A Publication of
The American
Physiological Society

AJP Online
April 1998

Inside

The Physiologist

Volume 41 Number 2 April 1998

Luis Gabriel Navar
71st President of APS

Renaissance in the Physiological Sciences: The Emergence of Unparalleled Opportunities

"Preparing for a far-off storm that may reach our shores is far wiser than ignoring the thunder until the clouds are overhead."

President William J. Clinton
State of the Union Address, January 27, 1998

It was a great thrill when I received notification that I was the next President-Elect of APS. APS has a long and distinguished record of service and achievement, and to be selected as its next president was truly an honor of the highest order. I thank you for giving me the privilege of serving you, and I trust I will be able to live up to your expectations. Realization of the awesome responsibility bestowed upon me came slowly. Thanks to the wisdom and sage leadership of our previous presidents and councillors and thanks to the outstanding management by the administrative officers and staff, APS has flourished and established an enviable financial base and secure administrative bastion. In many ways, we are the envy of other societies in the experimental biology group, but we must not be content to just maintain the momentum. Rather, we have the responsibility to search the horizon for "far-off storms" as well as for emerging opportunities and to develop creative strategies that will further strengthen the Society.

One of my initial duties was to write this article to all our members regarding my views about the state of the Society and my agenda for the coming year. Many questions loomed in my mind. What is the current state of the Society? What are the major challenges before us? What does the future hold for physiologists? How can we best accomplish our mission? What words of wisdom could I give you that have not been given before?

Indeed, most of the important problems have already been discussed very thoroughly and eloquently by my distinguished predecessors (1, 2, 6, 11). Nevertheless, we need to reevaluate some of these issues in terms of current developments. In my opinion, the one recurring point that has emerged in the foreground is that we are in the midst of a major paradigm shift in the biological sciences. The physiological sciences will not escape it and should not try to avoid it. Instead, we should strive to position APS and its constituency so that it can best respond to emerging opportunities.

(continued on page 74)

The Physiologist

Volume 41 Number 2 April 1998

Contents

Published bimonthly and distributed by The American Physiological Society

9650 Rockville Pike
Bethesda, Maryland 20814-3991
ISSN 0031-9376

Subscriptions: Distributed to members as part of their membership. Nonmembers in the USA: individuals $38.00; institutions $56.00. Nonmembers elsewhere: individuals $48.00; institutions $67.00. Single copies and back issues when available, $10.00 each; single copies and back issues of Abstracts issues when available, $20.00. Subscribers to *The Physiologist* also receive abstracts of the Conferences of the American Physiological Society.

Deadline for submission of material for publication: Jan. 1, February issue; March 1, April issue; May 1, June issue; July 1, August issue; Sept. 1, October issue; Nov. 1, December issue.

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Printed in the USA

Association of Chairmen of Departments of Physiology 1997 Survey Results

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The Association of Chairmen of Departments of Physiology annual survey was mailed to 155 physiology departments throughout the US, Canada, and Puerto Rico. A total of 104 surveys was returned, for a response rate of 67%. This rate is lower than the 1996 survey (71%).

The data provide the reader with general trends of faculty salary, overall departmental budgets, and space available for research. Faculty salary information (Tables 1, 2, and 3) is derived from the total compensation column, which includes any supplementary income but not fringe benefits. In addition to salary information, further data are provided on tenure, gender, ethnicity, and salary by number of years in rank.

Most of the statistics are based on 104 responses (5 from Canada and 2 from Puerto Rico), but salary, tenure, gender, eth-

Table 1. Faculty Salaries for Fiscal Year 1997

	Mean	% Change From Previous Survey	Minimum	Maximum	No. of Faculty
Chairmen					
All schools	$141,430	4.5	$34,354	$276,601	104
Medical public	138,197	4.3	34,354	218,300	69
Medical private	154,110	6.6	45,168	276,601	29
Nonmedical	117,322	-5.4	66,889	211,500	6
Female	87,395	2.3	34,354	156,349	4
Professors					
All schools	94,461	2.6	29,273	225,800	716
Medical public	91,707	2.8	29,273	225,800	511
Medical private	105,093	4.0	36,896	205,000	158
Nonmedical	91,408	-2.0	59,076	136,500	47
Female	92,032	2.0	58,128	169,134	90
Associate Professors					
All schools	67,854	0.9	25,020	146,000	431
Medical public	67,367	1.1	25,020	112,500	279
Medical private	70,090	1.2	36,768	146,000	126
Nonmedical	62,246	2.3	47,500	93,200	26
Female	67,103	-2.0	38,551	99,302	79
Assistant Professors					
All schools	55,061	1.6	20,800	130,000	325
Medical public	55,092	2.4	20,800	130,000	190
Medical private	54,553	-0.2	26,250	79,930	117
Nonmedical	58,033	5.0	44,449	73,000	18
Female	53,752	1.4	20,800	113,050	89
Instructors					
All schools	38,966	3.4	27,500	64,926	49
Medical public	37,946	3.1	27,500	60,128	39
Medical private	40,499	0.7	29,500	49,000	9
Nonmedical	64,926	0.0	64,926	64,926	1
Female	36,274	2.4	28,074	52,000	20

nicity, and number of years in rank results are calculated on the number of respondents providing this information. Missing from the returned surveys were years in rank for 62 faculty and ethnicity for 20 faculty.

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

Departmental budget information (Table 4) is by type of support. Faculty salaries were derived from grants, negotiated indirect cost rates, and percentage of returned indirect costs. Averages are presented by research, administration, teaching, and other.

Table 5 ranks responding institutions according to total dollars, research dollars, and space. No space information was provided for one institution and no research grant dollars for one institution.

For the most part, results are calculated based on the number of respondents providing information. Inconsistent data were eliminated in an attempt to achieve accurate statistics within each category.❖

We are grateful for the development of software by Charlene Smith, formerly of the University of Oklahoma.

Table 2. Average Salary by Number of Years in Rank

	Chairpersons		Professors		Associate Professors		Assistant Professors		Instructors	
Years	**Salary**	**No. of faculty**	**Salary**	**No. of faculty**	**Salary**	**No. of faculty**	**Salary**	**No. of faculty**	**Salary**	**No. of faculty**
0-5	$128,838	35	$85,236	231	$65,863	238	$55,006	288	$38,502	41
6-10	149,430	29	96,410	155	70,305	93	53,469	32	43,691	6
11-15	146,133	19	97,014	133	71,323	35	74,517	3	0	0
16-20	162,940	9	96,218	94	71,718	28	53,602	1	0	0
21-25	145,981	9	99,773	70	68,739	23	64,896	1	0	0
26+	103,021	3	102,745	33	67,572	14	0	0	33,000	1

Type of Institution (*n* = 104)

Support		*Teaching Interactions*			
Public	74	MD/DO	96	Pharmacy	27
Private	30	DDS	31	Other biomedical	54
		DVM	7	Life science	48
		Allied health	58	Bioengineering	29

Faculty Summary (*n* = 1,606)

	Male	*Female*
American Indian/Alaskan Native	2	0
Asian/Pacific Islander	100	20
Black, not of Hispanic origin	26	7
Hispanic	71	17
White, not of Hispanic origin	1,071	220
Foreign national	57	15

Tenure status in each department by degree (*n* = 1,573)

	Tenured	*Not Tenured*	*Not Eligible*	*Total*
MD	69	5	5	79
PhD	969	259	148	1,376
Both	63	14	4	81
Other	27	2	8	37

Student/Trainee Summary

Total number of pre- and postdoctoral students/trainees

Predoctoral male	962	Postdoctoral male	652
Predoctoral female	680	Postdoctoral female	324

Total number of foreign pre- and postdoctoral students/trainees

Predoctoral male	303	Postdoctoral male	390
Predoctoral female	197	Postdoctoral female	140

Ethnicity of each pre- and postdoctoral student/trainee

	Predoctoral		*Postdoctoral*	
	Male	Female	Male	Female
American Indian/Alaskan Native	1	6	1	2
Asian/Pacific Islander	81	40	44	39
Black, not of Hispanic origin	29	49	8	5
Hispanic	29	23	10	6
White, not of Hispanic origin	519	365	199	132

Number of foreign pre- and postdoctoral students/trainees

	Predoctoral		*Postdoctoral*	
	Male	Female	Male	Female
African	7	3	4	0
Asian/Pacific Islander	167	98	242	57
Central and South American	13	6	21	3
European, Canadian, Australian	77	67	90	60
Middle Eastern	30	14	24	11
Other	9	9	9	9

ACDP 1997 Survey Results

Number of foreign pre- or postdoctoral trainees whose primary source of support is:

	Predoctoral	*Postdoctoral*
Institutional	156	82
Research grants	451	233
Private foundations	38	25
Home (foreign) governments	34	17
Other	34	22

Predoctoral Trainee Completions

Number of trainees who have completed doctoral work during the year ended June 30, 1997 (n = 64)

Predoctoral male 110 *Predoctoral female* 88

US citizen/resident alien predoctoral trainee completions:

	Male	*Female*
American Indian/Alaskan Native	0	0
Asian or Pacific Islander	18	12
Black, not of Hispanic origin	1	5
Hispanic	1	5
White, not of Hispanic origin	57	45

Foreign national predoctoral trainee completions:

	Male	*Female*
African	0	1
Asian or Pacific Islander	18	16
Central or South American	0	0
European, Canadian, Australian	13	2
Middle Eastern	2	2
Other	0	0

Average annual starting stipend (in US dollars) for trainees:

Predoctoral (n = 96)	*Postdoctoral* (n = 90)
$13,997.44	$25,130.42

Space controlled by department (n = 103)

Research	15,795
Administration	2,708
Teaching	1,967
Other	1,480
Total space	21,950

Table 3. Salaries by Region

Region	Mean	Minimum	Maximum	Number
Chairmen				
Northeast	$147,672	$34,354	$201,868	21
Midwest	143,619	66,889	217,554	32
South	153,151	99,269	276,601	30
West	137,683	99,333	218,300	14
Canada/Puerto Rico	69,956	45,168	88,048	7
Professors				
Northeast	103,471	40,800	192,000	151
Midwest	94,235	36,896	205,000	202
South	93,765	36,550	163,065	223
West	96,988	34,740	225,800	97
Canada/Puerto Rico	64,793	29,273	110,570	43
Associate Professors				
Northeast	75,211	40,824	146,000	85
Midwest	68,601	42,016	112,500	145
South	68,103	25,020	115,000	124
West	62,406	34,710	89,467	54
Canada/Puerto Rico	47,398	36,768	69,855	23
Assistant Professors				
Northeast	56,315	38,291	76,000	61
Midwest	56,766	31,200	79,930	107
South	52,673	20,800	78,000	111
West	58,869	26,300	130,000	38
Canada/Puerto Rico	37,739	32,606	43,442	8
Instructors				
Northeast	44,981	37,132	60,128	5
Midwest	37,762	28,000	49,000	10
South	37,224	27,500	52,000	29
West	47,521	33,714	64,926	4
Canada/Puerto Rico	37,221	37,221	37,221	1

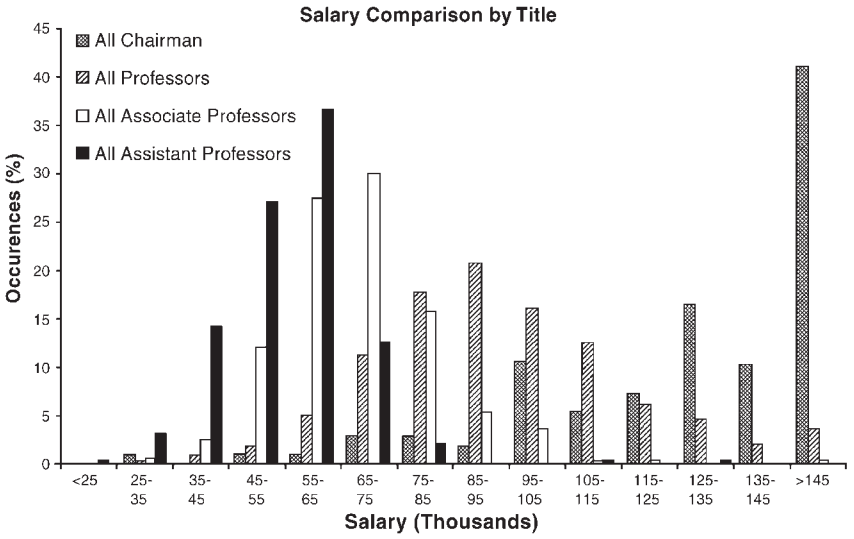
Northeast: ME, NH, VT, NY, MA, RI, CT, NJ, PA, MD, DE, DC

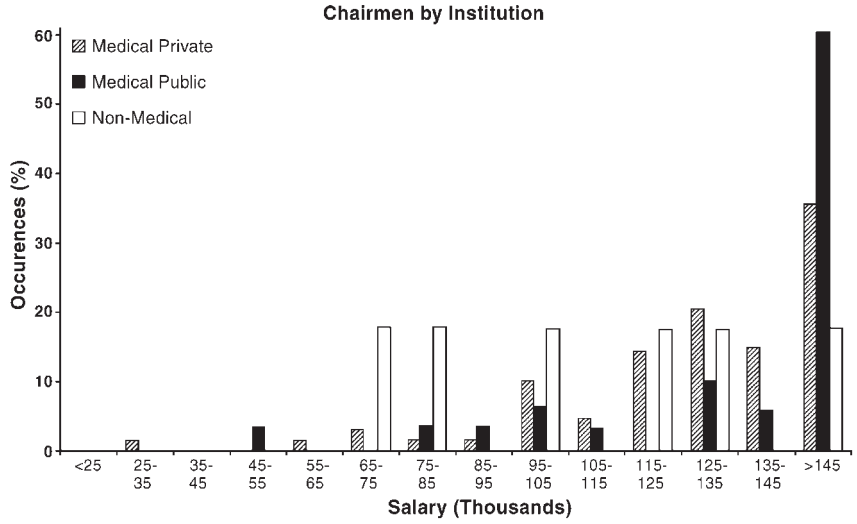
Midwest: MI, OH, IN, IL, WI, IA, MO, KS, NE, ND, SD, MN

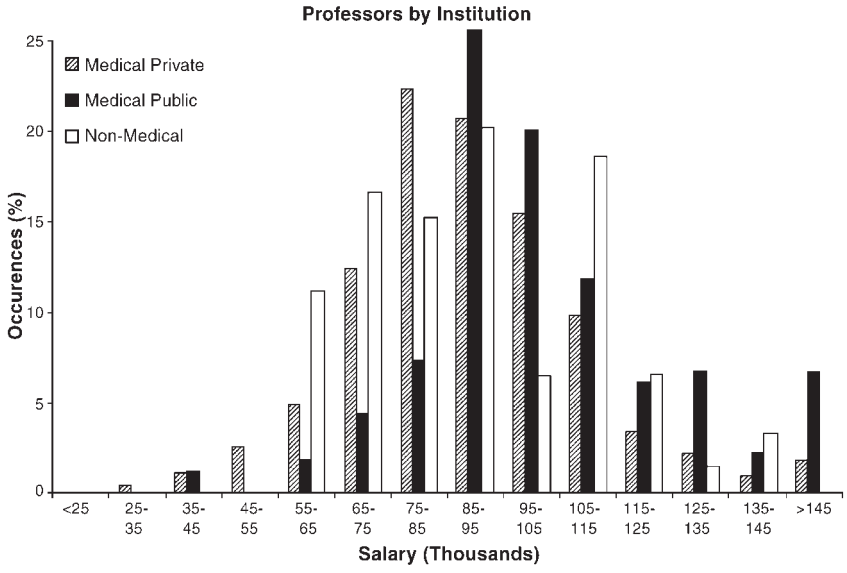
South: VA, WV, KY, TN, NC, SC, GA, FL, AL, MS, AR, LA, OK, TX

