quick catchy promo, but to no avail. He had made up his mind, and there was no changing it. Snail venom was out.

It was my first real lesson about working with people in television news. Up until that point I had mainly suggested ideas to my mentor, Max Gomez, and his producer, Cathy Becker, both of whom are open to hearing the ideas of an intern, and who did not require the perfect pitch. They had been the ones to pitch stories to the director, not I. So, I was blissfully unaware of the art of pitching to the real people in charge.

The people in charge of the news are

normal people, who work in a fast-paced world. They don’t necessarily have higher levels of education than anyone watching the news – and certainly not in science. Hence, they like things made simple, especially their science. They don’t care about the complexities of such issues as the bird flu, evolution, or nutrition. All they want to know is the bottom line, which is in reality what the general public wants to know.

I learned from my snail venom experience that to get to the bottom line for TV news there are two main questions a pitch needs to answer: 1) How is this new piece of information going to affect my life? And, 2) if it won’t affect my life, why should I care? In addition, the pitch needs to be concise and easy to understand. If it takes too long to explain your story idea to the news or promotions director, how on earth will it ever be simplified for the television audience?

Simplification is an aspect of television news that is irksome to the scientific

ANNOUNCING

American Physiological Society Resource Book for the Design of Animal Exercise Protocols

The American Physiological Society (APS) announces the Publication of a *Resource Book for the Design of Animal Exercise Protocols* intended for researchers, Institutional Animal Care and Use Committees (IACUCs), and those involved with research oversight. The authoring committee, which was comprised of exercise physiologists and laboratory animal veterinarians, reviewed reference material and drew upon their own experience to compile suggestions about how to design, review, and implement experimental paradigms involving animals and exercise.

The APS Resource Book is intended to promote an informed dialogue that can help researchers and their IACUCs arrive at satisfactory answers to questions about how to assure the welfare of animals in exercise research protocols.

Topics addressed in the APS Resource Book include general concerns such as selecting appropriate animal models for exercise research, study design considerations, animal stress, working with compromised animals, and the impact of surgery on exercise. (See *excerpts from the Table of Contents at the right*).

Resource Book for the Design of Animal Exercise Protocols



COMMITTEE TO DEVELOP A RESOURCE BOOK FOR
ANIMAL EXERCISE PROTOCOLS

American Physiological Society
9650 Rockville Pike
Bethesda Maryland 20814-3991

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Chapters 3, 4, and 5 include modalities such as treadmill, swimming, and exercise wheels.

In addition to some 400 citations, the book includes appendices on hind limb suspension and immobilization of rats and mice and a set of sample animal exercise protocol review scenarios.

TO ORDER: NIH's Office of Laboratory Animal Welfare (OLAW) sponsored the development of the APS Resource Book, and single copies are available free of charge from OLAW while supplies last. Contact OLAW@od.nih.gov to request a free copy.

Copies may also be purchased for \$9.50 each from the APS. To order, go to the APS website at: www.the-aps.org/store/

The PDF of the book is available online at <http://www.the-aps.org/pa/action/exercise/>



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ic mind, but necessary for the presentation of information through the television medium. The average television viewer is assumed to have the education of a sixth-grader, which makes it imperative that writing and ideas be simplified as much as possible. An entire scientific study must be boiled down to one take-home message that the viewer can apply to their life.

Sometimes stories benefit from the simplification. It makes it easy for the public to digest.

One study that we covered found that women who drink regular coffee don't necessarily have higher blood pressure, as had been implied by some previous studies. That piece of information led to the message that it's ok for women to drink coffee. There were several other important aspects to the study, like how much coffee per day, and women's age and lifestyle, but including them clouded the message. In truth, while the additional information may help scientists or medical doctors reach more accurate conclusions, in cases like the one above the public doesn't need to know everything.

However, many times simplification can lead to even more confusion, which I had the opportunity to witness firsthand.

The bird flu was a huge story during much of the time I was at WNBC-TV, the network's flagship New York City station. Unfortunately, the story broke around the same time as the public was being urged to get their annual flu vaccine. Suddenly there wasn't enough flu vaccine to go around, and that there was a shortage of the anti-viral drug Tamiflu. This confluence of similar stories caused confusion to no end within the news office. And, if the news is confused, the public will definitely be.

People in the newsroom asked our little medical unit whether the flu vaccine would keep them from catching the bird flu. Shouldn't "the flu" vaccine protect them from "the flu"? It was obvious from their questions that there was little understanding of the fact that there are



Photo credit: James Hickey

Kirsten Sanford

many different influenza viruses. Somehow that simple, important message was not getting out to the public. The use of the generic phrase "the flu" in the public zeitgeist for too many years had oversimplified the concept too much to be useful in informing people about differences between viruses.

Tamiflu created further misunderstanding since most people didn't differentiate between a vaccine and an antiviral medication. The similarity of the words leads to the assumption that they both prevent "the flu" even though they have entirely different purposes. When the reports of a Tamiflu shortage came in, people thought there wasn't enough flu vaccine. Funnily, even though the government kept saying there was plenty of vaccine, eventually there was a vaccine shortage as well.

On top of this the Associated Press newswire reported increases in bird flu deaths in other countries, which prompted news directors around the country to question whether this may become the

next pandemic. And, that was the message among all the others that stuck: The next pandemic may have struck. So, the story was covered over and over again by all the networks without enough emphasis on any of the scientific facts about the likelihood of the virus mutating. I watched as reporters in the newsroom (and probably at newsrooms across the country) created something for the public to fear.

The bird flu situation likely resulted from the fact that there is a lot of scientific uncertainty surrounding whether or not the virus will 1) mutate into a form that can be transmitted between people, and 2) if so, whether it will actually be very virulent.

Unfortunately, in this case, educated guesses and hypotheses were oversimplified, and came out sounding like facts. The example of bird flu serves to demonstrate how important accurate reporting is to public health and well-being. Perhaps a more complex message could have averted some of the public panic that resulted from the reporting. Hopefully, someday there will be a balance found where not all stories are simplified to the same degree.

If that day ever comes, it will certainly make scientists more apt to provide information to the press, and make the public more responsible for the information they receive. It seems to me that the lack of responsibility at this point allows the public to be reactionary rather than well informed. Scientists fear a reactionary public, and hate the fact that their work may be simplified to inaccuracy by the press.

This relationship between scientists, the press, and the public is an important one that can only benefit from finding new ways to improve communication between the three groups. I think that the AAAS fellowship is an important part of initiating better communication.

Sanford spent seven weeks at WNBC-TV in New York, and was asked back for "vacation cover." She is working on her doctorate at Univ. of California, Davis, and hosts a weekly radio program. ❖

Stanford Doctoral Candidate to be APS/AAAS 2006 Mass Media Fellow

At press time, AAAS announced that **Erin Cline**, a doctoral candidate in Molecular and Cellular Physiology at Stanford University, will be the APS-sponsored Mass Media Fellow for 2006.

Cline will spend about seven weeks this summer at the *Los Angeles Times*. She received her Bachelor's Degree in Biology from the Massachusetts Institute of Technology.