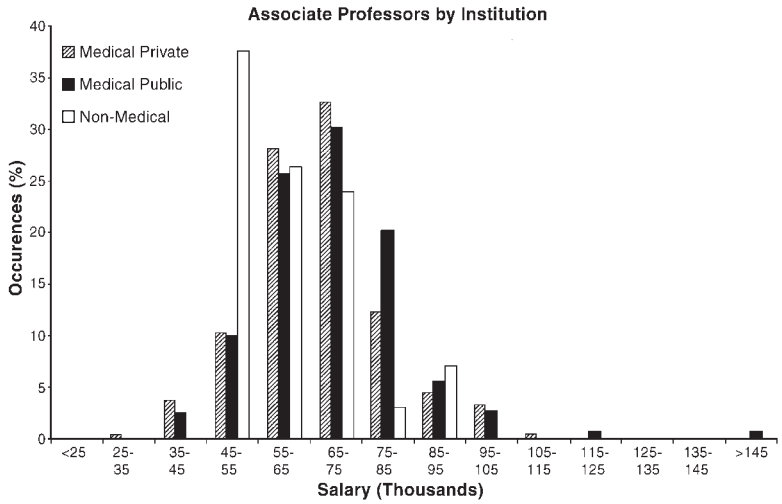
West: AK, HI, MT, WY, CO, NM, AZ, ID, NV, WA, OR, CA, UT

ACDP 1997 Survey Results









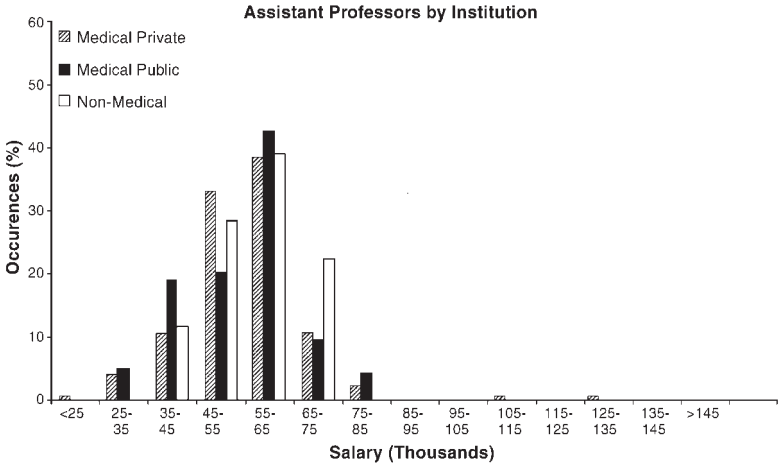


Table 4. Budgets by Institutions

	All Institutions	No.	Public Medical	No.	Private Medical	No.	Nonmedical	No.
Institutional	$1,368,962	104	$1,422,098	69	$1,253,605	29	$1,315,466	6
Outside research grants (direct costs only)	2,291,188	103	2,068,655	68	2,762,169	29	2,536,819	6
Training grants (direct costs only)	272,232	51	224,347	29	354,309	18	250,059	4
Endowments	182,126	43	205,749	30	147,237	9	83,449	4
Indirect recovery costs (amount to dept.)	123,452	53	127,433	46	74,514	5	154,251	2
Other budget support	407,718	48	466,583	34	262,341	13	296,226	1
Average	4,098,011	104	3,959,385	69	4,411,832	29	4,175,411	6
Standard deviation	2,501,985		2,369,811		2,772,991		2,460,196	

Financial Information

Percentage of total faculty salaries derived from research grants (not including fringe benefit amounts):	29.3%	(*n* = 82)
Current fringe benefit rate most frequently used for primary faculty:	24.8%	(*n* = 102)
For faculty salaries raised from grants, etc., percentage of allocated salary dollars directly returned to department:	79.4%	(*n* = 51)
Federally negotiated indirect cost rate for FY 97-98 on campus:	50.7%	(*n* = 98)
off campus:	26.9%	(*n* = 65)
Percentage of indirect costs returned to department:	17.7%	(*n* = 45)

ACDP 1997 Survey Results

Table 5. 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	Research Space (sq. ft.)	Rank Research Dollars/ sq. ft.	Research Dollars/ sq. ft.	No. of Faculty
1	$10,640,222	1	$7,846,845	5	$326,952	6	31,266	8	$251	24
2	10,600,000	28	3,300,000	19	206,250	12	28,350	57	116	16
3	9,388,286	2	7,498,364	14	220,540	4	35,000	18	214	34
4	9,063,107	3	6,250,369	4	328,967	13	26,850	12	233	19
5	8,747,911	4	6,122,877	17	211,134	28	19,908	4	308	29
6	8,542,669	6	5,372,464	28	191,874	24	21,434	7	251	28
7	8,512,558	5	6,118,000	9	278,091	104	0	103	0	22
8	8,215,266	15	4,093,935	10	272,929	42	17,092	9	240	15
9	8,036,220	8	4,714,891	36	162,582	25	21,316	16	221	29
10	8,005,750	7	4,862,314	24	202,596	19	25,169	21	193	24
11	7,831,587	25	3,599,861	26	199,992	32	19,106	22	188	18
12	7,622,731	23	3,665,050	23	203,614	18	25,691	42	143	18
13	7,514,608	24	3,642,546	45	130,091	9	29,332	51	124	28
14	7,274,747	21	3,794,183	18	210,788	16	26,141	40	145	18
15	7,258,000	9	4,599,000	15	219,000	3	35,577	45	129	21
16	7,204,844	40	2,442,707	43	135,706	10	28,885	75	85	18
17	7,065,370	12	4,446,579	25	202,117	51	14,800	5	300	22
18	6,927,730	22	3,684,769	27	193,935	21	24,024	37	153	19
19	6,583,479	18	3,982,289	12	234,252	41	17,479	14	228	17
20	6,578,682	20	3,892,174	21	204,851	1	43,443	70	90	19
21	6,365,207	44	2,279,165	55	113,958	30	19,700	55	116	20
22	6,352,619	16	4,016,690	34	174,639	14	26,348	38	152	23
23	6,248,317	10	4,585,317	7	305,688	31	19,397	11	236	15
24	6,160,395	14	4,211,406	6	323,954	53	14,634	6	288	13
25	5,918,268	13	4,340,000	31	188,696	7	30,037	41	144	23
26	5,753,935	17	4,006,000	8	286,143	44	16,773	10	239	14
27	5,596,749	11	4,568,806	2	380,734	55	14,127	3	323	12
28	5,446,685	19	3,896,687	20	205,089	39	17,937	17	217	19
29	5,430,698	36	2,595,439	42	136,602	47	15,688	30	165	19
30	5,272,267	29	3,228,094	33	179,339	2	36,618	72	88	18
31	5,204,742	52	2,017,812	84	67,260	20	24,241	76	83	30
32	4,971,816	31	2,910,992	51	121,291	23	21,719	44	134	24
33	4,920,139	46	2,213,556	71	92,232	22	22,672	67	98	24
34	4,861,508	51	2,100,052	56	110,529	27	20,482	65	103	19
35	4,824,545	41	2,427,393	68	97,096	35	18,760	46	129	25
36	4,766,823	26	3,476,064	40	144,836	11	28,461	53	122	24
37	4,751,911	42	2,404,493	47	126,552	17	26,025	69	92	19
38	4,729,969	33	2,863,968	37	150,735	38	18,000	33	159	19
39	4,690,363	45	2,258,175	63	102,644	5	32,541	83	69	22
40	4,578,764	30	2,980,100	35	165,561	91	7,203	1	414	18
41	4,567,515	43	2,302,496	58	109,643	36	18,298	49	126	21
42	4,471,566	34	2,842,067	1	406,010	63	12,251	13	232	7
43	4,453,000	27	3,400,000	3	340,000	70	9,759	2	348	10
44	4,408,836	32	2,880,070	62	102,860	37	18,226	34	158	28
45	4,297,436	47	2,200,000	41	137,500	40	17,505	48	126	16
46	4,272,238	54	1,944,000	80	77,760	15	26,333	82	74	25
47	4,258,877	37	2,561,625	16	213,469	56	14,000	25	183	12
48	4,203,678	35	2,671,295	11	242,845	59	12,667	19	211	11
49	4,200,000	53	2,000,000	69	95,238	26	21,309	68	94	21
50	4,175,586	49	2,188,693	32	182,391	57	13,261	29	165	12
51	4,163,189	39	2,446,150	22	203,846	58	13,068	23	187	12
52	3,970,417	57	1,765,165	75	84,055	64	10,991	32	161	21

Table 5 (continued)

Rank Total Dollars	Total Dollars	Rank Research Grant Dollars	Research Grant Dollars	Rank Research Dollars/ Faculty	Research Dollars/ Faculty	Rank Total Research Space	Research Space (sq. ft.)	Rank Research Dollars/ sq. ft.	Research Dollars/ sq. ft.	No. of Faculty
53	3,886,352	38	2,483,000	29	191,000	45	16,500	39	150	13
54	3,838,634	65	1,458,526	82	69,454	61	12,535	56	116	21
55	3,811,576	61	1,613,438	48	124,111	54	14,175	59	114	13
56	3,721,311	48	2,196,754	54	115,619	8	29,872	81	74	19
57	3,432,087	58	1,726,800	77	82,229	43	16,880	66	102	21
58	3,391,570	59	1,652,000	61	103,250	29	19,813	77	83	16
59	3,307,987	60	1,640,398	53	117,171	75	8,784	24	187	14
60	3,081,942	62	1,603,644	39	145,786	82	8,038	20	200	11
61	3,045,973	56	1,797,035	46	128,360	68	10,112	26	178	14
62	2,983,527	88	521,511	93	34,767	81	8,131	86	64	15
63	2,976,547	55	1,888,515	30	188,852	50	14,881	47	127	10
64	2,957,326	68	1,280,500	73	91,464	66	10,503	52	122	14
65	2,756,166	50	2,114,957	44	132,185	34	18,971	61	111	16
66	2,668,338	77	1,071,021	81	76,502	69	9,809	62	109	14
67	2,544,924	64	1,488,367	49	124,031	93	6,565	15	227	12
68	2,473,270	69	1,271,695	74	90,835	67	10,257	50	124	14
69	2,424,971	63	1,544,729	13	220,676	52	14,668	64	105	7
70	2,393,181	72	1,186,342	60	107,849	84	7,730	36	153	11
71	2,334,902	74	1,104,753	66	100,432	72	9,316	54	119	11
72	2,279,303	75	1,104,656	72	92,055	71	9,567	58	115	12
73	2,248,369	71	1,218,819	50	121,882	88	7,379	31	165	10
74	2,206,768	73	1,150,610	78	82,186	89	7,352	35	157	14
75	2,191,004	79	950,911	79	79,243	60	12,640	80	75	12
76	2,154,585	66	1,412,482	65	100,892	79	8,350	27	169	14
77	2,122,573	67	1,292,037	52	117,458	33	19,030	84	68	11
78	1,993,694	83	733,329	91	38,596	46	16,081	94	46	19
79	1,968,459	80	944,377	83	67,456	65	10,820	74	87	14
80	1,953,755	93	378,115	94	29,086	74	9,000	96	42	13
81	1,934,453	90	450,000	95	28,125	78	8,526	90	53	16
82	1,847,879	82	789,265	67	98,658	48	15,363	91	51	8
83	1,840,525	87	578,405	87	57,841	73	9,131	87	63	10
84	1,806,625	70	1,224,006	70	94,154	90	7,305	28	168	13
85	1,800,000	84	700,000	88	53,846	49	15,000	93	47	13
86	1,785,447	96	229,607	99	16,401	80	8,264	97	28	14
87	1,722,121	86	597,188	85	59,719	92	6,700	71	89	10
88	1,674,620	81	817,613	64	102,202	85	7,682	63	106	8
89	1,574,399	76	1,103,124	57	110,312	62	12,470	73	88	10
90	1,570,012	97	202,640	96	25,330	87	7,433	98	27	8
91	1,557,919	78	979,016	59	108,780	77	8,662	60	113	9
92	1,515,749	92	395,000	90	39,500	94	6,190	85	64	10
93	1,389,379	99	121,439	102	10,120	83	8,000	101	15	12
94	1,290,547	91	400,000	92	36,364	86	7,450	89	54	11
95	1,271,574	89	503,552	76	83,925	76	8,762	88	57	6
96	956,405	85	599,694	38	149,924	97	4,480	43	134	4
97	878,717	95	295,000	86	59,000	98	3,741	78	79	5
98	850,288	94	296,386	89	49,398	95	6,000	92	49	6
99	640,928	98	150,000	97	25,000	102	1,900	79	79	6
100	508,074	100	88,962	98	17,792	100	3,527	99	25	5
101	305,373	104	0	104	0	96	4,570	104	0	8
102	267,000	102	53,000	100	13,250	103	1,200	95	44	4
103	88,520	101	71,752	101	10,250	101	3,178	100	23	7
104	65,690	103	6,380	103	1,063	99	3,688	102	2	6

(continued from page 65)

The information superhighway has completely transformed the way that we communicate with each other, and even greater developments are destined to occur within the next few years. Where we were once content to wait days or weeks for responses to our communications, we now get impatient if we cannot receive our answer the same day. The technology revolution has made possible many accomplishments that were in the realm of science fiction only a few years ago. The cloning of Dolly has made a huge impact on public awareness of scientific achievements. This was such an important milestone that *Science* designated Dolly as the major scientific breakthrough of the year (10). Now, there are Charlie and George (the cloned calves), and the prospect exists for the efficient creation of genetically modified animals that will produce a variety of different substances in their milk or plasma or will serve as organ factories. Obviously, physiologists will have to serve as leaders or members of scientific teams involved in these endeavors in order to determine the functional consequences of genetic modifications and the compensatory physiological adjustments that occur.

The tremendous strides being made in characterizing the human genome as well as those of several laboratory species have opened up many research avenues that were not possible even a few years ago. The availability of an ever-increasing number of gene-targeted laboratory animals allows the resolution of specific physiological issues that have remained almost impenetrable for decades. How are we to view these exciting developments? As threats because scientists in other fields have captured the limelight? No! We should view these developments as opportunities for exciting interactions with various colleagues to explore new frontiers. It is my opinion that these recent developments have set the stage for a "Renaissance in the Physiological Sciences," a period of renewed intellectual and experimental achievements. And enthusiasm! Indeed, the very essence of the discipline of physiology will ensure this renaissance. The many issues and questions posed by new technological and molecular developments must be brought to fruition in terms of their functional characterization.

It is my opinion that these recent developments have set the stage for a "Renaissance in the Physiological Sciences," a period of renewed intellectual and experimental achievements. And enthusiasm!

Another very positive development is that there has been a startling improvement in the attitudes of our legislators about funding for medical research. Just a few years ago, one of the most pressing concerns was the limited federal funding for biomedical research (2, 6, 11). James Schafer (11) raised concerns about the funding climate and the major emphasis on deficit reduction. The 5.7% increase for NIH for that fiscal year (FY 1996) was considered a "windfall unlikely to be achieved again in the near future." Times change rapidly, and we now hear many proponents for doubling the federal research budget over the next five years. This is due, in no small part, to the advocacy efforts of APS — remember that some of your membership dollars may have helped you get your grant — and the other FASEB societies as well as Research!America. We have been very fortunate to have the support of several outspoken legislators such as Rep. John Porter (R-IL), Sen. Arlen Specter (R-PA), and former Sen. Mark Hatfield (R-OR) as well as the leadership of NIH Director Harold Varmus. There is now broad-based support in both Congress and the Administration to increase funding for biomedical research in a very substantial manner. In his State of the Union message, President Clinton proposed a "21st Century Research Fund for pathbreaking scientific inquiry that will be the largest funding increase in history for NIH, NSF, and the National Cancer Institute." At a later press conference, Health and Human Services Secretary Donna Shalala commented, "We are entering a golden age of research." On January 29, Specter introduced a Sense of the Senate resolution calling for a $2 billion increase in NIH for FY 1999, an increase of 14.7% from FY 1998. This was similar to the increase recommended by Porter.

These views are reflected in the recent FASEB Consensus Conference report, "Federal Funding for Biomedical and Related Life Sciences Research" (3). This report is relied on by members of the legislature and provides guidelines for funding various agencies, including NIH and NSF. The consensus was that "the time is right for substantial increases in our national investment in basic research in biomedical and related life sciences." A recommendation that funding for NIH be increased by 15% for FY 1999 was made, which would have been unthinkable only a few years ago. Clearly, these are better times than when Brian Duling wrote of "the worst of times" and when Leonard S. "Jim" Jefferson spoke of funding for research grants being flat since 1987 (2, 6).

This new effort for increased funding will greatly reinvigorate research activities. The challenge for us is to provide novel initiatives that will excite members of Congress. We must also stimulate our members to recognize and convince others of the importance of physiological investigations at all levels: from molecular to integrative and from cellular to organismic.

Physiologists attempt to understand life processes at all levels, and APS should be prepared to embrace and serve them all. This can be achieved by continuing our efforts to improve all facets of APS activities and to be highly responsive to the needs of all members of our constituency. New scientific developments and breakthroughs in other fields should

be quickly assimilated and integrated into physiological dimensions. As emphasized before (1), these are exciting times for the physiological sciences, a point eloquently stated by Claude Lenfant, Director of the National Heart, Lung, and Blood Institute (7). Lenfant said, "The physiologist is at the threshold of an unprecedented scientific era. To him or her will fall the task of making sense of the bits and pieces of new knowledge that are so rapidly accumulating." It is up to us to take full advantage of these unparalleled opportunities, and it is up to APS to give the support that will help you in this effort.

Visions for the 21st Century

My vision for APS as we enter the 21st century is that we will have captured the attention and loyalty of an even greater fraction of the physiological constituency. Our constituency consists of all investigators and educators —- whether they belong to APS or not — interested in the functional mechanisms governing life processes. In order to grow and flourish, APS must maintain an attitude of service to the overall discipline of physiology. We serve the Society best by furthering the cause of all physiologists and avoiding narrow and restrictive definitions. Collectively, we must do all that we can to convince investigators and educators working in all facets of the physiological sciences to become part of our active constituency. We need to continue efforts to make appropriate adjustments to our meetings and publications so that most of the exciting developments and findings will be presented at APS meetings and published in APS journals. Each of us must be an ambassador for the Society. Each of us must persuade our associates, colleagues, and collaborators to relate more closely to APS, to present at Society meetings, and to publish in Society journals. Just think of the collective influence that we could have if all physiologically oriented investigators, educators, and societies were to join forces under one umbrella!

While it is clear that there are many positive signs, we should also recognize problems that seem to keep us from speaking out with a unified voice. One recurring problem voiced often is that the image of APS is not as positive as we would like for it to be. This image is what determines the attractiveness of the organization to those whom we seek to embrace. Many of our younger constituents have never developed a close sense of identity with APS. The number of APS members aged 30-39 was 1,074 (17% of respondents) in 1985 and 998 (13% of respondents) in 1995. What are the reasons for this diminished interest among younger scientists? Perhaps some feel that APS has failed to provide a sense of identity and that it does not provide for special needs that are served better by smaller, more focused organizations. We can argue that these are incorrect perceptions, but many times perceptions are more real than the actual realities. We cannot deny that many of our colleagues, in particular younger ones, perceive that APS does not have the "prestige" of more modern societies. To a certain extent, we must accept the fact that scientists with mutual interests want to meet together and exchange findings and attitudes. Also, newly formed societies have an image of being "more timely and more modern." We must emphasize, however, that it need not be an either/or situation. Physiologists can and should be members of APS as well as of their specialty organizations.

Visions for Membership

It is easy to rationalize how APS will be strengthened by additional numbers, but the critical question is why investigators and educators in the physiological sciences should become a part of APS. Why is it in their best interests to join APS? Few younger scientists have a strong, discipline-oriented loyalty characteristic of more mature members who were nurtured as physiologists when the boundaries of various disciplines were more crisply defined. Few individuals will join strictly from a sense of duty; they have to be convinced that APS serves their major scientific and educational needs. These perceived needs include:

The challenge as we plan for the 21st century is to develop the right combination of programs that will serve all the members of our constituency.

- a need to be identified with a progressive and dynamic group of associates and colleagues
- a need to interact personally, in an intellectually satisfying environment, with others who share their interests
- a need to exchange views and experiences both informally through meetings and conferences and formally through journals and symposia
- a need to undertake collective action that furthers their interests
- perhaps most importantly, a need to be heard and recognized by those in positions of influence

If APS is prepared and willing to develop, implement, and refine programs that will satisfy these needs, we will flourish. The challenge as we plan for the 21st century is to develop the right combination of programs that will serve all the members of our constituency. This is easy to say, but it is much harder to actually know what combination of activities will have that elusive magical ambience. APS is making definitive efforts to document the specific needs, priorities, and perceptions of our membership, and this information is being used to establish APS priorities. The results of the recent "Member Needs Survey" that were reported in the February 1998 issue of *The Physiologist* have been very helpful (4). Importantly, various specific recommendations were

made, and we intend to be highly responsive to these. Some of these recommendations include:

- increased networking opportunities
- more award programs and recognition of accomplishments
- greater sectional representation and autonomy with greater communication to section members
- greater participation by younger members in all aspects of the Society
- more information and counseling on career opportunities
- more useful APS member publications
- streamlined publications procedures and decreased time from acceptance to publication
- improved programming at the EB meeting
- increased support to the educational mission of APS
- enhanced activity in public affairs and advocacy efforts

The renewed emphasis on further development and empowerment of the various sections and special interest groups within APS will provide an important mechanism by which APS can be more responsive to its members. Every section member should extend an open invitation to colleagues who do not participate in APS activities and should welcome them to their section activities. Furthermore, if any group within APS feels that its interests are not well-represented by existing sections, the members of that faction should join forces to develop a special interest group or new section that will be more responsive to their specific needs. Sections should be viewed as dynamic and responsive entities capable of reflecting the changing times.

I am inviting you now to help us achieve our target to increase our membership to 10,000 by the year 2000. I am asking you to personally make a commitment to sponsor new members.

Growth of a society is viewed as a reflection of an active and dynamic program. Unfortunately, APS membership has not grown very much over the last few years. Since 1990, our total membership has increased from 6,880 to 8,369 (as of October 1997). Most of this growth has been due to increases in the number of student and corresponding members. The number of regular members grew rather modestly from 4,839 to 5,454 these last seven years. An overall growth of 11% in regular members over seven years is not particularly impressive. Yet we all know from our own interactions with many colleagues and associates working in various clinical and basic science departments at universities and in the corporate sector that many of them are involved in some aspect of the physiological sciences. Importantly, we should not neglect our many colleagues who are working on pathophysiology and physiological derangements responsible for disease processes. As I have often said, physiologists are everywhere. It is just that they do not always admit to being physiologists!

Many of our colleagues in clinical departments relate closely to the physiological scientific community. It is up to us to convince all components of our constituency that APS will serve their needs, and we must make every effort to make our clinical colleagues feel at home in APS. I feel that it is very important for APS to bring into its active roles a greater fraction of the physiological constituency. I am inviting you now to help us achieve our target to increase our membership to 10,000 by the year 2000. I am asking you to personally make a commitment to sponsor new members.

In our efforts to make the Society more inclusive, we must recognize that APS is, by all its outward manifestations, an international organization. Physiologists from all over the world publish in our journals and participate in our scientific meetings and conferences. Colleagues from other countries serve with distinction on our editorial boards and work with us to improve our conferences and meetings. It is time to accept all physiologists interested in relating to APS, regardless of nationality, as full members. We already accept as "regular" members applicants from throughout the Americas. Yet we continue to label our APS members from overseas as "corresponding" members. I propose that we abolish this category and accept all qualified applicants as regular members, without regard to national origin or geographic location. By accepting our physiological colleagues from all over the world as full regular members, we will further strengthen our meetings and our journals.

The concept of inclusiveness goes beyond acceptance and encouragement of our international and clinical colleagues. We must increase efforts to increase gender, ethnic, and racial diversity within APS. We have a remarkably small percentage of our membership from underrepresented groups. As of 1995, less than one in five APS members were women. Even more appalling is the incredibly small number of APS members who belong to underrepresented minority groups such as Native Americans, African Americans, and Hispanic Americans. African American APS members are less than 2% of the membership. Native Americans and native-born Hispanics collectively are less than 1%. As a Chicano physiologist, I personally would like to know if there are even one dozen Chicanos in APS. Please write to me and let me know!

While many Hispanic physiologists born and trained in their home countries have found their way to APS, we have done little to encourage minority groups raised and educated in our own country. President Clinton's recent trip to South Texas emphasized the importance of education for members of minority groups, and we at APS should continue to increase our efforts to raise the awareness of members from these disadvantaged groups to the excitement of careers in the physiological sciences. The issue of enhanced recruitment efforts targeted at minorities and other underrepresented groups is widely misun-

derstood and often maligned. It is not that members of underrepresented groups are more deserving of these opportunities. Rather, they are equally deserving but are much less likely to have access to special pipelines, networks, or role models.

Therefore, APS should be committed to making even greater investments into outreach and educational programs all the way from kindergarten to undergraduate levels. To be successful, these goals will require not only the efforts of the Society but will also require greater collective efforts by FASEB and other science groups to spread the message of science throughout our schools and communities. We must devise ways to assimilate science educators teaching at the various educational levels. I echo the recent comments made by Bruce Alberts, President of the National Academy of Sciences, who emphasized at the last annual meeting, "It is we who determine who is or is not considered a scientist. If we convey to those who do not do scientific research that they are not part of our community, then science teachers and others will remain isolated."

As is evident from my comments, one of my major goals is to increase the membership of APS by making it more representative, inclusive, and diverse. This increased membership should be derived from both international and national constituencies. From the international constituency, we should welcome as full members of the Society all those physiologists who relate to APS and want to participate in APS activities. Importantly, we should recognize the severe financial limitations existing in many underdeveloped countries throughout the world, and we should make allowances to allow groups of physiologists from these sectors to become associated with APS under one membership. From the national constituency, we should urge all physiological scientists — basic or clinical, integrative or molecular — to become active APS members. As a long-term investment, we must bring an awareness of the physiological sciences to the early formative years from K-12 and into the undergraduate levels so that students considering careers in biomedical research recognize the exciting opportunities that exist in the physiological sciences.

It is important to emphasize once again that APS desires to serve all members of our constituency regardless of their specific investigative or educational orientation. We must stop painting ourselves into a corner by insisting on a narrow definition of the discipline of physiology. Active, assertive participation by members with diverse perspectives will contribute greatly to the vibrance and vitality of the Society.

Visions for APS Meetings

The problems and issues related to the meetings and conferences sponsored by APS were addressed in detail last year by Allen Cowley and in several other presidential articles (1, 2, 6, 11). In particular, Cowley delineated the negative opinions held by some of our members regarding the EB meeting. Clearly, many APS members are not satisfied with the EB meeting and have lost their enthusiasm for participation in it. I personally have enjoyed the EB meetings, and it is very disconcerting to know that so many APS members do not participate. The attendance numbers substantiate the anecdotal impressions. In former years, we had about one-fourth of our membership attending the EB meeting. In more recent years, attendance by APS members has steadily decreased. This decreased interest is remarkable because this is our meeting, and it can be anything that we want it to be. Yes, there are many competing speciality and subspeciality meetings and conferences, but the EB meeting is the only meeting where you as an APS member can exert your full influence. Through your participation in one or more of the APS sections, you can become directly involved in programming.

Cowley and the APS Council have initiated a number of positive steps to make major improvements to the EB meeting. Cowley convened a Blue Ribbon Panel to evaluate members' concerns and to provide creative suggestions for improvement of the meeting (5). We also devoted the recent Council retreat to consideration of the panel's recommendations and development of mechanisms to implement the suggestions. We expect the many positive actions initiated will improve markedly the quality of future EB meetings and make them more responsive to your needs. I urge you to join me in supporting the APS Program Committee as we strive to make the EB meeting the best of its kind in the world. Above everything, we need your active input and participation. Let us hear from you about how to improve the stature of this meeting or any other APS meeting. Get involved in program development through your section. Submit your best work to the EB meeting. Encourage your colleagues and associates to participate in the meetings. It is a wonderful time to meet with your colleagues and friends from throughout the world. Because of its interdisciplinary nature, the EB meeting provides outstanding opportunities for crossfertilization of ideas and experimental approaches. It is also a great time for those primarily involved in educational activities to receive up-to-date information on the latest developments, findings, and innovative approaches. If we, collectively, make the decision to have outstanding, high-quality EB meetings, then we will succeed!

Visions for APS Publications

There is a perception on the part of some APS members that APS journals are not quite as "prestigious" as other scientific journals. We often hear references to their Institute for Scientific Information (ISI) Impact Factors not being as high as other journals in the same general category. Those who take such rankings seriously hesitate to publish in APS journals. Recently, *Circulation Research* discussed these issues (8) and emphasized that its ISI Impact Factor had gone from 5 to 8, similar to that of the *Journal of Clinical Investigation* and the *Journal of Biological Chemistry*. The *American Journal of Physiology* was listed in the graph, and its Impact Factor hovered around 3.5 for this period (1992-1995). When the individual *AJP* journals are analyzed separately, however, their citation statistics

are more impressive. APS recently contracted with ISI for a 10-year study of the citation statistics of the individual APS journals and their competing journals. The study showed that most of our individual journals have citation rates and citation half-lives that are higher than their competitor journals. (The details of this analysis will be published in a future issue of *The Physiologist*.) By all the hard evidence available, the APS journals continue to experience unparalleled success and have made many innovative advances. We have outstanding and creative editors, and our journals have a wide circulation throughout the world. *Physiological Reviews* is first in its class and among the top 20 "highest impact" journals. The *American Journal of Physiology* is among the 15 most cited of all scientific journals. The single most important point is that when you publish in APS journals, your article will

Introducing ... L. Gabriel Navar

L. Gabriel (Gabby) Navar was installed as the 71st President of the American Physiological Society at the Society's spring meeting this month in San Francisco.

Navar is Professor and Chairman of the Department of Physiology at the Tulane University School of Medicine in New Orleans, LA, where he has served since his appointment in 1988. He was born in 1941 in El Paso, TX, where he received his education through high school. He attended Texas A&M University, obtaining a BS in animal science in 1962. He received his graduate training in the laboratory of Arthur Guyton at the University of Mississippi Medical Center in Jackson. Navar received his PhD in 1966 from the University of Mississippi and continued as a postdoctoral research associate under the tutelage of Guyton. He then joined the faculty at the University of Mississippi and was promoted to Associate Professor in 1971.

In 1972, Navar was a visiting scientist at Duke University and worked in the laboratory of James Clapp and Roscoe Robinson, where he received training in micropuncture methodology. After returning for a short period to the University of Mississippi, Navar then moved to the University of Alabama at Birmingham in 1974, taking a position as Associate Professor in the Department of Physiology and Biophysics and as a member of the Nephrology Research and Training Center headed by Thomas Andreoli. He remained there for 13 years, rising to the position of Professor of Physiology and Biophysics and of Medicine and Senior Scientist in the Nephrology Research and Training Center before accepting the chairmanship at Tulane.

In his early studies, Navar focused on the tubuloglomerular feedback mechanism and its role in renal autoregulation. His work was pivotal in integrating the newly emerging field of single-nephron tubuloglomerular feedback with autoregulation of renal blood flow and glomerular filtration rate. Subsequently, his laboratory was instrumental in developing our current understanding of the intrarenal renin-angiotensin system and in integrating angiotensin II reabsorptive and hemodynamic functions. In addition, his laboratory was at the forefront of developing methodologies for directly investigating renal resistance vessels. The development of the isolated perfused juxtamedullary nephron preparation in his laboratory has been of enormous benefit in helping scientists understand how the various paracrine agents interact to regulate afferent and efferent arteriolar tone. Thus, for the past 30 years, Navar's efforts have profoundly shaped our understanding of the intrinsic mechanisms responsible for regulation of the renal microvasculature. His current work is also directed toward delineation of the alterations in intrarenal function that contribute to the pathophysiological mechanisms mediating angiotensin II-dependent hypertension.