Postdoctoral Positions

Postdoctoral Position: We are seeking a postdoctoral scientist to study the regulation and functional activity of anion exchangers in cystic fibrosis intestinal epithelium. Mice with gene-targeted deletions of the multifunctional anion exchangers Slc26a3 (down-regulated in adenoma), Slc26a6 (chloride-formate exchanger; putative anion transporter-1) or the bicarbonate transporter Slc4a9 (anion exchanger 4) will be investigated for interactions with the cystic fibrosis transmembrane conductance regulator CFTR and the sodium-hydrogen exchanger NHE3. The successful candidate will be expected to utilize molecular, microspectrofluorimetry and electrophysiological techniques in their studies of these transporters. Salary is competitive and commensurate with experience. This position is available immediately. Applicants should have a PhD or be near completion. Send curriculum vitae, summary of research interests and names of three references to: Lane L. Clarke, DVM, PhD, Dalton Cardiovascular Research Center, University of Missouri-Columbia, 134 Research Park Dr., Columbia, MO 65211-3300. Electronic applications can be sent directly to clarkel@missouri.edu. [AA/EOE]

Postdoctoral Fellow: West Virginia University (WVU), Robert C. Byrd Health Sciences Center, Department Of Physiology. The WVU School of Medicine is seeking applications for the position of Postdoctoral Fellow in the Department of Physiology. The successful candidate will be trained by the principal investigator and other research team members to conduct research in the field of microcirculation. The experiments are conducted under the microscope involving single microvessel perfusion in anesthetized live animals. Qualifications: MD or PhD in physiology or medical sciences. Additional information regarding this position is available at our WVU Human Resources web site: <http://www.hr.wvu.edu/jobs/jb.cfm>. The position will remain open until filled, while applications received by April 28, 2006, will be given first consideration. To apply, please send a letter of application, current CV, and the names and contact information (including email addresses) for three references by Email to

phe@hsc.wvu.edu or by postal mail to: West Virginia University, Department of Physiology and Pharmacology, Attn: Ping He, PhD, PO Box 9229, Morgantown, WV 26506. [AA/EOE]

Faculty Positions

Faculty Position: Full-time faculty member in Biology, Position beginning August 2006; faculty positions at Fresno Pacific University are unranked.

Duties: teach courses such as human physiology, human anatomy, introductory biology, and other courses determined by department need and instructor expertise; mentor and advise students in the pre-health and/or biology majors; participate in scholarly, departmental and university activities; develop and lead research projects with students.

Qualifications Required: Christian commitment and lifestyle consistent with the university's standards; commitment to the university's Christian mission and Christ-centered teaching and learning; Doctorate (or nearly completed doctorate) in biology with specialization in the field of human biology; demonstrated potential for college-level teaching; ability to work harmoniously with students and faculty colleagues in a liberal arts environment; participate in and develop research projects with undergraduate students. **Desired:** demonstrated dynamic college-level teaching ability; evidence of scholarly achievement; ability to address and model the integration of Christian faith with the field of pre-health; membership in a Mennonite Brethren Church or other believers' church tradition, ethnic minority and/or female. Send a letter of introduction and a completed faculty application form downloaded from the website (<http://www.fresno.edu/dept/personnel/faculty.html>) with related documents to: Office of the Provost, Fresno Pacific University, 1717 S. Chestnut, Fresno, CA 93702; Email: fpuprov@fresno.edu; Fax: 559-453-5502. [AA/EOE]

Faculty Position: The Department of Physiology and Developmental Biology at Brigham Young University announces the availability of a permanent (continuing faculty status track) faculty position. Review of applications began April 1, 2006 and will continue until the position is filled. Applicants

should have a Doctorate degree and post-doctoral experience, with expertise and teaching capability in physiology and pathophysiology, or related areas such as anatomy, tissue biology, neuroscience, or developmental biology. Candidates must demonstrate a high potential for establishment of an externally funded research program. Send letter of application, curriculum vitae, and one-page statement of research interests and goals to Dr. R. Ward Rhees, Chair Search Committee, Department of Physiology, and Developmental Biology, Brigham Young University, Provo, UT 84602; Tel.: 801-422-2158; Fax: 801-422-0700; Email: ward_rhees@byu.edu. Additional information is available at <http://pdbio.byu.edu/positions.asp>. Preference is given to qualified members in good-standing of the affiliated church, The Church of Jesus Christ of Latter-day Saints. [AA/EOE]

Faculty Position: The Ohio State University School of Physical Activity and Educational Services is housed in the College of Education and is a community of active and dedicated educators whose interests encompass the entire human lifespan. This position represents a forward looking significant investment by the College to expand this area of study and research. The Exercise Science program includes graduate programs at both the Masters and Doctoral levels with a strong and extensive history and presently an emphasis on growth. The Exercise Science program includes an undergraduate major as well. A new state-of-the-art building is presently under construction which will house the program offices, laboratories and teaching facilities. Competitive start-up funds will be provided. We are seeking a faculty member and program leader in the area of exercise metabolism with an interest and history of research in obesity and related areas such as nutrition, diabetes, insulin resistance, and related disorders. This individual will develop/continue a sustainable line of research with extramural funding support in the general area of exercise metabolism with a specific focus on obesity, nutrition, diabetes, or insulin resistance; engage in collaborative research opportunities with faculty within Exercise Science and across the university, particularly in areas such as nutrition, physiology and medicine; teach at both the undergraduate and

graduate levels in the exercise physiology area; advise and support graduate level students (Masters and Doctoral). The successful candidate will have an earned Doctorate and postdoctoral or the equivalent, experience in Exercise Physiology or related area, a record of extramural funding and associated research based publications, demonstrated successful university teaching and graduate advising experience, and an interest in mentoring at all levels. Rank and salary are open and dependent upon qualifications and experience. The search committee will begin reviewing applications prior to March 31st, continuing until the position is filled. This position is available Autumn Quarter 2006. Send letters of application, curriculum vitae, and the names of three references to Interim Director, Donna Pastore, School of Physical Activity and Educational Services, 215 Pomerene Hall 1760 Neil Avenue, Columbus, OH 43210-1297. [EEO/AA]

Teaching Positions

Tenure-Track Position, Biology: The Pennsylvania State University, the Altoona College, invites applications for a tenure-track position in Vertebrate Physiology in the Division of Mathematics and Natural Sciences, beginning in Fall 2006. The position requires a PhD in Biology or a closely related discipline. Teaching duties will include introductory biology, mammalian anatomy for allied health students, upper-level vertebrate physiology (lecture/laboratory), and a course in his/her area of expertise. The successful candidate should contribute to our new baccalaureate program in Biology. Only 40 miles from the University Park campus, Altoona College offers the advantages of small college teaching with the readily available resources of a major research university. Applicants should present a record of evidence and potential effectiveness in teaching, research, and service. Penn State Altoona offers a competitive salary and an attractive benefits package. Applicants should send a letter of application establishing their qualifications; a current vita; a description of teaching philosophy and evidence of teaching effectiveness; a statement of research interests; transcripts (official transcripts required at

the time of an interview); and a minimum of three letters of reference. Applicants are strongly encouraged to submit their applications and accompanying materials electronically to mns-div@psu.edu in Word or PDF formats. Review of applications began the week of April 15, 2006, and will continue until the position is filled. Non-electronic inquiries, applications, and additional materials should be sent to: Chair Search Committee for Biology, Penn State Altoona, Box A-22006, 3000 Ivyside Park, Altoona, PA 16601-3760. For additional information about Penn State Altoona, please visit our web page at <http://www.aa.psu.edu>. [AA/EOE]

Assistant Professor of Biology, Physiology: The Department of Biological Sciences at Southwestern Oklahoma State University invites applications for a full-time, tenure-track position in biology at the Assistant Professor level. The position will begin 21 August 2006. The primary teaching responsibilities will be in Human Physiology, a mixed majors and non-majors course; Cell Biology; and Introductory Zoology. The ability to teach Parasitology and General Ecology is an advantage. Additional teaching load will be assigned from our general education biology course or required major courses. The primary responsibility of this position is teaching. However, we expect the candidate to establish a research program that involves undergraduates. Research lab space is available for this position. Service to the Department (advising undergraduates, committees), the University, and the community are required for promotion and tenure. The Department currently offers two degree programs: BS in Biology (155 students), and BS Ed. in Natural Science Education (17 students). We also provide a minor (31 students). Most of our majors have chosen a career in the health professions as a goal, but interest in graduate schools and research opportunities has increased recently. In the past nine years, 103 students, out of 109 who applied, were accepted into professional and graduate schools. We are extremely proud of this accomplishment and expect the successful applicant to contribute to this successful program and the future success of our students. There are currently nine faculty in the department with expertise in anatomy, agronomy,

physiology, entomology, herpetology, psychology, botany, and molecular biology. This position becomes available as a result of a physiologist retiring. Biology has been taught on this campus ever since SWOSU first offered courses in 1901. We are proud of our history, the accomplishments of our students, and the accomplishments of our faculty. We are searching for an outstanding applicant to continue this fine tradition. Complete applications will be reviewed upon receipt. To apply, submit a cover letter referencing Position 06-F024, curriculum vitae, unofficial transcripts, statement of teaching philosophy and research interests, and the names and contact information of at least three references to the Office of Human Resources, SWOSU, 100 Campus Drive, Weatherford, OK 73096-3098 or Email applications to jobs@swosu.edu. For more information contact Dr. Peter Grant, Department Chair, (580) 774-3294; Email: peter.grant@swosu.edu.