Navar has been an active member of APS since 1971, serving as Councillor for the Society for three years. He has been a member of the Program Advisory Committee, the Program Committee, and the Porter Physiology Development Committee. He was one of the founding members of the Renal Section and served on the section's executive committee. He also served as Associate Editor for the *American Journal of Physiology: Renal, Fluid and Electrolyte Physiology* for six years. In addition to his service to APS, Navar has been on numerous scientific committees of FASEB, the American Society of Nephrology, the American Society of Hypertension, and the American Heart Association. In 1996, he served as President of the Association of Chairs of Departments of Physiology. He has been on scientific study sections for NIH, VA, and the American Heart Association. He currently chairs the AHA Cardiorenal Study Section. He has been appointed to the editorial boards of *American Journal of Physiology: Renal, Fluid and Electrolyte Physiology*; *Hypertension; Kidney International*; *Kidney*; *Clinical Science*; *Nefrologia Latinoamericana*; *Journal of the American Society of Nephrology*; and *American Journal of Kidney Diseases*. He presently serves as Associate Editor of *Hypertension.*

Navar has received many awards, including the C. W. Gottschalk Distinguished Lectureship Award in 1997 from the Renal Section of the American Physiological Society and the Lewis K. Dahl Award from the High Blood Pressure Council of the American Heart Association in 1997. His research has remained well-funded, including an NIH Heart, Lung, and Blood Institute MERIT Award. He has more than 190 publications, a substantial number of which are reviews, editorials, and book chapters.❖

have worldwide distribution, and it will definitely reach your colleagues with similar interests. Thus, I urge you to send your very best work to APS journals. Facilitate your efforts to keep up with the literature by subscribing to at least one of the APS journals. The annual subscription rate is less than the cost of one experiment! Encourage your colleagues and associates to send their best papers to APS journals and to subscribe to APS journals. It is in our best interests collectively to continue to enhance the prestige and stature of the APS journals to the highest level possible, and we can do this if we all contribute to the quality of the journals.

The current success of the journals notwithstanding, these are very challenging times for all scientific publications. We remain uncertain how the technological revolution will affect our printed journals. As it becomes more and more accepted for journals to go on-line, there are predictions that the demand for hard copy subscriptions will decrease. The potential for decreased revenue from our publications is clearly one of the "far-off storms" that we need to recognize. We do not know what this will mean to APS journal subscriptions and to APS revenues. However, we are aware of these potential developments and are preparing for the changes that will come to the world of scientific publications as we enter the 21st century. Some of the journals have already gone on-line, and all of the APS journals will be on-line by the end of the year. APS members will be able to access these journals for a very nominal annual fee, and we hope that this will provide yet another incentive for individuals to join APS.

Visions for APS Educational Activities

There is no question that APS places a very strong emphasis on serving its constituency that is primarily oriented toward investigative pursuits. We also have an Education Office to serve our constituency that is primarily oriented toward educational and teaching endeavors. In terms of actual programs designed to help this constituency, however, we currently offer very little specific assistance. This is unfortunate because now more than ever our educators have very specific needs. In recent years, the Teaching of Physiology Section has increased its activities and has sponsored various programs, including the popular refresher courses at the EB meeting. Also, our journal, *Advances in Physiology Education*, serves our educators.

Nevertheless, there are many important potential projects that could be spearheaded by the APS Education Office to directly help members upgrade their teaching efforts. In this era of technological sophistication, there is a paucity of high-quality computer-assisted educational programs that can enhance physiology courses at all levels. In this regard, we are far behind other disciplines such as anatomy, neuroscience, and pharmacology. Even though there are relatively few programs available, we do not have any mechanisms for independent assessment or for encouragement of the development of these programs. It is hoped that the new Teaching Career Enhancement Award recently approved by Council will encourage the development of computer-assisted programs and other creative educational strategies. In my opinion, coordinating these efforts is a very important function of the APS Education Office, and I propose that we further develop this office so that it can give more attention to these duties.

The issue of guidelines for a national curriculum in the biomedical sciences has come up on frequent occasions, in particular with that part of our constituency that is primarily concerned with teaching medical students. Again, several of our sister societies such as anatomy and pharmacology already have developed curriculum guidelines that can be used to guide curriculum committees at individual medical schools. As medical and other professional schools in the health sciences throughout North America continue to revise and modify their curricula, a variety of different teaching approaches are being utilized. These widely diversified approaches range from traditional courses in physiology and neuroscience to those in which there is no single course that is specifically identifiable with the discipline of physiology.

Regardless of the specific vehicle used by individual schools to teach physiological principles, it is our responsibility to emphasize the importance of an appropriate exposure to the physiological concepts that provide the foundations needed for further studies in pharmacology, pathology, pathophysiology, and medicine (9). The mechanisms of deranged function cannot be appreciated without an in-depth understanding of basic biophysical and physiological mechanisms. The purpose of developing a national curriculum is to provide guidelines for the breadth and depth of knowledge in the physiological principles and concepts that are considered essential for further progress in understanding mechanisms of disease and of body defenses. Regardless of the specific didactic or educational approach by any given institution, appropriate mechanisms must be utilized to assure that students are being inculcated with these basic principles and concepts. At present, there is no specific authoritative reference that faculty can use to document the breadth and depth of physiological learning that is deemed essential. APS should be in a position to provide such a document to those that need it. These and several other potentially important functions should be considered further so that the APS Education Office can provide even greater and more direct services to members of its constituency primarily involved in teaching pursuits.

Overview

In closing, I would like to reiterate that we have many reasons to be very optimistic about the future of the physiological sciences and APS. The Society is in a sound financial position and has the resources to make the requisite investments that you deem desirable. Federal funding for biomedical research

is on an upswing and destined for even greater increases. Our discipline has the main responsibility for providing an integrative framework within which we can place in perspective the many exciting recent developments made possible by modern biotechnological and molecular developments. These new developments will allow us to expand our knowledge and understanding about physiological and pathophysiological mechanisms to new horizons. By nature of our training, physiologists alone appear to be uniquely suited to subserve the cardinal role of assimilating and putting into perspective the nearly overwhelming plethora of new and sometimes incomprehensible and inconsistent pieces of information. Who else will provide the integrative bridge that links these newly emerging areas? Together, we can make APS responsive to the needs of our discipline and our constituency, which will further strengthen the stature and influence of APS throughout the world of biological and biomedical sciences.❖

Acknowledgements

I express my appreciation to James Schafer, Allen Cowley, and Martin Frank for providing me with information, reading drafts of this article, and making suggestions. Special appreciation to Agnes C. Buffone for preparing the article.

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Physiological Society of Nigeria Journal Requests Support

The Physiological Society of Nigeria is requesting donations to help preserve the publication of its journal, the *Nigerian Journal of Physiological Sciences*. The journal was established in 1978 to promote and disseminate information in physiology and related disciplines among scientists within and outside Africa. The first volume of the journal was published in 1983, with two issues per year published since that time of approximately 100 pages each. D. D. O. Oyebola (University of Ibadan, Nigeria) served as the journal's first editor from 1983 to 1987. The editorship was then assumed by A. B. Ebeigbe (University of Benin, Nigeria), who continues as the current editor.

During its tenure, the *Nigerian Journal of Physiological Sciences* has served the needs of its readership, which is composed of biomedical scientists and clinical practitioners in Nigeria and the Third World. It is currently indexed by both Exerpta Medica database and Chemical Abstracts. Production funds for the journal are procured through membership subscription (the society has 145 members), philanthropic contributions, and the sale of reprints of articles.

Plans for the future center around reorganizing the editorial offices to make use of desktop publishing facilities in order to allow for greater efficiency and to reduce the journal production costs. The total cost of this reorganization, which includes the purchase of computers, printers, scanners, etc., will be approximately $21,500.

However, in the short term, there is more concern about meeting the forecasted costs associated with the yearly production of the journal. Approximately $5,000 is needed to allow the Physiological Society of Nigeria to continue publishing the next volume of the journal. Because of the specialized nature to sub-Saharan Africa of the articles the *Nigerian Journal of Physiological Sciences* publishes, the journal is often the only reasonable alternative in which African scientists can publish their research.

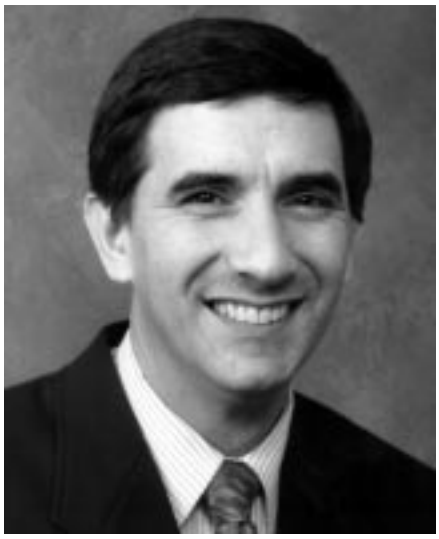
Any scientists wanting to aid their African colleagues in their efforts to maintain a scientific research journal should send financial donations to the *Nigerian Journal of Physiological Sciences*, Physiological Society of Nigeria, c/o Department of Physiology, Faculty of Medicine, University of Benin, Benin City, Nigeria. For additional information about the journal's needs, contact A. B. Ebeigbe, Editor-in-Chief, via e-mail at ebeigbe@infoweb.abs.net.❖

APS Election Results

Walter F. Boron, Professor and Chair, Department of Cell and Molecular Physiology, Yale University School of Medicine, is the new President-Elect.

The two newly elected Councillors taking office on April 23, 1998, for three-year terms are **Ethan R. Nadel**, Director of the John B. Pierce Foundation Laboratory, and **Phyllis M. Wise**, Professor and Chair, Department of Physiology, University of Kentucky College of Medicine. ❖

President-Elect



Walter F. Boron

Councillors

Ethan R. Nadel

Phyllis M. Wise

Levitsky Selected as Recipient of 1998 Arthur C. Guyton Physiology Teacher of the Year Award

Michael G. Levitsky, Professor of Physiology and of Anesthesia, Louisiana State University Medical Center, New Orleans, LA, has been selected as the 1998 Arthur C. Guyton Physiology Teacher of the Year. The award, now in its sixth year, is given for documented excellence in teaching both in and out of the classroom and for a demonstrated commitment to physiology education. W. B. Saunders Company sponsors the award, which consists of a plaque, a cash award of $1,000, and funds to defray some of the expenses for attending the meeting.

Levitsky's award will be presented at EB '98 in San Francisco, CA, in conjunction with his talk on "Connections: Physiology in the Medical Curriculum." The ceremony will be held on Monday, April 20, at 6:30 PM in Pacific Suite I of the Marriott Hotel. This will allow the high school teachers from the APS *Frontiers in Physiology* summer research program to attend.

Levitsky, who holds adjunct appointments as Professor of Physiology and of Pediatrics at Tulane University Medical Center in addition to his duties at Louisiana State, is an outstanding classroom teacher, according to the comments of those who know him. He is also a successful author, as his primary book, *Pulmonary Physiology*, is now in its fourth edition and has been translated into Italian and Spanish. His talk and award presentation at EB '98 promises to serve as a highlight for the Teaching of Physiology Section's activities during the meeting.

APS extends an invitation to all to attend the 1998 Guyton Physiology Teacher of the Year Award presentation and thanks the W. B. Saunders Company

ACDP Presents Distinguished Service Award to Hunt

At the Winter Retreat of the Association of Chairmen of Departments of Physiology held December 4-7, 1997, in San Juan, PR, the association's annual Distinguished Service Award was presented to Carlton C. Hunt.

Hunt, now Emeritus Visiting Professor at the University of North Carolina at Chapel Hill, chaired three departments of physiology during his long career. From 1957 to 1964, he headed the Department of Physiology at the University of Utah and from 1964 to 1967 that at Yale University. Finally, he chaired, until 1983, the Department of Physiology and Biophysics at Washington University in St. Louis.

Of the people he hired or who were associated with him or his faculty, many became chairs themselves, including D. Baylor, W. Betz, M. Blaustein, W. Boron, J. Caldwell, P. De Weer, C. Eyzaguirre, Y. Fukami, J. Hoffman, M. Kuno, L. Landmesser, A. Martin, R. Miller, J. Nicholls, E. Perl, C. Pfenninger, G. Pilar, D. Purves, R. Rakowski, L. Reuss, J. Russell, C. Slayman, P. Stahl, A. Takeuchi, and K. Uchizono.❖

Front (l to r): Mordecai Blaustein, Carlton Hunt, Paul De Weer.
Back (l to r): Robert Rakowski, Philip Stahl, Walter Boron.

APS Teaching Career Enhancement Awards

Statement of Purpose:

The APS Teaching Career Enhancement Awards are designed to enhance the career potential of regular members. The awards will provide up to $4,000 to allow individuals to develop innovative and potentially widely applicable programs for teaching and learning physiology. The awards can be used to support short-term visits to other schools to consult with experts who can assist with the development project or attendance at special courses devoted to methodologies appropriate for the educational development project.

Application Procedure:

Candidates who are regular members in good standing may submit an application form including the following: *1*) a two-page description of the proposed project, including the aim, the educational problem that the project is designed to ameliorate, identification of the innovative aspects, a plan to evaluate the educational outcomes, and the kinds and sources of expertise needed by the applicant to carry out the project; *2*) an anticipated budget with justification for requested funds; *3*) a letter of support from the applicant's department chair or other appropriate individual; *4*) letters of agreement from individual or departmental hosts of schools to be visited; *5*) description or outline of courses to be attended; and 6) a brief curriculum vitae focused on activities and achievements related to education.

Deadlines and Contact Information:

Deadlines: April 15 and October 15. Successful applicants are expected to report, in print or at a physiology conference, a description of the project and its evaluation. Awardees are encouraged to submit such reports for publication in *Advances in Physiology Education*. For an application form, please contact Martin Frank, Executive Director, American Physiological Society, 9650 Rockville Pike, Bethesda, MD 20814-3991. Tel: 301-530-7118; fax: 301-571-8305; e-mail: awards@aps.faseb.org; Internet: **http://www.faseb.org/aps/awards.htm**.

1997 APS Conference

The Physiology and Functional Diversity of Amiloride-Sensitive Na^+ Channels: A New Gene Superfamily

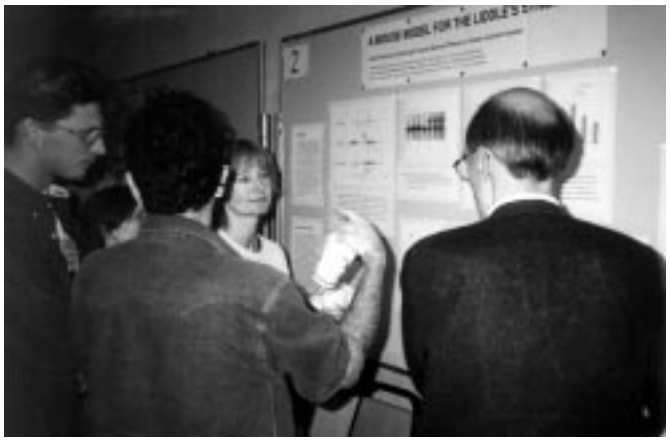
October 29–November 1 • Park City, UT

The snow-capped Rocky Mountains served as the backdrop for the 1997 APS Conference on "The Physiology and Functional Diversity of Amiloride-Sensitive Na^+ Channels: A New Gene Superfamily," organized **Dale J. Benos** with the assistance of **Bernard C. Rossier**, **Douglas C. Eaton**, **Lawrence G. Palmer**, **Bruce A. Stanton**, and **David G. Warnock**. The conference featured an in-depth exchange of ideas concerning amiloride-sensitive Na^+ channels, their regulation, and their involvement in normal and pathophysiological situations. Issues were discussed at the molecular, cellular, and organ levels, including the relationship of the cloned ENaC to native Na^+ channels, the interactions of Na^+ channels with other cellular components, the involvement of epithelial Na^+ channels in disease states such as hypertension and cystic fibrosis, the molecular basis for the conversion of secretion versus the absorptive function of the lungs at birth, and the relationship between amiloride-sensitive Na^+ channels and the mechano-sensitive channels found in sensory systems.

There was an internationally recognized and interdisciplinary group of investigators present, and interaction was enhanced by the presence of young scientists, students, and investigators new to the burgeoning field of amiloride-sensitive Na^+ channels. The conference attracted 187 registrants, 29% of whom represented young scientists, including 13% student and 16% postdoctoral registrants. Seventeen percent were members, including one emeritus member, and 23% were not members of APS.

The outstanding program consisted of 10 symposia, 4 plenary lectures, and a total of 63 poster presentations. The social program included the Wednesday evening opening reception and Friday evening banquet and awards presentation.

Park City Conference Organizer Dale Benos (upper left) with the eight recipients of the Graduate Student Awards.



Poster Session during the Park City Conference.

The awards presentation recognized eight recipients of the Graduate Student Award. The awardees presented with a cash prize and certificate were **Christopher M. Adams**, University of Iowa, "Ripped Pocket, a Degenerin Na^+ Channel Encoded by Maternal Transcripts in *Drosophila* Embryos"; **Oliver Bonny**, University of Lausanne, Switzerland, "Towards Mouse Models of PHA-1"; **Chun Cheng**, University of Iowa, "ENaC Oligomerizes into a 25S Complex"; **Christopher Davreux**, Toronto General Hospital, Canada, "In Vivo *N*-Acetyl Cysteine Attenuates Neutrophil-Mediated Inhibition of Amiloride-Sensitive Sodium Channel Activity in Distal Lung Epithelial Cells"; **Jesus A. García**, Massachusetts General Hospital, "The Nematode Degenerin UNC-105 Forms Channels in HEK Cells That Are Hyperactivated by Mutations That Cause Neuronal Degeneration or Muscle Hypercontraction"; **Naomi Niisato**, Hospital for Sick Children, Canada, "Osmoregulation of Na^+ Transport in Renal Epithelial A6 Cells"; **Sylvain Pradervand**, University of Lausanne, Switzerland, "A Mouse Model for Liddle's Syndrome"; and **Mark D. Zentner**, University of Southern California, "Regulation of α-rENaC Gene Expression in Rat Parotid Cells by Raf/MEK/ERK Pathway".

García was also the recipient of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Fellowship Award provided to encourage participation of underrepresented minority students. Supported by NIDDK, the fellowship provides reimbursement of all expenses associated with travel to and participation in the conference. The recipient is matched with an APS member attending the conference who offers guidance and makes introductions to other scientists. **Barbara Goodman** of the University of South Dakota served as García's mentor.

A total of 64 abstracts were submitted to the conference for poster presentation. Table 1 provides a distribution of abstracts based on submitting department. Thirty percent were by female first authors; 33% were submitted by authors at institutions outside the Americas. A total of 187 registrants attended the conference. Table 2 provides the breakdown of registration by type. Twenty-two percent of the registrants were female. Twenty-seven percent were from outside the Americas, and 4% were from industry.

Table 1. Distribution by Department of Submitted Abstracts

Department	No. of Abstracts	%
Medicine or Internal Medicine	14	22%
Physiology	13	20%
Pharmacology & Toxicology	9	14%
Physiology & Biophysics	7	11%
Biology or Biological Science	2	3%

Table 2. Registration Statistics

Type of Registrant	No.	%
APS Member	30	16%
Nonmember	44	23%
Postdoctoral	29	16%
Student	24	13%
Retired	1	1%
Invited Speaker	55	29%
Guest	4	2%
Total	187	100%

APS and the Organizing Committee gratefully acknowledge financial support provided through generous educational grants from Axon Instruments, Inc.; Corning Costar Corporation; the Cystic Fibrosis Foundation; NIDDK; Photon Technology International; and Texas Fluorescence Laboratories.❖

1998 APS Conference

Endothelial Regulation of Vascular Tone: Molecular to Integrative Physiology

September 16–19, 1998 • Radisson Riverfront Hotel • Augusta, GA

ORGANIZER

David M. Pollock, Medical College of Georgia

ORGANIZING COMMITTEE

Jennifer S. Pollock, Medical College of Georgia
John D. Catravas, Medical College of Georgia
L. Gabriel Navar, Tulane University
Harris J. Granger, Texas A&M University

WEDNESDAY, September 16, 1998

DISCOVERY OF ENDOTHELIAL-DERIVED FACTORS

Endothelial-Derived Relaxing Factors
Salvador Moncada, University College, UK
Nitric Oxide and G-cyclase Activation
Ferid Murad, University of Texas at Houston
Endothelin
Masashi Yanagisawa, Howard Hughes Institute
Arachidonic Acid Metabolites
William B. Campbell, Medical College of Wisconsin
Endothelial-Derived Hyperpolarizing Factor
Rudi Busse, J. W. Goethe University, Germany
Mechanisms for Sustained Release of Vasodilators by Endothelium
Bradford C. Berk, University of Washington

THURSDAY, September 17, 1998

BASIC SCIENCE STATE OF THE ART

Role of Nitric Oxide in Vascular Disease
Louis J. Ignarro, University of California at Los Angeles

ACTIVATION AND SIGNAL TRANSDUCTION MECHANISMS

Effects of Acute and Chronic Shear Stress on Endothelial Function
Gabor Kaley, New York Medical College
Flow-Dependent Responses to the Vascular Endothelium
John A. Frangos, University of California at San Diego
Shear Stress Effects in the Glomerulus
Barbara J. Ballerman, Johns Hopkins University
Metabolic Control of Endothelial Cell Function
Richard J. Paul, University of Cincinnati
Protein-Protein Interaction in Endothelial Cell Caveolae
Richard C. Venema, Medical College of Georgia
Cell-Cell Communication
Brian Duling, University of Virginia

MOLECULAR AND GENETIC REGULATION

Transgenic Mice as Models for Hypertension
Edward G. Shesely, Henry Ford Hospital
Molecular Regulation of NOS-III
David G. Harrison, Emory University
Genetic Regulation of NOS II Induction
Ulrich Fürstermann, Gütenberg University, Germany
Special Lecture: *NO Synthase Isoforms*
Jennifer S. Pollock, Medical College of Georgia

FRIDAY, September 18, 1998

INTERACTION OF ENDOTHELIAL FACTORS

Endothelial Regulation of Renin Release
Josephine P. Briggs, University of Michigan
Endothelin-Nitric Oxide Interactions in the Kidney
David M. Pollock, Medical College of Georgia
Endothelial Regulation of Arterial Pressure
Joey P. Granger, University of Mississippi
Kinin Regulation of Nitric Oxide Production
Thomas H. Hintze, New York Medical College

PULMONARY CIRCULATION

Regulation of Endothelium-Bound Angiotensin Converting Enzyme
John D. Catravas, Medical College of Georgia
Pulmonary Circulation
Philip J. Kadowitz, Tulane University
Role of ET in the Developing Lung
Steven H. Abman, University of Colorado

RENAL CIRCULATION

Angiotensin-Nitric Oxide Interactions in the Kidney
L. Gabriel Navar, Tulane University
Mechanisms of Angiotensin and Prostaglandin Action in the Renal Microcirculation
William J. Arendshorst, University of North Carolina
Nitric Oxide in the Macula Densa and Afferent Arteriole
Christopher S. Wilcox, Georgetown University
Special Lecture: *Peptidases in the Vascular Endothelium*
James W. Ryan, Medical College of Georgia

SATURDAY, September 19, 1998

CLINICAL SCIENCE STATE OF THE ART

Pivotal Role of Endothelium to Heart-Lung Transplantation
Sir Magdi Yacoub, Imperial College, UK

CORONARY CIRCULATION

Endothelial Regulation in Cardiomyopathy
Leslie C. Fuchs, Medical College of Georgia
Estrogen Modulation of the Vascular Endothelium
Virginia M. Miller, Mayo Clinic
Effect of Exercise on Endothelial Function
M. Harold Laughlin, University of Missouri

ENDOTHELIUM AND DIABETES

Endothelial Dysfunction in Diabetes
Richard A. Cohen, Boston University
Diabetic Nephropathy
Pamela K. Carmines, University of Nebraska
Novel Therapeutic Approaches to the Treatment of Diabetes
Joan A. Keiser, Parke-Davis

RESPONSE TO INJURY

Endothelin in Vascular Disease
Terry J. Opgenorth, Abbott Laboratories
Endothelial Regulation of Angiogenesis
Harris J. Granger, Texas A&M University
Endothelial Cell Gene Expression in Response to Injury
Mary E. Gerritsen, Bayer
TGF-ß in Fibrotic Disease
Wayne A. Border, University of Utah
Activation of Endothelial Stress Genes
Bruce R. Pitt, University of Pittsburgh

1998 APS Conference

The Paraventricular Nucleus of the Hypothalamus: A Crossroads of Integrative Physiology

December 5–9, 1998 • San Antonio, TX
The Menger Hotel

ORGANIZER:

Joseph R. Haywood
University of Texas Health Sciences Center at San Antonio

STEERING COMMITTEE:

Alan K. Johnson
University of Iowa

Arthur D. Loewy
Washington University

Leo P. Renaud
University of Ottawa

Catherine Rivier
Salk Institute

Anton J. W. Scheurink
University of Groningen, The Netherlands

The paraventricular nucleus of the hypothalamus (PVN) serves as the crossroads of integrative physiology. This discrete hypothalamic area receives neural, humoral, and endocrine input regarding the state of the cardiovascular, endocrine, and immune systems, as well as fluid and electrolyte and energy balance. Integration of afferent inputs results in efferent neural or hormonal regulation of specific organ systems. This conference will bring together scientists who study different physiological systems and who use a variety of technical approaches ranging from molecular biology to whole animal physiology. The goal will be to understand how the PVN integrates afferent information, controls specific physiological functions, and coordinates interactions among organ systems.

TENTATIVE PROGRAM

Anatomy, Neural Pathways, and Neurochemistry
Arthur Loewy, Washington University; **Paul Sawchenko**, Salk Institute; **Larry Swanson**, University of Southern California

Integration of Ingestive Behaviors
Alan K. Johnson, University of Iowa; **Glenn Stanley**, University of California at Riverside; **Stephen Woods**, University of Washington; **Joseph Verbalis**, Georgetown University; **Gaylen Edwards**, University of Georgia, **David York**, Pennington Biomedical Research Center.

Role in Metabolism and Energy Balance
Anton J. W. Scheurink, University of Groningen, The Netherlands; **Barry Levin**, Veterans Affairs Medical Center, East Orange, NJ; **Gertjan van Dijk**, University of Groningen, The Netherlands; **Martine Orosco**, University of Paris; **Mary Dallman**, University of California at San Francisco.

Neuroendocrine Regulation
Leo P. Renaud, University of Ottawa; **Stanley Watson**, University of Michigan; **Ruud Buijs**, Netherlands Institute of Brain Research; **Charles Bourque**, McGill University; **William Crowley**, University of Tennessee at Memphis; **Paul Plotsky**, Emory University

Stress and the Immune System
Catherine Rivier, Salk Institute; **Serge Rivest**, Laval University; **Dwight Nance**, University of Manitoba; **Adrian Dunn**, Louisiana State University; **James Herman**, University of Kentucky

Control of Cardiovascular-Renal Function
Joseph R. Haywood, University of Texas Health Sciences Center at San Antonio; **Steven Bealer**, University of Tennessee at Memphis; **Quentin Pittman**, University of Calgary; **Mariana Morris**, Wright State University; **Kaushik Patel**, University of Nebraska; **Alastair Ferguson**, Queens University

APS Conference Deadlines

Endothelial Regulation of Vascular Tone: Molecular to Integrative Physiology

Abstract Deadline: May 15, 1998
Early Registration Deadline: August 14, 1998

The Paraventricular Nucleus of the Hypothalamus: A Crossroads of Integrative Physiology

Abstract Deadline: June 1, 1998
Early Registration Deadline: October 19, 1998

Clinton Proposes Research Increases

President Clinton's FY 1999 budget proposals requested historically large increases for major life sciences research programs as part of a five-year plan to expand government support for research and technology.

This plan, dubbed the "Research Fund for America" was announced February 2, the day the budget plan was released, at a high-profile press conference that featured Vice President Gore emphasizing the importance of federally funded scientific research. Gore called R&D spending "the kind of investment that makes sense."

NIH was singled out for the largest increase in the Research Fund for America. The President's budget proposed $14.798 billion for NIH in FY 1999, an increase of $1.15 billion or 8.4% over FY 1998. Over the course of five years, the NIH budget is supposed to rise by a total of 48%, which would bring it to $20.274 billion in FY 2003. Cancer research will receive the largest boost. It is slated to grow by 9% in FY 1999 and by 65% over the five-year period. Clinton announced the cancer research initiative during his State of the Union address, where NIH Director Harold Varmus was seated in a place of honor beside the First Lady. Vice President Gore provided additional details about the cancer research plan at a January 29 press conference where he was joined by Sens. Connie Mack (R-FL) and John Rockefeller (D-WV).

Under the President's FY 1999 budget proposal, NIH would be able to fund 30,098 research project grants (RPGs), including 8,267 new and competing awards. Both these figures are historical highs and represent significant increases over the 28,675 RPGs expected to be funded in FY 1998, which includes 7,625 new and competing awards. This would permit a success rate of 31% if the number of applications grows at the expected rate. The proposal would also allow the average cost of competing awards to increase 10% in FY 1999 to allow for "real expansion in the scope of research undertaken in RPGs." This includes the cost of converting smaller R29 awards to R01s. Support for noncompeting RPGs would be allowed to increase by 3% on average over FY 1998 levels.

The President proposed increasing the number of training slots slightly, from 15,211 to 15,342, and providing a one-time stipend increase of 25% to bring trainee stipends closer to the levels recommended by the National Academy of Sciences. Predoctoral stipends would be raised from $11,700 to $14,600, and entry-level postdoctoral stipends would be raised from $21,000 to $26,200.

NSF was also a beneficiary of the President's Research Fund for America proposal. The President called for a 10% increase of $344 million at NSF for a total FY 1999 budget of $3.773 billion. Research and Related Activities was slated to receive a slightly larger increase of 11.8% that would raise its funding from $2.546 billion in FY 1998 to $2.847 billion in FY 1999, a $301 million increase. The President's budget called for NSF to increase a total of 24% over five years.

The President also proposed a 10% increase for VA Medical and Prosthetic Research, which would increase its FY 1999 funding by $28 million to $300 million. No further funding increases were proposed for this program during the rest of the five-year period. Also, the overall VA budget plan relied on $450 million that is to be saved by denying benefits to veterans who have tobacco-related disabilities. It was predicted that Congress will refuse to go along with this, so the proposed VA increase may be in jeopardy.

The total budget request for NASA in FY 1999 was $13.465 billion, a decrease of $173 million. However, a $23.1 million funding increase was proposed for the Life Sciences program, which would bring its total to $111.6 million. The FY 1999 Life Sciences budget proposed $55.1 million for the Life Sciences Division program of peer-reviewed, ground-based research. This represents a $1.4 million or 2.6% increase over the Life Sciences Research and Analysis funding level in FY 1998, which was $53.7 million.

Political Realities

The President's budget demonstrated strong support for NIH and other research agencies. NIH, in particular, also has many strong supporters on Capitol Hill. However, the political reality is that larger questions of living with the balanced budget agreement affect everything Congress wants to do. Although the federal budget is expected not only to climb out of the red next year but even to show a surplus, some Republicans do not want to take the political risk of approving spending in excess of the "caps" mandated under last year's balanced budget agreement.

Throughout February and into March, there was intense behind-the-scenes activity focusing on the House and Senate Budget Committees as NIH's supporters looked for ways to increase NIH funding without "breaking the [budget] caps." There was good will and strong determination, but questions lingered as to how the situation would be resolved. Each year, the Budget Committees draw up a broad-brush outline for government spending in the next fiscal year. That outline, called the Congressional Budget Resolution, is supposed to be a point of reference for the program funding decisions made by the Appropriations Committees. APS sent letters of support to the Senate and used our NetAlert rapid response network in an effort to get scientists to tell their Representatives to support a significant NIH funding increase. For more information on NetAlert, contact Alice Hellerstein at ahellers@aps.faseb.org.❖

Research Community Mobilizes to Defeat Cloning Legislation

In late January and early February, APS joined with others in the medical research community to halt hasty Senate consideration of a bill that would have banned the use of a specific cloning technique in research with human cells. The bill, S. 1601, was intended to prevent the cloning of humans, but many scientists were concerned that its effects would have been much broader. The bill was introduced in response to the announcement by controversial physicist Richard Seed that he intended to set up a clinic to clone children for infertile couples.