Assistant/Associate Professors: The Wayne State University (WSU) Department of Physiology invites applications for two tenure-track Assistant/Associate Professorships. We seek well-trained researchers using state of-the-art approaches in endocrinology, cardiovascular, kidney, neurophysiology, and cell and molecular physiology to complement ongoing programs. For additional details see: <http://www.med.wayne.edu/physiology/index.htm>. WSU is an exciting, dynamic, urban research environment with excellent facilities and is rated in the top third of all US research institutions. Highly competitive start-up packages and salaries will be offered. Candidates will be expected to establish extramurally funded research programs and to be active in teaching. Formal review of candidates began April 15. Applicants should attach curriculum vitae, research plan, and three letters of recommendation as PDF files to dyingst@med.wayne.edu. Wayne State University is a premier institution of higher education offering more than 350 academic programs through 14 schools and colleges to more than 34,000 students in metropolitan Detroit. [AA/EOE]

Assistant/Associate Professors: The Wayne State University (WSU) Department of Physiology invites appli-

cations for two tenure-track Assistant/Associate Professorships. We seek well-trained researchers using state-of-the-art approaches in endocrinology, cardiovascular, kidney, neurophysiology, and cell and molecular physiology to complement ongoing programs. For additional details see: <http://www.med.wayne.edu/physiology/index.htm>. WSU is an exciting, dynamic, urban research environment with excellent facilities and is rated in the top third of all US research institutions. Highly competitive start-up packages and salaries will be offered. Candidates will be expected to establish extramurally funded research programs and to be active in teaching. Formal review of candidates began April 15. Applicants should attach curriculum vitae, research plan, and three letters of recommendation as PDF files to dyingst@med.wayne.edu. Wayne State University is a premier institution of higher education offering more than 350 academic programs through 14 schools and colleges to more than 34,000 students in metropolitan Detroit. [AA/EOE]

Assistant/Associate Professor: Applied Physiology: Exercise and Chronic Disease, Arnold School of Public Health, University of South Carolina, Columbia. The University of South Carolina's Department of Exercise Science is recruiting a tenure track faculty member who will expand the unit's instructional and research capacities in the area of integrative physiology. Candidates are sought who will apply cutting-edge techniques in research on the physiologic basis of the effects of exercise on health and/or disease processes. While the research focus is open, the University of South Carolina has established cancer, health disparities, neuroscience, bioengineering, and clinical research as target areas for future research investments. The Department of Exercise Science is one of six academic departments in USC's fully accredited Arnold School of Public Health. As such, opportunities are readily available for collaboration with investigators in other public health disciplines, as well as with those in USC's School of Medicine, College of Liberal Arts, and College of Engineering. The Department of Exercise Science offers degree programs at the undergraduate (BS), masters (MS), and doctoral levels (PhD and DPT), and the unit currently serves over 575 students. The successful

candidate will show potential for excellent teaching at both undergraduate and graduate levels as well as an excellent ability to supervise graduate students at masters and doctoral levels. Title: Assistant or Associate Professor (Tenure Track); Duties: 1) conduct research; 2) solicit and receive external research grants; 3) collaborate with other faculty in development of research grant applications and performance of funded research on the physiological basis of the effects of exercise on health; 4) publish research in peer-reviewed journals; 5) teach undergraduate and graduate courses in exercise physiology; 6) mentor graduate students; 7) provide service to the home academic unit, the university, and relevant professional societies. Qualifications: 1) PhD or comparable degree in exercise science, or related discipline; 2) postdoctoral research training optional but highly recommended; 3) demonstrated success in solicitation of extramural research grants; 4) excellent record of research publications; 5) evidence of ability to be an excellent teacher; 6) demonstrated ability of effective collaboration with other researchers; 7) evidence of ability to effectively mentor graduate students. Salary: Commensurate with experience and rank. Setting: The University of South Carolina, Norman J. Arnold School of Public Health is one of 30 schools accredited by the Council on Education for Public Health. It has a mission to expand, disseminate and apply knowledge regarding prevention of disease, disability, and environmental degradation; promotion of health and well-being in diverse populations; and provision of effective, efficient and equitable health service. Detailed information on the Arnold School of Public Health is available at the following website: <http://www.sph.sc.edu/>. Applications: Submit curriculum vitae and names/contact information for three references (electronic copies preferred) to Russell R. Pate, PhD, Arnold School of Public Health, University of South Carolina, 730 Devine Street, Columbia, SC 29208. Review of applications began on May 1 and will continue until the successful candidate is identified. Contact: Barbara Kelly, Tel.: 803-777-2234, Fax: 803-777-2504; Email: bkelly@gwm.sc.edu [AA/EOE]

Assistant Professor (Reference #VPA-MEDI-2006-001): The Division of Basic

Medical Sciences in the Faculty of Medicine at Memorial University of Newfoundland invites applications for a tenure track faculty position in Physiology at the Assistant Professor level. Applicants with an MD or a PhD degree, postdoctoral training and a basic science research background in physiology will be considered. The successful candidate will have experience with curriculum design and the teaching of physiology and anatomy in an MD programme. He/She should have implemented innovative approaches to facilitate basic science learning (in areas such as cardiovascular, renal, or respiratory physiology and gross anatomy) in an integrated undergraduate medical education curriculum. The successful candidate will be expected to contribute significantly to curriculum development and medical student teaching, and to have/develop an externally funded research programme either in basic medical sciences or medical education. The Division of Basic Medical Sciences consists of 35 faculty members with research strengths in cardiovascular science, cancer research, immunology, and neuroscience. Additional information regarding the Faculty of Medicine, the Division of Basic Medical Sciences and Memorial University of Newfoundland may be found at <http://www.med.mun.ca>; <http://www.med.mun.ca/basic> and <http://www.mun.ca>. Memorial University is the largest university in Atlantic Canada. As the Province's only university, Memorial plays an integral role in the education and cultural life of Newfoundland and Labrador. Offering diverse undergraduate and graduate programmes to over 18,000 students, Memorial provides a distinctive and stimulating environment for learning in St. John's, a safe, friendly city with great historical charm, a vibrant cultural life and easy access to a wide range of outdoor activities. To apply, send your curriculum vitae, description of research and teaching interests and the names and contact information for three references to Dr. K. Mearow, Office of the Associate Dean, Division of Basic Medical Sciences, Faculty of Medicine, Memorial University of Newfoundland, St. John's, Newfoundland and Labrador, Canada A1B 3V6; Email: jblundon@mun.ca. Application review began May 1, 2006 and will continue until an appointment is made. All qualified candidates are encouraged to apply, however, Canadian citizens and perma-

ment residents will be given priority. Memorial University is committed to employment equity and encourages applications from qualified women and men, visible minorities, aboriginal people and persons with disabilities.