Despite its stated goal of halting human reproductive cloning, many in the scientific community felt that S. 1601 was too vague and would have halted other cloning research that might benefit human health. Examples cited included efforts to use cloning to grow new skin for burn victims or regenerate damaged organs. The level of concern increased when Senate Majority Leader Trent Lott (R-MS) said that the bill would be brought directly to the Senate floor immediately after recess without going through the usual process of committee hearings and legislative markup. Research organizations then mobilized to urge the Senate not to proceed.

Concerns over the possibility of cloning a human being were first raised in February 1997 when Scottish researchers announced that they had successfully cloned a lamb using tissue from an adult sheep using a technique called somatic cell nuclear transfer. President Clinton immediately called for a voluntary national moratorium on any effort to clone a human being and asked the National Bioethics Advisory Commission (NBAC) to study the question of human cloning. NBAC recommended that the moratorium be continued due to both ethical and safety concerns. The research community concurred that applying this technique to human reproduction posed unacceptable risks, and the FASEB societies adopted a voluntary five-year moratorium on human cloning.

The human cloning question appeared to have been settled without the need for legislation until Seed suddenly appeared on the scene. Seed, a physicist who had previously tried to use livestock breeding techniques to help infertile couples conceive, announced that he planned to clone humans. This made some in Congress feel that legislative action was required, even though FDA announced in the meantime that it would exercise its regulatory authority over any effort to clone humans.

S. 1601 would have made it illegal to apply the somatic cell nuclear transfer technology to human cells. The bill defined this process as "taking the nuclear material of a human somatic cell and incorporating it into an oocyte from which the nucleus has been removed or rendered inert and producing an embryo (including a preimplantation embryo)." It would have imposed penalties of up to $250,000 in fines and/or prison terms of up to 10 years for violations of the law. The language was simple, but its potential impact on a complex and rapidly changing area of science was potentially worrisome. The US had never before banned a specific research technology, according to David Korn, the Senior Vice President for Biomedical and Health Sciences Research at AAMC.

APS joined with FASEB, AAMC, and a host of other organizations in warning Senators against legislating an excessively broad prohibition. As a result of the outcry from the scientific community, Majority Leader Lott was unable to muster the 60 votes needed to end a filibuster against S. 1601, and the bill was pulled from the Senate calendar.

A subsequent House subcommittee hearing on the cloning issue produced considerable discussion about the complexity of the issue and much less certainty about how to proceed. Nevertheless, a future return to consideration of some kind of legislation to ban human cloning remains a possibility.❖

OPRR Workshops on the Humane Care and Use of Laboratory Animals

The Effective IACUC: A Workshop on Programmatic Management

June 1-2, 1998
Reno, NV

Contact:

Richard C. Simmonds
Nellor Building (MS340)
University of Nevada at Reno
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Electronic Media and Applications in Biomedical Research and Laboratory Animal Science and Management

June 18-19, 1988
St. Louis, MO

Contact:

Betty Cartwright
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ALDF Asks Court to Rehear Primate Case

The Animal Legal Defense Fund (ALDF) has asked the US Court of Appeals for the District of Columbia to rehear its appeal of the *ALDF v. Glickman and NABR* case. On December 9, 1997, a three-judge panel from that court issued a ruling ordering the case to be dismissed for lack of jurisdiction. Two of the three judges on the panel, Karen LeCraft Henderson and David B. Sentelle, agreed that neither ALDF nor the individuals on whose behalf it had brought the suit had met the necessary criteria to be granted legal standing to sue USDA. In the original decision on this matter, US District Court Judge Charles Richey had ruled in favor of ALDF plaintiffs and had struck down USDA's care standards for nonhuman primates.

Because Judge M. Patricia Wald dissented on the finding of no standing with respect to one of the individual defendants, ALDF had the option to appear for a rehearing either by the original three-judge panel or else by the full appeals court (en banc). ALDF stated in its request for a rehearing that the opinion issued is in conflict with established law on standing and "immunizes a vast amount of [federal] agency conduct from judicial review."

There are several possibilities as to what will happen next. The same three judges might agree to rehear the case, and they could affirm, reject, or modify their earlier opinion. The full Appeals Court might decide to review the case and affirm, reject, or modify the decision. The court might also refuse to reconsider the December 9 ruling, in which case ALDF would have 90 days to ask the Supreme Court to accept the case for

Judge Rules Against PETA in NEAVS Takeover

A Massachusetts court has ruled that People for the Ethical Treatment of Animals (PETA) officials who took over the New England Anti-Vivisection Society (NEAVS) had "breached their fiduciary responsibilities" to that organization in 1996, according to the animal rights newsletter *Animal People*. The ruling, issued January 22 by Margaret Hinkle, Superior Court Justice for Suffolk County, MA, was an effort to settle a two-year battle over control of the Boston-based animal rights organization.

Judge Hinkle ruled against a coalition of NEAVS trustees that included PETA cofounders Ingrid Newkirk and Alex Pacheco; Physicians Committee for Responsible Medicine President Neal Barnard; and trustees Scott Van Valkenberg, Tina Brackenbush, and Merry Caplan. Hinkle said these individuals breached their fiduciary responsibilities by "failing to allow Theo Capaldo to stand for election as the duly nominated sole candidate" for president of NEAVS at the 1996 annual meeting and by ousting Fund for Animals President Cleveland Amory from the presidency of NEAVS "without cause" and delegating "excessive powers and authority" to an executive committee that they had created.

"Credible evidence warrants the inference, which I make, that some individuals, particularly Mr. Pacheco, viewed Capaldo as likely to be unsupportive of continued funding from NEAVS for organizations with which they were allied," Judge Hinkle wrote in her 16-page decision. She noted that Pacheco is president and a director and Newkirk is a managing director of PETA and then pointed out that "PETA has received significant funding from NEAVS."

According to *Animal People*, NEAVS had $8.6 million in assets when the PETA-led coalition took it over in 1989. By 1995, its assets had declined to $5.8 million.❖

Lane to Head OSTP; Colwell to Head NSF

Office of Science and Technology Policy (OSTP) Director Jack Gibbons, who had been the President's chief science and technology advisor for the past five years, resigned from his position in February. The move led to a series of promotions within the administration's science policy hierarchy.

President Clinton nominated NSF Director Neal Lane to replace Gibbons at OSTP. To replace Lane, Clinton nominated Rita Colwell, who was only recently nominated by Clinton to serve as deputy director of NSF. Both the Lane and Colwell nominations require Senate confirmation.

President Clinton announced the changes at OSTP and NSF during the 150th annual meeting of the American Association for the Advancement of Science in Philadelphia. Clinton said he accepted Gibbons's resignation with regret and cited Gibbons's ability to build bipartisan coalitions on contentious issues ranging from nuclear testing to cloning as one of his greatest strengths.

National Science Board Chairman Richard N. Zare pronounced Lane an "outstanding" choice to succeed Gibbons as science advisor to the President. Zare praised Lane for his record at NSF and for his leadership abilities. "Lane's accomplishments as director of NSF for the past five years truly constitute an enviable record," Zare said. "This appointment is NSF's loss but the nation's gain."

Lane, who was a professor of physics at Rice University before coming to NSF, said he welcomed the opportunity to become science advisor. "This is an exciting and demanding time for science and engineering," Lane said. "Scientists and engineers are now challenged to address a broad range of critical social, economic, environment, and health needs." Lane said he would give the highest priority to enabling the US to "uphold a position of world leadership in all aspects of science and engineering in the 21st century." He said that his first task would be to win Congressional approval for the President's FY 1999 budget requests for science and engineering to "set the stage" for this new century of progress.

Of Colwell's appointment to replace him, Lane said he was "even more delighted" than he was when she had been nominated a month earlier to become his deputy. Colwell is the president of the University of Maryland Biotechnology Institute and a professor of microbiology. Zare said Colwell "has achieved success and international recognition as a microbiologist, teacher, and manager."❖

NIH Warns of Fraudulent Funds Solicitation

NIH is warning researchers to be wary of a fraudulent solicitation for funds being sent to health care professionals on what appears to be NIH letterhead.

The letter is an announcement of interest in "clinical research in the area of neurodegenerative disorders" and makes numerous references to NIH. However, this is not a legitimate solicitation for NIH funds.

The announcement encourages researchers to submit personal information that could be used fraudulently or illegally, NIH warns. Medical professionals receiving unusual requests for an application submission to NIH are asked not to respond and to notify NIH's Division of Grants Policy at 301-435-0949.❖

APS Education Office Offers *My Health, My World* Certification Training

During 1995-1997, the APS Education Office participated in the *My Health, My World (MH/MW)* early elementary curriculum development project of Baylor College of Medicine in partnership with APS and the Texas Medical Association. APS coordinated the Washington, DC, field test site. Other sites included Houston and Austin, TX. The APS Education Office is now continuing its efforts beyond the field testing component of the program by participating in the *MH/MW* Certified Facilitators Program, designed to disseminate the *MH/MW* materials throughout DC-area communities. After completing training workshops conducted by the APS Education Office, certified facilitators will conduct workshops for teachers, day care providers, and home schooling coordinators.

The overall goal of the project, funded in part by the National Institute of Environmental Health Sciences, is to promote a deeper understanding of environmental effects on human health while conveying the excitement of "doing science" to students in grades K-4. Problem-solving and decision-making skills are emphasized. The materials were developed in coordination with the *National Science Education Standards*.

APS recruited more than 50 preschool and elementary school teachers in the Washington, DC, area over a three-year period to field test *MH/MW* materials. Now, three *MH/MW* units are complete and available. The units can be used as a coordinated curriculum, or activities within the units can be used as "drop-ins." Each unit consists of an original science adventure storybook, a detailed teacher activity guide, and a student minimagazine. Additional units are under development.

Facilitators in the *MH/MW* Certified Facilitators Program may be teachers, parents, day care providers, scientists, or other persons who are interested in helping educators in formal or informal settings improve their curricula and/or teaching methods in elementary science. To become fully certified for one, two, or all three of the *MH/MW* units, a facilitator must attend a one-day training session on the unit; present the unit materials during some kind of workshop to teachers or other educators, whether it be in a formal or informal setting; and provide feedback on his or her workshop to the Baylor College of Medicine.

Upon certification, facilitators receive a certificate and letter of completion, a full set of unit materials, a set of basic supplies needed to conduct the activities in a workshop for 20-25 people, and special order forms that allow participants at the facilitator's workshops to get unit materials at a large discount. Facilitators also receive ongoing resources, training, and technical support from the APS staff. APS can help facilitators plan, recruit participants, set up, and evaluate their workshops.

The first two training workshops are scheduled for March 14, 1998, and October 3, 1998. APS members interested in early science education can become facilitators or attend facilitator's workshops. For more information, contact Marsha Lakes Matyas, APS Education Officer, 9650 Rockville Pike, Bethesda, MD 20814-3991. Tel: 301-530-7132; fax: 301-571-8305; e-mail: mmatyas@aps.faseb.org.❖

Attention Women Students and Postdoctoral Fellows: Do Not Miss This Networking Opportunity!

Matching of new mentees and mentors in the APS Mentoring Program for Women in Physiology is coming up.

The next deadline for applications is May 1, 1998.

Mentee application forms are available by contacting the APS Education Office at 301-530-7132 or educatio@aps.faseb.org or by going to the APS Web site at **http://www.faseb.org/aps/educatn/mentor1.htm**. There is no fee for participating in this program.

Women who are graduate students, postdoctoral fellows, or junior faculty members interested in physiology as a career choice will gain advice, encouragement, support, and networking opportunities from mentors who provide advice on scientific and academic development, career advancement skills, and family and gender issues. Mentors and mentees make a one-year commitment.

1998 Summer Research Teachers Named

APS Council has approved the 19 teams of teachers and researchers selected by the Review Committee to participate in the 1998 *Frontiers in Physiology* Science Teacher Summer Research Program. The Review Committee is comprised of the APS Education Committee and several former summer research teachers.

The 19 teachers were selected from among 60 applications received this year by the Education Office, making an overall acceptance rate of about one-third. The teachers accepted are from 14 states and will be working at 17 research institutions. Nearly 70 percent of the researchers who will be serving as hosts to the teachers have never participated in the program previously.

As in previous years, host institutions will be providing part of the funding for the program. Additional funding will be provided by APS and through grants from the National Institute of General Medical Sciences, the National Institute of Diabetes and Digestive and Kidney Diseases, and NSF.

Middle and high school teachers participating in the *Frontiers* program will receive a fellowship of up to $5,850 to conduct physiology research for a seven- to nine-week period in the laboratory of an APS member and to attend EB '99 in Washington, DC. Teachers will also attend a one-week summer retreat to learn how to develop hands-on, inquiry-based activities for their classrooms for publication by APS. (See **http://www.faseb.org/aps/educatn/frontact.htm.**)

The 1998 summer research teacher fellows and their APS research hosts are listed below. Researchers marked with an asterisk are first-time hosts.❖

1998 SRT Winners

(* denotes first-time research host)

Teacher	Research Host
Susan Veisel Crawford High School San Diego, CA	**Peter D. Wagner** University of California at San Diego
Brenda L. Dempsey George Washington HS Denver, CO	***Margaret C. Neville** University of Colorado School of Medicine
Ni Truong Mays Middle School Miami, FL	***Ellen F. Barrett** University of Miami School of Medicine
Eva Carswell Westside High School Macon, GA	***Ananda Weerasuriya** Mercer University School of Medicine
Marvin L. Morton Southside Comprehensive HS Atlanta, GA	**Timothy C. Cope** Emory University School of Medicine
Erica Nicole Jones Glasgow Middle School Baton Rouge, LA	**Norman R. Kreisman** Tulane University School of Medicine
Heather Giselle Seaton-Andrews Elizabeth Seton High School Bladensburg, MD	***Richard J. Traystman** Johns Hopkins University School of Medicine
Ronald M. Salazar Mankato West High School Mankato, MN	**Franklyn G. Knox** Mayo Foundation Nephrology Research
Daniel E. McClain Ritenour Senior High School Overland, MO	***Mary F. Ruh** St. Louis University School of Medicine
Thomas J. Conley Parkway West High School Ballwin, MO	**Mark M. Knuepfer** St. Louis University School of Medicine
Kolene M. Krysl Millard Central Middle School Omaha, NE	**David Petzel** Creighton University School of Medicine
Miriam Rivas DeWitt Clinton High School Bronx, NY	***Michael S. Wolin** New York Medical College
Rebecca S. Strong Laing Middle School Mt. Pleasant, SC	***Louis Burnett** College of Charleston
Jean Richardson Summerville High School Summerville, SC	***George Cooper, IV** Medical University of South Carolina
Andrew Scott Cohen Trident Academy Mt. Pleasant, SC	***Richard A. Schmiedt** Medical University of South Carolina
Sally Schempp Vermillion Middle School Vermillion, SD	***Douglas Martin** University of South Dakota School of Medicine
Opal Bigham Stephen F. Austin Middle School Bryan, TX	***David C. Zawieja** Texas A&M University Health Science Center
Kimberly Walker Deady Middle School Houston, TX	***Michael B. Reid** Baylor College of Medicine
Mary Elizabeth Kelley Bethel High School Hampton, VA	***Gerald J. Pepe** Eastern Virginia Medical School

Positions Available

Research Training in Nutritional and Interventional Gerontology. Predoctoral and postdoctoral fellowships are available at the University of Texas Health Science Center at San Antonio, an internationally recognized center for aging research. Supported by the National Institute of Aging, the training program focuses on transgenic, hormonal, and nutritional probes of the aging processes. A major focus is on development and testing of transgenic lines that modulate expression of genes that may play a role in aging, including those regulating glucose and bone metabolism, hormone action, antioxidants, DNA repair, and cardiovascular function. More information on specific research programs and mentors is available on the Web at **http://age.uthscsa.edu/research/AgeTrain.html**. Traineeships are limited to US citizens and permanent residents. Send a letter detailing experience and research interests, curriculum vitae, and three letters of recommendation to James Nelson, Department of Physiology, University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, San Antonio, TX 73284-7756. E-mail: nelsonj@uthscsa.edu. [EOE/AA].