Assistant Professor: Faculty Position in Exercise and Nutrition Science. The University at Buffalo, State University of New York, invites applications for a tenure-track faculty position at the Assistant Professor level in the Department of Exercise and Nutrition Sciences, School of Public Health and Health Professions. The start date is negotiable. Screening of applicants will begin July 10, 2006 and continue until the position is filled. Candidates should have an earned doctorate in a discipline relevant to exercise science or nutrition. All applicants will be considered but preference will be given to candidates with research expertise in one of the following areas: physiology, metabolism, immunology, biomechanics, or nutrition as related to exercise science. Postdoctoral research experience is required. A record of outstanding achievement in research with publications in high quality journals is desired. Successful candidates will be expected to develop an independent research program, seek external funding, and contribute to teaching and service. Candidates should submit 1) a letter of application, 2) a curriculum vitae, 3) a brief statement of future research plans, and 4) the names and contact information for three references to: Dr. John X. Wilson, Chair, Department of Exercise and Nutrition Sciences, Kimball Tower, Room 405, University at Buffalo, Buffalo, NY 14214-8028; Email: jxwilson@buffalo.edu. The Department of Exercise and Nutrition Sciences is one of the academic units in the School of Public Health and Health Professions. There are well-established research programs and excellent facilities available within the School and Department. The Department employs 18 full-time faculty and offers a BS in Exercise Science, a BS/MS in Exercise Nutrition, a Dietetic Internship with Advanced (Graduate) certificate program, MS degrees in Exercise Science and Nutrition and a PhD degree in Exercise Science. The University at Buffalo is a Research I institution. With 24,000 students, it is New York's largest and most comprehensive university. The Western New York

area provides a highly livable environment rich in music, theater, and professional sports in addition to the advantages of its location on the international border with Canada. The Department of Exercise and Nutrition Sciences is interested in identifying prospective minority and women candidates and professionals with disabilities. Qualified individuals with a disability may request needed reasonable accommodation to participate in the application process. No person in whatever relationship with The State University of New York shall be subject to discrimination on the basis of age, creed, color, disability, national origin, race, religion, ethnicity, sex, sexual orientation, marital or veteran status. [AA/EOE]

Research Positions

Research Technician (#00026364): Department of Cellular & Integrative Physiology, Indiana University School of Medicine. Assist PI in carrying out experiments; separating proteins and organizing sample information and protein analysis data. Bachelor's degree in Physiology or related science. Prefer at least six months of laboratory experience. Please send resume to Dr. Frank Witzmann, Indiana University School of Medicine, Department of Cellular & Integrative physiology, 1345 W. 16th Street, L3-308, Indianapolis, IN 46202. [EEO/AA, M/F/D]

Biological Science Assistants: The US Army Research Institute of Environmental Medicine (USARIEM) in Natick, MA has multiple positions for qualified Biological Science Research Assistants. USARIEM conducts basic and applied research concerning optimization of human performance under stressful conditions and avoidance of associated medical problems. Positions require enlistment into US Army for five years with assignment at USARIEM (Boston suburb). Educational requirements are Bachelors or Masters Degrees in biology, physiology, biochemistry, microbiology, cell biology, medical laboratory technology, exercise sciences or nutrition. Applicants must have a history of high academic achievement and be highly motivated. Experience with procedures related to human, animal, tis-

sue, and molecular research is preferred. Terms of enlistment and benefits vary and may include student loan repayment (up to \$65K) or \$70K Army College Fund, enlistment bonuses, housing, medical care, and educational and professional growth opportunities. This is an outstanding opportunity for individuals interested in research related to environmental and exercise physiology, nutrition and metabolism, and molecular biology. Open positions are located in the Military Performance Division, Military Nutrition Division, Biophysics and Modeling Division and Thermal & Mountain Medicine Division. Send resume to MAJ Chad Koenig (Recruiting Process) Detachment Commander, US Army Research Institute of Environmental Medicine, Kansas Street, Natick, MA 01760-5007; Tel.: 508-233-5127; Email: USARIEM.adjutant@amedd.army.mil.

Research Technician (#00022580): Department of Cellular & Integrative Physiology, Indiana University School of Medicine. Assist PI in carrying out experiments; preparing, separating and analyzing protein samples using proteomic technologies. Includes two-dimensional electrophoresis and gel image analysis. Bachelor's degree in Physiology or related science. Prefer at least six months experience in lab experimentation and reagent preparation. Send resume to Dr. Frank Witzmann, 1345 W. 16th Street, Indianapolis, IN 46202. [AA/EOE]

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

Ads are accepted for either positions available or positions wanted under all categories. The charge is only \$75. All ads are also posted on the APS Career Opportunity Web page upon receipt for a three month period. Contact Linda Dresser (Email: ldresser@the-aps.org; Tel: 301-634-7165; Fax: 301-634-7241) for more information.

Kolapo M. Ajuwon, an Assistant Professor, has affiliated with the Department of Animal Science, Food, and Nutrition, Southern Illinois University, Carbondale, IL. Ajuwon was previously associated with the Department of Basic Medical Sciences, Purdue University, West Lafayette, IN, as a Postdoctoral Fellow.

Steven Sung-Chur An is currently an Assistant Professor, Johns Hopkins University, Bloomberg School of Public Health, Baltimore, MD. Formerly, An was a Research Associate, Physiology Program, Harvard School of Public Health, Boston, MA.

Margery Kronk Anderson has accepted the position of Director, USA Biology Olympiad, Center for Excellence in Education, McLean, VA. Anderson was previously affiliated with the Program for Administrative Science Education, Department of Pathology, Walter Reed Institute of Research, Silver Spring, MD.

David Patrick Basile, has accepted a position of Assistant Professor, Indiana University School of Medicine, Department of Physiology, Indianapolis, IN. Basile, as an Associate Professor, had been affiliated with the Department of Physiology, Medical College of Wisconsin, Milwaukee, WI.

Stephen M. Black, a Professor, joined the Medical College of Georgia, Vascular Biology Center, Augusta, GA. Black was formerly affiliated with the Biomedical and Pharmaceutical Sciences, University of Montana, Missoula, MT.

Jason Michael Blank has associated with the Department of Ecology & Evolutionary Biology, University of California, Irvine, as a Postdoctoral Employee. Prior to his present position, Blank was a Graduate Student, Department of Biological Sciences, Stanford University, Pacific Grove, CA.

Gerda E. Breitwieser accepted the position of Staff Scientist, Geisinger Clinic, Weis Center for Research, Danville, PA. Breitwieser previously held the position of Professor, Department of Biology, Syracuse University, Syracuse, NY.

Kathryn A. Brown has joined the Division of Cardiology, Emory University School of Medicine, Atlanta,

GA., as a Postdoctoral Fellow. Brown was formerly a student with the Department of Pharmacology, The University of Iowa College of Medicine, Iowa City, IA.

Frank V. Brozovich has affiliated with the Mayo Clinic as Professor, Department of Cardiovascular Diseases, Rochester, MN. Prior to his new assignment, Brozovich was Professor, Division of Cardiology, Case Western Reserve University, Cleveland, OH.

Robert Carter, III, has affiliated as an Exchange Military Physiologist, with the Centre Recherche, Service Sante Armees, Department of Human Factors, La Tronche, France. Formerly, Carter served as a Research Physiologist, Thermal and Mountain Medicine Division, US Army Research Institute of Environmental Medicine, Natick, MA.

Scott Earley is currently an Assistant Professor, Department of Biomedical Sciences, Colorado State University, Fort Collins, CO. Prior to his new position, Earley was associated with the Department of Pharmacology, University of Vermont, Burlington, VT.

Ersin Fadillioglu is currently an Associate Professor of Physiology, Hacettepe University Faculty of Medicine, Department of Physiology, Ankara, Turkey. Fadillioglu was previously associated with the Department of Physiology, Medical Faculty of Inonu University, Malatya, Turkey.

Andreas Fahlman has affiliated as a Postdoctoral Fellow with the North Pacific Universities Marine Mammal Research Consortium, University of British Columbia Marine Mammal Research Unit, Vancouver, BC, Canada. Fahlman was previously a Research and Teaching Fellow, School of Kinesiology, Simon Fraser University, Vancouver, BC, Canada.

Robert A. Fenton, an Assistant Professor, has joined the Institute of Anatomy, University of Aarhus, Denmark. Fenton had previously been a Research Fellow, Laboratory of Kidney and Electrolyte Metabolism, National Heart, Lung, and Blood Institute, Bethesda, MD.

Hideki Fujino is presently a Professor at Himeji Dokkyo University,

Department of Physical Therapy, Himeji, Japan. Fujino was previously affiliated with the Department of Physical Therapy, Suzuka University of Medical Science, Suzuka, Japan.

Eugene Vladimir Golanov, a Professor, has affiliated with the National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD. Golanov was formerly associated with the Department of Neurosurgery, University of Mississippi Medical Center, Jackson, MS.

Bradley Greger accepted the position of Assistant Professor at the University of Utah, Salt Lake City, UT. Prior to his new position, Greger was a Postdoctoral Fellow, Department of Biology, California Institute of Technology, Pasadena, CA.

Hiroshi Hayashi, Professor, is presently associated with Atami Hospital, International Health & Welfare, Department of Internal Medicine, Atami-City, Shizuoka, Japan. Prior to his new affiliation, Hayashi was Director, Yokohama Red Cross Hospital, Yokohama, Japan.

Katja Heinicke is presently a Research Associate, Presbyterian Hospital of Dallas, Institute for Exercise and Environmental Medicine Neuromuscular Center, Dallas, TX. Before her new position, Heinicke was a Visiting Scientist, Institute of Veterinary Physiology, University of Zurich, Switzerland.

Thomas C. Herzig is currently a Staff Officer, Bureau of Medicine and Surgery, Future Plans and Strategies, Washington, DC. Herzig was formerly an Executive Officer, Naval Submarine Medical Research Laboratory, Groton, CT.

Matthew Wade Hulver, is currently an Assistant Professor, Division of Human Nutrition, Food and Exercise, Virginia Tech, Blacksburg, VA. Hulver had been an Assistant Professor of Research, Division of Health and Performance Enhancement, Pennington Biomed Research Center, Baton Rouge, LA.

Nili Jin presently is a Postdoctoral Associate, Baylor College of Medicine, Department of Cell Biology, Houston, TX. Jin was formerly a student at Oklahoma

State University, Department of Physiology, Stillwater, OK.

Hisaharu Kohzuki has accepted a position with Himeji Dokyo University, Department of Physical Therapy, Himeji, Japan. Prior to his new position, Kohzuki was associated with the Department of Food Nutrition/Faculty Human Services, Okayama Gakuin University, Kurashiki, Japan.

Judy Marie Muller-Delp, as Associate Professor, has affiliated with the Center for Interdisciplinary Research in Cardiovascular Sciences, Morgantown, WV. Before her new position, Muller-Delp was an Assistant Professor, Department of Health & Kinesiology, College Station, Province, TX.

Frank Park has joined the Department of Medicine, Medical College of Wisconsin, Milwaukee, WI as an Associate Professor. Park was formerly Assistant Professor, Department of Medicine, Louisiana State University Health Sciences Center, New Orleans, LA.

Hemal H. Patel, a Project Scientist, has joined the Department of Anesthesiology, VA San Diego Healthcare System, University of

California, San Diego, CA. Patel had been affiliated with the Department of Pharmacology, University of California, San Diego, as a Postdoctoral Fellow.

M. Ian Phillips is currently Research Professor, Chair Emeritus, Keck Graduate Institute, Claremont, CA. Phillips was formerly Professor Emeritus and Vice President Research, Department of Physiology, University of South Florida, Tampa, FL.

Robit Ramchandra has joined the Howard Florey Institute, C/O University of Melbourne, Victoria, Melbourne, Australia. Prior to his new position, Ramchandra was associated with the Department of Physiology, University of Auckland, New Zealand.

Rosemarie G. Ramos has affiliated with the National Institute of Environmental Health Sciences, Division of Intramural Research, Research Triangle Park, NC. Formerly, Ramos was associated with the Division of Environmental and Occupational Health, University of Pittsburgh School of Public Health, Pittsburgh, PA.

Carol D. Rodgers is now Associate Professor, University of Saskatchewan,

College of Kinesiology, Saskatoon, Canada. Rogers was previously affiliated with the Department of Physical Education & Health, University of Toronto, Canada.

Rashmin C. Savani joined the Department of Pediatrics, University Texas Southwestern at Dallas, TX. Formerly, Savani was affiliated with the Department of Neonatology-PEDS, Children's Hospital, Philadelphia, PA.

Dean O. Smith accepted the position of Vice President for Research, Texas Tech University, Lubbock, TX. Prior to his new position, Smith was Professor, School of Ocean & Earth Sciences & Technology, University of Hawaii, Honolulu, HI.

Daniel Wolpert is presently Professor, Department of Engineering, University of Cambridge, United Kingdom. Wolpert was formerly Professor, Institute of Neurology, Department of Motor Neuroscience, London, United Kingdom.

Physiology in Perspective

Walter B. Cannon Memorial Lecture

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

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

Bowditch Award Lecture

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

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

Letter to Charles Tipton

Robert M. Weiss writes: "At the present, I am Professor and Chief of Urology at the Yale University School of Medicine and President of the Medical Staff at the Yale-New Haven Hospital. My laboratory continues to be interested in signal transductions and smooth muscle, although most of our recent work deals with the relationship between an anti apoptotic gene survivin and bladder cancer. We also have interest in the effects of diabetes and urinary tract smooth muscle and signal transduction in inflammatory conditions involving the urinary tract. Our laboratory was the first to describe the use of survivin in the urine as a marker for recurrent bladder cancer and we published in the JCI the first indication of iNOS in human inflammatory cells."

Letters to Beverly Bishop

Newman L. Stephens writes: "Thank you for your greetings and your thoughtfulness.

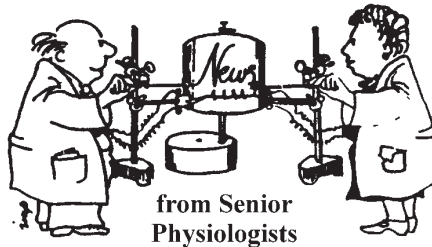
"Currently, I am working as a full-time Professor in the Department of Physiology. This includes medical undergraduate and graduate basic science teaching. I have 2 PhD students, 1 MSc, and 1 research associate under my supervision. Funding for my research continues from Canadian federal (Canadian Institutes for Health Research) and American sources in the amount of \$300,000 per annum.

"I continue to publish, as you may see from the attached CV. We have three papers submitted and under editorial consideration as of now.

"I am organizing an international symposium on 'Asthma: Chronic Inflammation, remodeling and Hyperreactivity.' This will be held in Antigua (The Caribbean's) in November this year. I held an international symposium on 'Models of Smooth Muscle Contraction' last year at Hecla Lodge, Manitoba. The proceedings were published in the *Canadian Journal of Physiology and Pharmacology (CJPP)*.

"More to the kindness of friends than to any great brilliance on my part, I was given the Rhodarte Merit Award for contributions to science at the recent meeting of the American Thoracic Society. I was also given an award from the International Academy of Cardiovascular Sciences, and the Frein Research Award in Australia.

"With respect to words of wisdom for younger colleagues I would say 'do what-



ever turns you on, don't settle for the expedient or anything whose end result is material returns.' There are two qualities which I regard as the greatest for scientists. One is wisdom which is distilled from knowledge, and the other is compassion. Strangely enough these have accrued from studies in Tibetan spiritualism and a layman's approach to quantum physics."

Vic Chernick writes: "Many thanks for writing to me on the occasion of my 70th birthday. Firstly, let me sincerely apologize for the tardy reply to your letter because I was abroad for 6 weeks, but more of that later.

"Let me bring you up to date on what I have been doing since I became a Professor Emeritus at the University of Manitoba in 2001, after 35 years on faculty. Although this step theoretically meant retirement, nothing could be further from the truth. Throughout my career, I always blended basic and clinical research with the clinical care of children with respiratory disease. Now, although I am not directly involved in research activities, I do continue to attend clinical and research rounds and see patients on a consultation basis one day a week. It is in the clinic that I come into contact with medical students and post-graduate trainees, and enjoy teaching the pathophysiology of disease as a basis for understanding therapeutic approaches. Additionally, since 2002, I have been the Editor-in-Chief of *Pediatric Pulmonology*, a journal dedicated to both the basic and clinical science aspects of pediatric respiratory disease. My first accomplishment was to switch this journal to an electronic format using the Scholarone program. I approached the computer with considerable trepidation and fear but now find it an indispensable tool, and wonder how I survived before Email. I have also just completed editing the 7th edition of *Kendig's Disorders of the Respiratory Tract in Children* which will be pub-

lished this spring. Many consider this book to be the 'bible' of pediatric lung disease. My co-editors were Drs. Tom Boat (Cincinnati), Andy Bush (London) and Bob Willmot (St. Louis). In fact, I had a great experience rewriting the basic physiology chapter of this text along with a junior colleague from San Diego, John West! Once again, I don't know how we were able to edit this book before the internet.