Physiology Faculty. The Department of Physiology and Molecular Medicine at the Medical College of Ohio, Toledo, OH, invites applications for a tenure-track position at the assistant or associate professor level. Candidates must have a PhD, MD, or equivalent; postdoctoral research experience; and either funded grants or significant potential for developing independent funding. All candidates with a record of excellence in research and a commitment to graduate and medical education will be considered. Candidates conducting research on thermoregulation are especially encouraged to apply. The successful candidate will join a diverse department with strengths in integrative physiology, molecular endocrinology, and the molecular biology/genetics of hypertension. Review of applications will begin immediately and continue until a suitable candidate is hired. To apply, send a curriculum vitae and the names of three references to: Steven L. Britton, Chairman, Physiology Search Committee, Department of Physiology and Molecular Medicine, Block Health Science Building, Medical College of Ohio, 3035 Arlington Avenue, Toledo, OH 43614-5804. [EOE/AA]

For an updated list of "Positions Available," See the APS Web Site at http://www.faseb.org/aps/position.htm

Assistant Professor of Physiology. The Department of Physiology of the Northeastern Ohio Universities College of M edicine is seeking applicants to fill a tenure-track position in the area of signal transduction. The department has a cardiopulmonary research focus and invites applications from individuals investigating intracellular signaling/gene regulation in either the heart, vasculature, or lungs to complement ongoing programs in these areas. Candidates must have a PhD and/or MD, with appropriate postdoctoral fellowship training, a strong record of research accomplishment, and the ability to establish an independent, externally funded program. Excellent opportunities exist within the department and institution for collaboration. Medical student teaching responsibilities will be to participate in teaching physiology to first- and second-year students. Department faculty are members of the graduate faculty in programs leading to the PhD through the School of Biomedical Sciences at Kent State University. The successful candidate will have the opportunity to develop graduate courses that relate to his/her specialty. Further information about the department and institution can be obtained on the Web at **http://www.neoucom.edu**. Candidates should send a letter of application describing research experience and goals accompanied by a curriculum vitae and the names and addresses of three references by May 22, 1998, to: Michael B. Maron, Professor and Chairperson, Department of Physiology, Northeastern Ohio Universities College of Medicine, PO Box 95, Rootstown, OH 44272-0095. [EOE/AA]

Postdoctoral position. A postdoctoral position is now available in the Vascular Biology Center at the Medical College of Georgia to investigate endothelin and nitric oxide interaction in regulating arterial pressure, renal hemodynamics, and renal tubular function. A wide range of techniques are currently used, including the use of various animal models in rats and mice, hemodynamic measurements, cell culture, protein purification, immunoprecipitation, immunoblotting, immunohistochemistry, and recombinant DNA protein expression. Several other postdoctoral positions are also available in other laboratories within the Vascular Biology Center investigating growth factor-induced angiogenesis in the central nervous system, angiotensin converting enzyme in lung injury, G-protein-linked receptor signaling, and structure-function relationships of NO synthase isoforms. Potential candidates should have a PhD, MD, or equivalent in physiology, pharmacology, or related fields. Send curriculum vitae and the names of three references to David M. Pollock, Vascular Biology Center, Medical College of Georgia, Augusta, GA 30912-2500. Fax: 706-721-8545; e-mail: dpollock@ mail.mcg.edu.

Positions Available

Postdoctoral position in the application of genomics to exercise's prevention of chronic diseases. Position available immediately for a postdoctoral fellow to train in linking exercise to the modulation of disease-susceptibility genes. Studies will employ emerging techniques and databases from the Human Genome Project to study gene function in mice, rats, and human subjects. Exercise decreases the risk of atherosclerosis, type II diabetes, and obesity, yet the molecular and genetic bases of disease prevention of these polygenic diseases by exercise are unknown. Applicants should have training in molecular biology, a strong interest in functional modulation of genes, and a future commitment to the molecular basis of disease prevention through the environmental manipulation of genes. The laboratory has studies that range from tissue culture to more integrated systems; a vigorous and exciting intellectual atmosphere exists. The laboratory has numerous external grants and is located in the Texas Medical Center, with its multiple resources. Please send curriculum vitae and three letters of reference to: Frank W. Booth and Marc T. Hamilton, Department of Integrative Biology, University of Texas at Houston Medical School, 6431 Fannin Street, Houston, TX 77030-1503. Fax: 713-500-7444; e-mail: fbooth@girch1.med.uth.tmc.edu. [EOE/AA].

Neuroscientist Faculty Position. The Department of Physiology and the Feinberg Clinical Neuroscience Research Institute of Northwestern University Medical School are seeking a highly qualified individual to develop an independent research program in areas related to fundamental mechanisms that may underlie ischemic brain injury. The appointee will be a full-time, tenure-track faculty member with appointments in physiology and in neurology or neurosurgery. Candidates should have a record of outstanding research accomplishments and demonstrated ability to maintain effective interactions between basic science and clinical disciplines related to the study of ischemic brain injury. The level of appointment will be commensurate with the qualifications of the successful applicant. **To ensure full consideration, applications should be received before June 15, 1998.** Please send a curriculum vitae, statement of research interests, and the names and addresses of four references to: Shaun Morrison, Search Committee Chairman, Department of Physiology (M211), Northwestern University Medical School, 303 E. Chicago Avenue, Chicago, IL 60611. Minorities, disabled, and women are particularly encouraged to apply. Hiring is contingent on eligibility to work in the United States. [EOE/AA]

Introducing ... Edward J. Zambraski

On January 1, 1998, Edward J. Zambraski succeeded Steven Bealer as Chair of the APS Career Opportunities in Physiology Committee. Zambraski has served on the Careers Committee for the past three years. As Chair of the Careers Committee, Zambraski will also serve as an ex officio member of the APS Education and Liaison With Industry Committees.

One of the major activities of the Careers Committee has been to organize a careers symposium at the annual spring meeting. This evening symposium is designed to provide graduate and postdoctoral students with insights into various career opportunities. Traditionally, a diverse group of speakers presents information on a wide variety of positions in terms of the responsibilities and opportunities that a particular position may offer. This year's careers symposium at EB '98 on April 18th will take a slightly different tack, as it will focus on graduate student training. A talk entitled, "Being a Graduate Student in a Manner That Gets You a Job: Answers to the Questions You Did Not Know to Ask," will be presented. This will be followed by the opportunity for the attendees to interact with physiologists in various types of positions, both in academia and the private sector, in a small group setting.

While the primary focus of the Careers Committee has been assisting young scientists, it is felt that the committee needs to consider doing more for the broader segment of physiologists within the Society. There are numerous challenges, concerns, and problems facing all physiologists, even those who are "established" or tenured. The issues of funding and downsizing of physiology programs and the need for individuals to "retool" and possibly redirect their research programs are clearly influencing both the concept and reality of a career in physiology. The Careers Committee will be exploring ways it might focus and possibly assist members in dealing with these various factors. In this regard, it is felt that an important task of the Careers Committee will be to coordinate and increase its involvement with the activities of the APS Education Committee. Several active projects within the Education Committee, such as the Career Enhancement Awards programs, surveys of physiology degree recipients, and the sponsorship of experimental technique workshops and refresher courses at our annual meetings, clearly relate to the issue of career opportunities.

Zambraski is a professor of physiology at Rutgers University in Piscataway, NJ. Zambraski graduated from the State University of New York at Cortland and the University of Iowa, where he received his PhD in 1976 under the mentorship of Charles M. Tipton and Gerald F. DiBona. While at Iowa, he was involved in the first series of studies demonstrating neural control of renal tubular sodium reabsorption. In 1976, Zambraski went directly from Iowa to join the Department of Physiology at Rutgers. He directs an active lab and has maintained his focus on the neural and endocrine control of renal function. His studies have examined the control of renal function in a wide variety of settings, including hypertension, cirrhosis, environmental stress, and exercise.

Zambraski is also active in the American College of Sports Medicine (ACSM). He has served as a member of the Board of Trustees of ACSM and is Past-President of the Mid-Atlantic ACSM Regional Chapter. Currently, he is Chair of the ACSM Research Review Committee.

Zambraski extends an invitation to all APS members to provide comments and suggestions as to how they feel the Careers Committee may best serve members of the Society.❖

National Academy of Sciences Honors Mountcastle

The National Academy of Sciences (NAS) honored APS member **Vernon B. Mountcastle** with its NAS Award in the Neurosciences.

Mountcastle, Professor Emeritus at Johns Hopkins University's Krieger Mind-Brain Institute, was honored for his discovery of the columnar organization of the mammalian cerebral cortex and for original studies relating behavior to function of single cells in higher cortical areas.

NAS presents its Award in the Neurosciences every three years in recognition of extraordinary contributions to progress in the fields of neuroscience, including neurochemistry, neurophysiology, neuropharmacology, developmental neuroscience, neuroanatomy, and behavioral and clinical neuroscience. The award, established in 1988 by the Fidia Research Foundation, includes a $15,000 prize. Mountcastle will receive his award at NAS's 135th annual meeting in Washington, DC, on April 27.❖

People and Places

Ruisheng Du has moved to the Cardiovascular Division, University of Minnesota, Minneapolis, MN, as a postdoctoral fellow. Du previously had been a graduate student in the Department of Physiology and Pharmacology, University of South Dakota, Vermillion, SD.

Manjapra Variath Govindan has affiliated with the Centre de Recherche, L'Hôtel Dieu de Quebec, Quebec, Canada. Govindan had been with the Department of Physiology, Laval University Medical Center, Quebec, Canada.

Joining the Animal Science Department, University of Nebraska, Lincoln, NE, **H. Edward Grotjan** has moved from the Department of Pharmacology and Molecular Biology, Washington University School of Medicine, St. Louis, MO.

Kurt Eric Kwast, formerly of the Department of Molecular, Cellular, and Developmental Biology, University of Colorado at Boulder, has now joined the Department of Molecular and Integrative Physiology, University of Illinois, Urbana, IL.

Mark C. Lavigne is presently affiliated with the Laboratory of Host Defenses, National Institute of Allergy and Infectious Diseases, Bethesda, MD. Previously, Lavigne was a graduate student in the Department of Physiology and Biophysics at Georgetown University School of Medicine in Washington, DC.

Deceased Members

Praphulla K. Bajpai
Dayton, OH

Fred B. Benjamin
Silver Spring, MD

Richard Bernard
Quebec, Canada

Samuel A. Corson
Columbus, OH

Frederic Kavaler
Brooklyn, NY

Elizabeth Painter-Marcus
Riverside, IL

Sarra Kirsti Laycock is now the Study Director of the Department of Pharmacology at Quintiles Scotland, Ltd. in Edinburgh, Scotland. Laycock had been with the Department of Physiology, New York Medical College, Valhalla, NY, as a postdoctoral fellow.

Christiaan Leeuwenburgh had been a research associate with the Department of Internal Medicine, Washington University School of Medicine, St. Louis, MO. Recently, Leeuwenburgh joined the Department of Exercise and Sports Sciences, University of Florida, Gainesville, FL.

Formerly director of the Crozer-Keystone Health System Center for Preventive Medicine and Human Performance at Springfield Hospital in Springfield, PA, **Daniel S. Miles** is now Vice President, Clinical Research, Renaissance Technology, Inc., Newton, PA.

Having accepted a position as Assistant Professor, Division of Hypertension and Vascular Research, Henry Ford Hospital, Detroit, MI, **Patrick J. Pagano** has moved from the Department of Medicine, Boston University School of Medicine, Boston, MA.

Sheri B. Parker, a graduate research assistant formerly with the Department of Physiology, Eastern Virginia Medical School, Norfolk, VA, has recently become affiliated with the Naval Medical Research Institute, Bethesda, MD.

John R. Petersen is now head of the H. Lundbeck Pharmaceutical Department of Safety Pharmacology in Valby, Denmark. Prior to going to Denmark, Petersen was with the Department of Pathology, University of Texas at Galveston Medical Branch.

Rolando Juan Jose Ramirez is now a postdoctoral fellow in obstetrics and gynecology at Magee-Women's Research Institute in Pittsburgh, PA. Prior to his new assignment, Ramirez was a graduate student at West Virginia University, Morgantown, WV.

Previously associated with the Department of Physiology, Cornell University Medical School New York, NY, **Henry J. Sackin** is now Professor, Department of Physiology and Biophysics, the Chicago Medical School, North Chicago, IL.

Recently, **David A. Schneider** joined the Department of Pharmacology and Toxicology at Michigan State University in East Lansing, MI, as a postdoctoral fellow. Prior to his new assignment, Schneider was a graduate student in the Department of Large Animal Medicine at the University of Georgia in Athens, GA.

Bruce D. Schultz has joined the Department of Anatomy and Physiology, Kansas State University, Manhattan, KS. Prior to his new position, Schultz was affiliated with the Department of Cell Biology and Physiology at the University of Pittsburgh, Pittsburgh, PA.

Having affiliated with the Department of Pediatrics and Physiology, Eastern Virginia Medical School, Norfolk, VA, **Michael J. Solhaug** has left the Children's Hospital of the King's Daughters, Norfolk, VA.

Edward E. Soltis was affiliated with the College of Pharmacy, University of Kentucky, Lexington, KY, before he became affiliated with the College of Pharmacy, Western University of Health Sciences, Pomona, CA.

Formerly a graduate student with the John B. Pierce Laboratory, Yale University, New Haven, CT, **Andrea M. Stahl** is presently a clinical research associate in the Department of Clinical Investigations at the Walter Reed Army Medical Center in Washington, DC.

Wendy W. Waters has affiliated with the NASA Johnson Space Center Cardiovascular Laboratory, Houston, TX, as a research associate. Prior to her new assignment, Waters was a postdoctoral fellow with the Cardiovascular Physiology Laboratory, KRUG Life Sciences, Inc., Houston, TX.

Having joined the Department of Pharmacology, University of Vermont, Burlington, VT, **Donald Gordon Welsh** has left the John B. Pierce Laboratory, Yale University, New Haven, CT.

Formerly technical director of the Texas College of Osteopathic Medicine, Fort Worth TX, **Judy R. Wilson** is now a visiting assistant professor at the University of Texas at Arlington.

Huailing Zhong has affiliated with the Ann Arbor Veterans Affairs Medical Center, Ann Arbor, MI. Previously, Zhong was with the Department of Physiology, Wayne State University School of Medicine, Detroit, MI.

Obituary

Carl W. Gottschalk (1922-1997)

Carl William Gottschalk, who died on October 15, 1997, was one of our greatest renal physiologists. He led the revival of micropuncture after World War II and used this technique to make key advances in many areas of renal physiology. APS recognized his achievement previously by establishing the Carl W. Gottschalk Distinguished Lectureship of the Renal Section.

After his undergraduate education at Roanoke College, Gottschalk graduated from medical school at the University of Virginia. His medical internship was at Massachusetts General Hospital. His interest in kidney micropuncture began during a postdoctoral fellowship with Eugene Landis in the Department of Physiology at Harvard Medical School between 1948 and 1952. Intrigued by some observations made with Daniel Tosteson, then a Harvard medical student, Gottschalk did a systematic study of renal interstitial pressure using small hypodermic needles and large glass pipettes. However, it became obvious to him that insertion of what he later called a "crowbar" into the renal parenchyma damaged many tubular and vascular structures and that a proper study would require micropuncture of individual tubules and microvessels.

Micropuncture had been developed and initially pursued almost exclusively in the laboratory of A. N. Richards at the University of Pennsylvania, beginning in 1921. When World War II intervened, the Richards laboratory was disbanded. After Gottschalk finished his medical residency at Harvard in 1952, he took a fellowship in cardiology at the University of North Carolina at Chapel Hill, where set up his own micropuncture laboratory and collaborated with Margaret Mylle, who became his long-term associate.