"Although I am still 'hard at it,' I do have more time for physical fitness (jog three miles three to four times a week etc.), duplicate bridge and travel. This brings me to the reason for my tardiness in replying to your letter. At the beginning of January, my wife and I drove from Winnipeg to Florida to visit friends. We then flew to Ecuador and spent two weeks in that fascinating country, including the Amazonian jungle and the Galapagos Islands (site of the Charles Darwin National Park). After returning to Florida, I flew off to Aspen for a ski week with 'the boys, following which I drove back to Winnipeg to face the frigid weather. The car was packed with presents for our three daughters, eight grandchildren and one great-grandson, all of whom live in Winnipeg.

"In closing this verbose epistle, I have some words of wisdom for clinician-scientists of the future. Although academic activities will be intense and require long hours of work, try to keep physically fit and develop some outside interests. I am now auditing an Astronomy course at the University of Winnipeg, and have taken courses on opera and English poetry. Never lose your sense of curiosity and zest for learning. Maintain a good sense of humor and above all, have fun."

Letters to Peter Lauf

Kenneth Jackson writes: "Thank you for the American Physiological Society 80th birthday card.

"Except for the summer months, I go to the University of Washington one morning each week to meet a colleague for breakfast and to discuss University activities and other subjects. I no longer do any teaching or research. Much of my time is devoted to our sailboat (a Tayana 37 cutter). For the past few years, during three months of the summer, my wife and I have cruised Canadian waters. Much of the rest of the year is devoted to local cruising and boat maintenance."

Hansjoerg E. Kolder writes: "Your invitation, to share my interest in physiology with APS members, honors me. Thank you. I trained in physiology, for an academic career. Almost 20 years later, I added ophthalmology, first as resident and then as faculty member. I will summarize, for your readers, some opportunities and challenges that I experienced during my long professional career.

"Physiology fascinated me from the time I started medical school at the University of Vienna, Austria. After passing my *rigorosum* in physiology, I was offered a position as teaching assistant and received a small stipend that nursed me through school. I had to prepare demonstrations, e.g., the function of a frog heart, and assist students to record tracings with a sooted *kymographion*. Once, before I had much experience, I was asked to substitute, on short notice, for a lecturer. At the end of my improvised presentation, and with appropriate answers to questions by students, I knew that I enjoyed interacting with students. Teaching became for years a rewarding experience.

"After medical school I returned to physiology and completed the requirements for *venia legendi*, the precondition for teaching at the university. During that time I was guided by Gustav Schubert, Professor and Head, Physiology, University of Vienna, and mentored by Professor Hans Bornschein, Director of the Division for Sensory Research. Major independent research concerned the mechanism of explosive decompression, the accuracy of spatial orientation affected by centrifugal force, and the oscillations of the human electro-oculogram.

"De Havilland introduced the first commercial jet airliner with a pressurized cabin (Comet 1) in 1952. Three accidents occurred between May 1953 and April 1954. The aircrafts disintegrated in flight. Fatigue cracking was determined as cause. De Havilland suspended further flights and made modifications. Comet 4 entered service in October 1958. A few weeks later Boeing introduced its 707. That plane was larger, and more economical. I came to the USA in late 1958, flying with a DC7 to Atlanta, in 34 hours. My family joined me two months later, traveling with a 707, in 17 hours.

"In Austria I was certified as medical examiner for pilots and anxious to study the events during rapid, or explosive,

decompression, as it was called then. The experiments were performed with a conical, transparent, small chamber, having a plastic sheet as bottom, and provisions to rupture it remotely. All of it was placed in a pressure tank. The small chamber and the pressure tank could be filled with air at different pressures. High speed photography at 7000 f/s, on 16 mm film, was used on rats, followed by single frame analysis. It showed that environmental pressure decrease within milliseconds leads to chest expansion. About 15 msec later, the nares widen and the chest wall begins to recede. Depending on the pressure differential, respiratory arrest follows or breathing is resumed. Time for decompression and pressure differential are inversely related with a narrow variance. Vagotomy, prior to decompression, prevents apnea. Alveolar hemorrhage is a secondary phenomenon limiting the survival. Norbert Untersteiner modeled this process.

"Hilding Bjurstedt, Professor, Karolinska Institutet, Stockholm, Sweden enabled me, with his advise, to use extensively the human centrifuge in his department for aviation medicine. The accuracy and precision of orientation in space was studied with and without visual clues. Stepwise changes of acceleration were used, up to 3 G. The apparent vertical, perceived by the test subject, was recorded as dependent variable. Otolithic and somesthetic receptors interact. The angle between torso and head, as well as the plane of presentation (frontal or sagittal), were tested and found to be independent. The results suggest that the deep muscle sense is an additional variable contributing to spatial orientation. A Coriolis force develops when the distance changes between center of rotation and position of the labyrinth. The Coriolis force is normally not perceived, but can cause nausea on the centrifuge. That was not investigated in this study.

"Gerhard A. Brecher, Professor and Head, Physiology, Emory University, Atlanta, Georgia, offered me a tenured position in 1963. Funding of research was, at that time, a priority of the Federal Government. Within three months I had a grant to establish a laboratory for sensory research. The main emphasis was to analyze in detail the slow oscillation of the human electro-oculogram (EOG). The EOG has a natural period of about 30 minutes and can be recorded with periorbital skin elec-

trodes. The EOG shows also a fast oscillation of inverse polarity and a period of about two minutes. Both oscillations can be synchronized with rectangular or sinusoidal variations of light intensity. The EOG has a practical application for recording eye movements. Several graduate students contributed to the identification of parameters describing the EOG. Louis D. Homer developed a descriptive model. He assumed four voltage sources (cell layers?) with feedback among them. Light intensity, adaptation, and color, correlate with specific parameters of the model. The electroretinogram (ERG) is a different phenomenon and records the electrical response to a flash of light. It has been extensively researched and is useful for the differential diagnosis of retinal disorders,

"Frederick C. Blodi was appointed Head of Ophthalmology at the University of Iowa, Iowa City, Iowa, in 1967. As clinician and ophthalmic pathologist, he wanted to add a physiologist and asked me to join the Department. I was not ready to work in ophthalmology, without qualifying as clinician. Fred understood my hesitation and offered me residency training in exchange for teaching ophthalmic physiology. An additional attraction was Paul Boeder, a mathematician on permanent loan from American Optical, a large company producing optical devices. Paul, by his own estimate, had taught physiologic optics to half of all ophthalmologists practicing in the USA. He was a legend. Paul asked me to assist him for seven years. At that time physiology became history for me. I was a renegade, but physiology remained my intellectual base.

"For three years I split my time among training as general ophthalmologist, teaching sensory physiology of the eye, and studying reversible vitamin A deficiency, the latter as part of a multidisciplinary team at the University of Iowa. Eight volunteers completed the study, which required living under confined conditions for more than two years. Dark adaptation threshold, b-wave amplitude of the electroretinogram and plasma vitamin A level were tested weekly, among several other parameters. The average onset of dark adaptation impairment and decrease of b-wave amplitude of the ERG, occurred 533 days after the start of the experiment. Marked changes occurred once the plasma vitamin A level had

decreased to 11 µg/ml. These changes reverted promptly and dose dependent with retinol or beta-carotene supplementation.

"I supervised the ERG Laboratory and implemented the development of a new, chip-based, ERG recording system. I relished also the opportunity to guide beginning residents through the maze of observational skills, to ask appropriate questions and follow advice, when performing their first eye operations. The novice surgeon must respect advice, even intervention, when operating on an organ where a mistake of a few microns

can prevent good visual outcome. My overriding aim was to guide the residents to recognize the risk before it occurs.

"More recently I participated, with about 1,000 patients, in a multi-university study to evaluate pre-operative appropriateness ratings, developed for patients with cataracts, and co-morbidity. The outcome was judged by the post-operatively attained visual acuity, as function of co-morbidity. The data can be used for risk management. That was work as tedious as the title indicates. But, it had merit, and offered an intel-

lectual challenge for long nights during the cold Iowa winter.

"When time came to consider retirement, I prepared for a meaningful, useful and practical activity. My thoughts returned to summers in my childhood when, on a small farm in Southern Austria, I learned to like horses and cattle and to accept the discipline to feed them right and treat them gently. Now I operate a ranch and am conversant with veterinary physiology, to an extent. To save a calf is more important than to sell a steak." ❖

Book Review

McDonald's Blood Flow in Arteries: Theoretical, Experimental and Clinical Principles. Fifth Edition.

Wilmer W. Nicholas and Michael F. O'Rourke
New York, NY: Oxford Univ. Press, 2005,
607 pp., illus., index, \$225.00.
ISBN: 0340809418

It is always a delight to read this standard work on the complicated relation between blood flow and pressure in arteries. Over the years it has evolved from a monograph for relative insiders to a textbook for a much broader readership, including biologists, (patho) physiologists and medical doctors. Considering the broader readership, it is of utmost importance that the complexity of the phenomena is described in a logical order. This has been further improved in the present edition. Also, improvements have been made regarding the understanding of the complicated theoretical aspects by reading only the text and skipping the equations, what medical doctors generally do, e.g., by adding new clarifying figures. New Chapters on "Endothelial function" (Chapter 5), "Cardiac Failure: clinical implications" (Chapter 15), "Generalized and metabolic disease" (Chapter 23) and "Pressure pulse waveform analysis" (Chapter 26) have been added, the latter

two containing information presented in other or separate chapters in the previous edition. This reorganization is an improvement. The addition of the chapters 5 and 15 is timely from a medical point of view. The new chapter (20) on "Interpretation of blood pressure in epidemiological studies and clinical trials" is an asset. These types of studies, which are rapidly increasing in number, provide important information about the arterial system, for example, in aging and in diseases as hypertension. In these studies, however, the parameters to describe arterial function are often derived in an indirect way, necessitating critical analysis of the methods employed and the data obtained. In general the approaches taken in these studies are analyzed critically. However, in the discussion of the applicability of generalized transfer functions to reconstruct the aortic pressure waveform from peripheral pressure waveforms, the authors are less critical. For example, the substantial, individual spread in transfer function modulus, limiting inter-subject comparisons, and the relative contribution of higher harmonics to details of the aortic pressure waveform should have been emphasized. The chapter on "Exercise" (Chapter 25) is partly rewritten; new and relevant information has been added. It makes sense to deal with "Pulmonary circulation"

(Chapter 16) before "Coronary circulation" (Chapter 17). The bibliography is updated and a glossary is added to the present edition.

The authors are at their best when describing such aspects as pulse wave generation, amplification, analysis, transmission and reflection, impedances of the arterial system and pressure/flow relations. They are internationally recognized experts in these fields and the chapters on these topics are written in an admirably clear way. The content is easy to understand, also for non real experts in the field. In the assessment of the pressure/diameter relations to estimate the viscous properties of an artery, the necessity of using recording systems with equal electronic delay times is dealt with properly, but the necessity of assessing these parameters at exactly the same site in the artery under investigation, to avoid overestimation of the degree of hysteresis, and, hence, of the viscous properties of the artery, should have been emphasized.

Chapters on endothelial cell (EC) function and atherosclerosis are inevitably topics to be discussed in a book on "Blood flow in arteries." In these chapters the authors limit themselves to describing EC function and its assessment, and to discussing general aspects

of atherosclerosis without addressing in detail the important role of biomechanical factors in this function and in this disease. It has been well established that, in addition to biochemical mediators, circumferential wall strain and wall shear stress (WSS) are important determinants of EC function and EC gene expression. The latter being dependent on the type and the level of WSS the EC's are exposed to. Atherosclerotic lesions preferentially start in areas of disturbed flow, associated with low WSS which expresses an atherogenic endothelial gene profile. The interaction between biomechanical forces and EC function, called mechanotransduction, has been the subject of investigation in the past 15 years. These studies have provided a wealth of information on this intriguing mechanism. It is recommended to address the interaction between biomechanical forces and EC function and gene expression and their role in atherogenesis more elaborately in future editions of the textbook, if any. This is especially appropriate, because forces as circumferential strain and wall shear rate (WSR) can be determined *in vivo*. In large arteries, WSR can be derived from 3-D velocity profiles non-invasively recorded by means of ultrasound or magnetic resonance imaging techniques. WSS is estimated from

the product of WSR and local blood viscosity. In the microcirculation WSR can be derived from velocity profiles assessed by using fluorescently labeled nanometer particles as velocity tracers; plasma viscosity being used to estimate WSS. In both large arteries and arterioles, the WSR data derived from these *in vivo* recorded profiles, which are generally flattened parabolas, have been shown to be substantially higher (on the average more than two-times) than those estimated on the basis of theory, assuming the velocity profile to be fully developed to a parabola. It is a pity that barely any attention is paid to these developments, while the authors cite articles addressing these aspects. The authors state that the velocity profile may change along the arterial tree to a parabolic shape, quoting Tangelder and colleagues (page 39). The arteriolar velocity profiles presented by Tangelder and colleagues, an example of which is shown in figure 2.24, are not parabolic, but flattened parabolas with K factors varying between 2.3 and 4.0, values significantly exceeding the value of 2.0 for a parabolic velocity profile.

The chapter on "Ultrasonic blood flow and velocimetry" (Chapter 8) needs reconsideration with respect to fundamental concepts as spatial, temporal and velocity resolution of Doppler sys-

tems and the suppression of stationary reflections. Moreover, outdated techniques, like zero-crossing interval histograms, are extensively discussed, while commonly used, modern processing techniques, as Doppler autocorrelation and cross-correlation, are not mentioned at all. The latter technique is of interest, because it allows for velocity measurements without sacrificing the high resolution of the echo mode. For information about the present state of the art the reader should have been referred to "Doppler Ultrasound" by Evans and McDicken, Wiley, 2000.

Despite these limitations *McDonald's Blood Flow in Arteries* remains the standard textbook on physics of the cardiovascular system for scientists active in this field. In many ways the fifth edition is an improvement compared with previous editions and it is highly recommended to those who want to be up-to-date on the complex relation between pressure and blood flow in arteries. It is commendable that again the authors have taken the effort to write a new edition.

❖

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Arnold P.G. Hoeks
Maastricht University,
the Netherlands

Books Received

Harrison's Endocrinology.
J. Larry Jameson, (Editor).
New York: McGraw-Hill,
2006, 570 pp., illus., index,
\$64.95.
ISBN: 0-07-145744-5

*Molecular and Cellular
Biophysics.*
Meyer B. Jackson.
New York: Cambridge Univ.
Press, 2006, 525 pp., illus.,
index, \$65.00.
ISBN: 0-521-62470-3.

*Neural Plasticity and
Disorders of the Nervous
System.*
Aage R. Moller.
New York: Cambridge Univ.
Press, 2006, 400 pp., illus.,
index, \$120.00.
ISBN: 0-521-84667-6.

Space Physiology.
Jay C. Buckley, Jr.
New York: Oxford University
Press, 2006, 283 pp., illus.,
index, \$59.95.
ISBN: 0-19-513725-6.



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The Wine Wizard Peter Wagner

Sports Illustrated has its annual swimsuit issue; I have the annual *Charles Shaw* issue, and this is it. Charles Shaw, better known as "Two Buck Chuck" sells half a dozen varietals for \$1.99 plus tax through the Trader Joe grocery chain. Here are the current releases:

2005 Charles Shaw Sauvignon Blanc. Peaches (unusual, but OK) and sulfur (not OK) on nose and palate. Melon and lychee too. Finish is a bit hard and short. OK for \$2 if you are insensitive to sulfur, otherwise leave it alone.

2004 Charles Shaw Chardonnay. Spicy oak, vanilla, sage on nose, not much fruit. Palate has good if generic fruit on entry, but the fruit fades quickly to a short slightly bitter finish. At least, no sulfur. Fair for \$2.

2004 Charles Shaw Merlot. Sulfur again, plus black cherry and green pepper (OK for merlot) palate is soft and the fruit is surprisingly good. Tannins are medium low and the finish is quite good. This is the best of the five this year, good



Peter Wagner

value for \$2 once the sulfur swirls off.
2003 Charles Shaw Cabernet. Sulfur

again. Red and black cherry palate, moderate high tannin for the fruit, earthy and a bit dirty. Finish is lean, rough and hard. Not recommended.

2005 Charles Shaw Shiraz. Heavy, persistent sulfur on the nose and palate makes this one to avoid. Try again next year, as last year's was quite good.

Now allow me to recommend a real winner:

2004 Hahn meritage (\$10-\$15). This wine was great last year as well. Hahn has found something here. A blend of Bordeaux varietals, this wine has excellent red and dark fruit concentration, pleasant vanilla oak and spice in the background, and very good length on the palate. It all comes together nicely, and is terrific value at the price. ❖



Mental Health Research Association Young Investigator Award

Agency: Mental Health Research Association (NARSAD)

Program: 2007 NARSAD Young Investigator Award

For More Info: <http://www.narsad.org/research/apply/>

Summary: Applications for the 2007 NARSAD Young Investigator Award will be due on July 25. Materials will be available sometime in April, 2006.

The guidelines currently at the website are for 2006 and are for reference only. The award, which provides up to \$60,000 over two years, supports promising young neurobiologists who want to extend research-fellowship training or begin careers as independent research faculty members.

Who may apply: postdoctoral fellows, assistant professors, or the equivalent. Research must be related to schizophrenia, major affective disorders, or other serious mental illnesses.

Program Contact:

NARSAD, Research Grants Program, 516-829-5576 or grants@narsad.org

DEADLINE: July 25

Joel Fritzler
Research Project & Information Specialist
Office of Research Development and Administration
Woody Hall C-215, SIUC Mailcode 4709
Southern Illinois University
Carbondale, IL 62901

618-453-4530
jcfritz@siu.edu

July 3-7

The Third International Symposium on Aero Aqua Bio-Mechanisms (ISABMEC 2006), Okinawa, Japan. Information: Internet: <http://abmech.org/isabmec2006/>.

July 5-7

The Physiological Society - Main Meeting 2006, University College London, UK. Information: Internet: <http://meetings/physoc.org/ucl/index.asp>.

July 31-August 3

3rd Annual Symposium of the American Heart Association Council on Basic Cardiovascular Sciences - Translation of Basic Insights into Clinical Practice, Keystone, CO. Information: Internet: <http://www.american-heart.org/presenter.jhtml?identifier=3032066>.

August 13-17

First International Congress of Respiratory Biology (ICRB), Bonn-Bad Honnef, Germany. Information: Steven F. Perry, Ph.D. University of Bonn, Germany. Email: perry@uni-bonn.de; Internet: <http://www.respirbiol.org>.

August 30-September 2

The Scientific Program Committee for the Fifth Annual Meeting of the Society for Molecular Imaging, Big Island, HI. Information: Internet: <http://www.molecularimaging.org/2006meeting/home06.php>.

September 2-6

European Respiratory Society 2006 Annual Congress, Munich, Germany. Information: Internet: <http://www.ersnet.org>.

September 3-8

2006 Gordon Research Conference on Molecular Mechanisms in Lymphatic Function and Disease, Les Diablerets, Switzerland. Information: Internet: <http://www.grc.org/>.

September 6-9

Cardiac Energy Metabolism in Heart Failure: From Concepts to Therapies, Semiahmoo Resort, near Seattle, Washington, USA. Information: Society for Heart and Vascular Metabolism. Email: heartmetabolism@yahoo.com; Internet: <http://www.heartmetabolism.org>.

September 7-10

Genomic Perspectives to Host Pathogen Interactions, Hinxton, Cambridge, United Kingdom. Information: Cold

Spring Harbor Laboratory, Meetings & Course Program, PO Box 100, 1 Bugtown Road, Cold Spring Harbor, NY 11724-2213. Tel: 516-367-8346; Fax: 516-367-8845; Email: meetings@cshl.edu; Internet: <http://www.cshl.edu/meetings>.

September 10-11

Tetrahydrobiopterin and Alternative Treatments in Phenylketonuria, Cardiovascular Disease and Diabetes, Sendai, Japan. Information: Online Registration and Abstract Submission: <http://www.pku-bh4.com>.

September 16-20

5th European Congress of Biogerontology, Istanbul, Turkey. Information: Internet: <http://www.biogerontology2006.org>.

September 28-October 1

Integrative Approaches to Brain Complexity, Hinxton, Cambridge, United Kingdom. Information: Cold Spring Harbor Laboratory, Meetings & Course Program, PO Box 100, 1 Bugtown Road, Cold Spring Harbor, NY 11724-2213. Tel: 516-367-8346; Fax: 516-367-8845; Email: meetings@cshl.edu; Internet: <http://www.cshl.edu/meetings>.

October 20-23

13th International Conference of Biochemistry of Exercise, Seoul, Korea. Information: Chang Keun Kim, Ph.D., Korea National Sport University, 88-15 Oryun-dong, Songpa-gu, Seoul, Korea. Tel: +82 2 410 6815; Fax: +82 2 418 1877; Email: cckim2006@yahoo.co.kr; Internet: <http://www.icbe2006-seoul.org/program.html>.

October 26-29

Joint World Congress on Stroke: International Stroke Society, Mediterranean Stroke Society and Southern African Stroke Foundation, Cape Town, South Africa. Information: Global Congress Organizers and Association Management Services, 17 Ru du Cendrier, P.O. Box 1726, CH-1211 Geneva 1, Switzerland. Tel: +44 22 908 0488; Fax: +44 22 732 2850; E-mail: stroke2006@kenes.com; Internet: <http://www.kenes.com/stroke2006>.

December 6-10

Humanizing Model Organisms to Understand Pathogenesis of Human Disease, Hinxton, Cambridge, United Kingdom. Information: Cold Spring Harbor Laboratory, Meetings & Course Program, PO Box 100, 1 Bugtown Road, Cold Spring Harbor, NY 11724-2213. Tel: 516-367-8346; Fax: 516-367-8845; Email: meetings@cshl.edu; Internet: <http://www.cshl.edu/meetings>.

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- The Comparative/Ecological Physiology of Nectar-feeding Birds: The Last 15 Years
- Necrophysiology

SYMPOSIA

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- Linking Body Size and Physiology with Life History: Walking in the Footsteps of Bill Calder
- Physiological Adaptation of Fishes to Life at the Extremes
- Field Metabolic Rate - FMR: Physiological Traits and Ecological Implications
- Comparative Biology of Aging in Long-lived Animals
- Comparative Mechanisms of Respiratory Rhythm Generation and Chemoreception
- Hypoxic Effects on Vascular Tone: Mechanisms of Hypoxic Vasoconstriction in Vertebrates
- Muscles as Springs: Molecules to Movement
- Blood Rheology "Abnormalities" in Marine and Terrestrial Animals: What Lessons Can We Learn?
- Comparative Molecular Physiology of Acid-base Regulation
- Aquaporins and Aquaglyceroporins in Vertebrates: Evolution and Diversity
- Dividing the Undivided: Shunting and Flow Separation in Reptile Hearts
- Biomedical Applications of Suspended Animation
- Comparative Nutritional Physiology: Nutrient and Toxicant Absorption, Postabsorptive Fate, and Ecological Implications

October 8-11,
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SYMPOSIA

- Genomics and Proteomic Approaches to Studying Lung Disease
- Proteomic and Genomic Approaches to Developing Potential Therapeutic Targets
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- Genomics and Proteomics of Environmental Lung Disease
- Acute Lung Injury and Inflammation

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17. LIST YOUR MOST SIGNIFICANT PUBLICATIONS, WITH EMPHASIS ON THE PAST 5 YEARS (Publications should consist of manuscripts in peer-reviewed journals. List them in the same style as sample below.)

Sample: MacLeod RJ and Hamilton JR. Volume Regulation initiated by Na⁺-nutrient cotransport in isolated mammalian villus enterocytes. Am J Physiol Gastrointest Liver Physiol 280: G26-G33, 1991.

18. DOCTORAL DISSERTATION TITLE (if applicable):

19. POSTDOCTORAL RESEARCH TOPIC (if applicable):

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