At that time, one of the most intriguing concepts in renal physiology was the novel countercurrent hypothesis of Wirz, Hargitay, and Kuhn, which predicted, among other things, that the fluid in the loop of Henle near its tip is concentrated to approximately the same degree as that in the capillaries and collecting ducts at the same level. Gottschalk decided to investigate the hypothesis by measuring directly the osmolality of the fluid in the various vessels and tubules in the renal medulla. The results of those studies directly confirmed the countercurrent hypothesis and immediately established Gottschalk's reputation as a leading renal physiologist.

Gottschalk and his collaborators went on over the next 30 years to many more pioneering advances in areas of renal physiology, including the renal concentrating mechanism, renal handling of urea, urinary acidification, calcium excretion, the effects of renal innervation on tubular sodium transport, glomerular dynamics, and the pathophysiology of renal failure.

Gottschalk trained numerous young persons who wanted to enter the cutting edge of renal physiology by learning micropuncture. William Lassiter remained with him as a long-term collaborator. Others went on to prominent positions at the University of North Carolina and elsewhere. In addition, several of the best young investigators from Europe came to Gottschalk's laboratory for training.

Gottschalk performed many valuable services for the physiology and medical communities. He was on the editorial boards of *American Journal of Physiology*, *Circulation Research*, and *Kidney International*. He edited a textbook, *Diseases of the Kidney*. He was President of the American Society of Nephrology, and he chaired numerous committees, including the Special Committee on Kidney Disease of the Bureau of the Budget, which was influential in the passage of the End Stage Renal Disease amendment to Public Law 92-603 that made funding generally available for renal dialysis and transplant.

He received many honors in recognition of his scientific excellence, including numerous distinguished lectureships, the Homer Smith Award in Renal Physiology, the A. N. Richards Award, the David M. Hume Award, the first R. W. Berliner Award, and election to the National Academy of Sciences.

Gottschalk was a passionate collector. His collection of arctic butterflies now graces the Peabody Museum of Natural History at Yale University. A butterfly he discovered is named after him, *Stryman cecrops gottschalki*. He also assembled a massive collection of works on the history of medicine, particularly those related to the study of nephrology. The books go back several centuries and include numerous first editions. This collection is intended for the University of North Carolina library. Gottschalk's penchant for medical history also led him to edit a book on the history of renal physiology and several series of articles in renal journals on the history of nephrology. He formed and chaired for 15 years the Commission for the History of Nephrology.

Gottschalk's scientific contributions were monumental. Behind them was a warm and generous person. His modest manner concealed a piercing intelligence. His quiet, unaffected manner, his superior knowledge about many things, and his inclination to convince with understated logic and without bombast made him a congenial and much admired colleague. He will be much missed by the many physiologists he trained, inspired, and befriended.❖

News from Senior Physiologists

Letter to Helen Tepperman

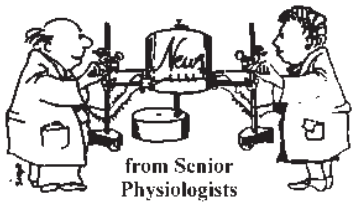
Howard B. Burchell writes: "What a nice surprise to receive greetings from APS on the occasion of my 90th birthday. I am still amazed that I have survived so long. I was honored by friends in the History of Medicine group at a special lecture given by the well-known nephrologist and ethicist Carl Kjellstrand, who spoke on the subject 'Are There Medical Heroes?' The excellent talk was provocative, but no clear answer was forthcoming.

"I have been able to maintain reasonable independence and cognitive function with attendance at weekly conferences. I have hearing problems, but my vision continues to be quite good, and I read for several hours each day.

"I am overwhelmed by the advances and new language of molecular biology and genetics. I share the feeling of other 'oldsters' that reductionism has proceeded at such a rate as to crowd out the traditional teaching of organ function, but I am optimistic that a reasonable balance will return.

"A recent address from Arthur Kornberg entitled 'The Centenary of the Birth of Modern Biochemistry' that appeared in the December 1997 issue of the *FASEB Journal* draws attention to the considerable antiscience sentiment of a larger percentage of the population than one would wish. I have concern, too, that the rapidly expanding group of PhD bioethicists, critical as they should be of the medical profession in its ethical transgressions, have too often succumbed to the temptation to distort facts to attract readers and perhaps follow the 'politically correct' line. My effort to introduce some balance in reporting was welcomed by Richard Landau, the editor of the University of Chicago's *Perspectives in Biology and Medicine*, who seemed to share my convictions ('Ethics in Mid-Century Cardiovascular Research,' *Apologia*, Spring 1996).

"A revolutionary change in the practice of medicine has been effected by the monumental growth of controlled clinical trials, and the plethora of acronyms surpasses the memories of many of us. While I support this research approach, with the rigid discipline implied, there are occasions when I think some physicians might be excellent 'population doctors' but possibly not facile in recognizing an individual's uniqueness and specific needs. Admittedly, a patient, percentage-wise, might be better off managed by data from large trials than from intuition or anecdotal experience."



Letter to Richard L. Malvin

Werner P. Koella writes: "Looking back now, I dare say that at least from May 1982 to July 1993 I had a wonderful, satisfactory, truly happy retirement. I cannot remember that I had a single boring moment. I was always busy but never under pressure. I just loved to do all the things that filled my days and even did not mind doing all the 'uninteresting' activities that are so vitally important for our lives. Evidently, and I am not ashamed to state this here, I did a good job when I planned my retirement, taking into account my special likings and interests, my diversified but certainly not great talents, and my special fields of research and teaching expertise.

"So the 'master plan' for my retirement activities (referred to here as RETACTS) that emerged from my efforts and lay on my desk by the time of my retirement on April 30, 1982, looked about like this:

"Absolutely Necessary Vegetative Activities (12 hours): Roughly one half of the 24-hour day I had to reserve for what one may refer to as absolutely necessary vegetative activities, i.e., sleeping and dosing and loafing (all three very important!), food and fluid intake (and their opposites), and body hygiene.

"Professional Activities (4.5 hours): About 3/16 of the day, I planned to work (or rather enjoy myself) in my former professional activities, i.e., biomedical research, consulting, and teaching. By the time of my retirement, I could look forward to five more years of lecturing in neurophysiology and psychoneuropharmacology at the Medical School of the University of Bern in Switzerland. From 1982 to 1993, I lectured in physiology at various schools of physiotherapy. Furthermore, I gave lectures at various scientific meetings. I helped with the organization and running of various congresses and symposia. I was asked to become a consultant with one of the Basel pharmaceutical firms. I was asked to continue my work as editor-in-chief, associate editor, or field editor for a variety of periodicals. In the years 1986-1988, I wrote a textbook, *The Physiology of Sleep: An Introduction*. In the early 1990s, I was asked to participate in the writing and editing of a sleep lexicon. At about the same time, I was asked to design, write the scenario, and make the necessary drawings for a teaching videotape entitled *On the Physiology of Sleep*. While I could not and did not intend to do any experimental research, I still did a lot of 'desk research.' I thought about a lot of mainly physiological problems in the realm of the organization of behavior. I wrote a number of papers on the results of that research. In particular, I developed some new ideas concerning a novel universal concept of vigilance, expanding Head's term to apply to a multitude of behavioral systems. Of course, I also spent time reading scientific literature.

"Physical Exercises (1.5 hours): For about 1/16 of the 24-hour day, I wanted to do some physical exercises of various kinds, mainly as an effort to slow down the aging processes of my 'physis' as well as my psyche. I started by doing some exercises just about every day in my private gym in my basement. I also spent time on my home trainer. Once or twice a week, I went for walks (a few miles) with or without our dog. In the summer of 1983, when the RETACTS

program began to run smoothly, I started to turn my fitness activities into a real and most pleasant hobby: hiking. In the years 1983 until 1993, and to a lesser extent in the years 1994 and 1995, I walked 12 times over 12 different routes through Switzerland. Altogether, I walked 3,500 kilometers (about 2,200 miles), 240,000 feet going upwards and about as many feet going down. True to my likings, I wrote about my experiences in my book *Tours de Suisse* during my 'sick days' of 1995 and 1996. I cannot repeat it too often: these hiking tours were some of the highlights of my retirement activities. Hiking, like no other sport, combines in a truly fortuitous manner the useful (a mild physical exercise) with the beautiful and interesting (the enjoyment of hundreds if not thousands of interesting and most beautiful sights). Needless to say, on hiking days the time spent on physical exercises was always considerably longer than the average 1.5 hours reserved for those activities.

"Miscellaneous Activities (6 hours): The last quarter of the 24-hour day I planned to spend, in varying proportions, in a variety of miscellaneous activities: hobbies and entertaining nonsense. I took up music making again, playing the trumpet in a brass combo and in a Dixieland band. I even learned a few things about harmony and counterpoint. Of course, when the jam sessions lasted until the early hours of the next morning, proportions of the other activities had to be reduced a little bit! Together with my wife, I went to concerts, and we started listening again to our more than 400 phonograph records. We went to theater performances. We visited friends and relatives, mostly our three sons and later our grandchildren, or had these dear people visit us. I spent more time reading newspapers and novels and scientific articles belonging to a different class than my professional activities. I spent more time in my basement workshop, building furniture for the family and playthings for the grandchildren. I took care of repair jobs around the house and did some work (as little as possible) in the garden. I helped my wife with shopping, and I could always spend time on what I gladly refer to as nonsense activities: mainly TV watching.

"This program worked perfectly, at least until July 1993. I was quite happy to find out that with the described combination of rather diversified occupations I had an excellent if not ideal mix of interesting, intellectually stimulating activities; of rewarding activities in the sense of value to the community; of aesthetically pleasing activities, e.g., music making and the sights I encountered during hikes; of fitness-enhancing activities; and of purely entertaining activities. With my consulting jobs, I could make a little money that helped to raise my rather low retirement income and paid for my 'extravagant' hobbies.

"Yet, good things do not always last forever. In July 1993, my coronaries (and later my lungs) started to misbehave. When I finally could stay home after repeated and extended stays in the hospital, I had to reduce my 'workload' greatly, and only gradually could I occupy myself again with some of the hobbies that filled my days before July 1993. But now things look better again. I can easily walk a few miles every day. I can read. I can do some writing, like this report and my *Tours de Suisse* book. I cannot make any music, but I still enjoy listening to 'canned' music. During these last four years, I built playthings for my grandchildren, and we enjoy many social activities, mostly contacts with our relatives and many friends.

"Now, for a few words of wisdom for our younger colleagues. Plan your retirement well. Try to find out what you really would like to do and what you have to avoid by all means in order to be happy. Some kind of continuation of one's job can often turn into the role of a hobby, in particular if you can do the job without feeling under pressure. If you like music and a have a talent for it, by all means start playing an instrument. Or else start painting or start collecting stamps. Or create playthings and/or dolls. If you like flowers, make cultivating roses or cacti your retirement hobby. Also, plan too much, as if the days during your retirement have 30 hours. It is always easy to skip a few things after you find out the days are too short, but it is very difficult to find new occupations after you find out you have too much time on your hands. Start planning your retirement early. It always pays to develop a few new skills while you still work, skills that, after retirement, can turn into wonderful hobbies during your third period of life."

Letter to William J. Stekiel

John E. Pauly writes: "I became Professor Emeritus of Anatomy at the University of Arkansas for Medical Sciences on July 1, 1995. Although I thoroughly enjoyed teaching, biomedical research, and university administration for 40 years, I decided to make a clean break and try something else when I retired. I am now a volunteer pilot and Director for Aerospace Education for the Arkansas Wing of the Civil Air Patrol, and I recently accepted a part-time position as a flight instructor for the Central Flying Service of Little Rock.

"I maintain contact with my former colleagues and continue to attend the Experimental Biology meeting annually.

"One of my wife's greatest fears was that I would 'hang around the house' after I retired. She often reminded me that she married me for life but not lunch. One of my greatest fears was 'hanging around the university' and taking up valuable space. (It is nice to know they were sorry to see me go rather than having my colleagues hoping I would go!) So I went back to flying 11 years ago and prepared for my 'second career.'

"Thank you for your best wishes for my health and happiness. Fortunately, I still enjoy good health. I do not want a 'relaxed lifestyle.' There are too many mountains to climb."❖

Congress to Put Intellectual Property Treaty Into Effect

Many have called the Internet and World Wide Web the best medium for the free exchange of ideas and information. Recently, however, a movement has been gaining momentum to protect the rights of authors of original material published on the Web. On July 29, 1997, Rep. Howard Coble (R-NC) introduced HR 2281, a bill currently pending before Congress. HR 2281 outlaws tampering by two kinds of protective technologies: those that prevent unauthorized access to copyrighted material and those that prevent unauthorized copying of copyrighted material. In addition, HR 2281 prohibits the act of circumventing access controls such as passwords and encryption utilities. The legislation provides for civil and criminal remedies for violation of these prohibitions.

This bill was proposed in order to adhere to provisions of two treaties approved last year by the World Intellectual Property Organization, **http://www.wipo.org**, at an international conference convened in Geneva, Switzerland, in December 1996. Delegates from more than 100 countries attended the conference and contributed to the language of the treaties, whose purpose was to address issues surrounding the protection of copyrighted material in digital form and to provide stronger international protection for authors, performers, and producers of recorded material.

Companion legislation to the treaty implementation bill was also introduced by Rep. Coble. HR 2180, the "On-line Copyright Liability Limitation Act," is an attempt to address concerns raised by network service providers regarding their potential liability for infringement when copyrighted material is transmitted through their services by other parties.

The issue of copyrights and the Web has recently been highlighted in the news by legal actions initiated by musical performers such as Madonna and Johnny Cash. Both of these entertainers claim that material they prepared was being distributed via the Internet without permission and without proper restitution.

For the moment, the best advice to authors who wish to publish material on the World Wide Web is to assume that your material is going to be infringed upon. After all, instant access is just that: instant access to and control of any text that is displayed on a Web site.

For more information on copyright issues concerning Web publishers, check out:

The US House of Representatives Internet Law Library/Intellectual Property: Copyrights
http://law.house.gov/325.htm

Thomas: Legislative Information on the Internet
http://thomas.loc.gov/cgi-bin/query/z?c105:H.R.2281:
http://thomas.loc.gov/cgi-bin/query/z?c105:H.R.2180:

The Copyright Act of 1976, as amended
http://www.law.cornell.edu/uscode/17/

Creative Incentive Coalition
http://www.cic.org

If you have any information, questions, or opinions on this matter, please feel free to forward your comments to Paul Lombard at plombard@aps.faseb.org.❖

Lung Growth and Development

John A. McDonald (Editor)
Lung Biology in Health and Disease Series/100, (Claude Lenfant, Exec. Ed.)
Monticello, NY: Dekker, 1997, 752 pp., illus., index, $195.00
ISBN: 0-8247-9772-8

Volume 100 in the series of monographs entitled *Lung Biology in Health and Disease* revisits the topic of lung development, the subject of an earlier volume published in 1977 in this series. In the intervening 20 years, there has been an explosion of knowledge in some areas, most notably in the regulation of surfactant synthesis. Other aspects of lung development remain poorly understood. The editor of *Lung Growth and Development*, John McDonald, has a long-standing interest in the developmental biology of the lung and has published extensively in related areas. He has assembled an outstanding collection of contributing authors, many of whom have made major scientific contributions to the material covered in their chapters. McDonald is to be commended for producing a text that includes both in-depth coverage of major advances in lung development and an assessment of important research areas that remain unexplored.

Although touted as a text that discusses both prenatal and postnatal aspects of lung development, with a few exceptions the chapters concentrate primarily, if not exclusively, on prenatal lung development. The respiratory epithelial cell is a major focus of this volume. Chapters are devoted to gene transcription in pulmonary epithelial cells, differentiation of the alveolar epithelial cell and the tracheobronchial epithelial cell, epithelial-mesenchymal interactions, and regulation of the surfactant system. Readers with a primary interest in lung fibroblasts may be disappointed by the lack of a chapter devoted to the role played by these cells in the pre- and postnatal development of the lung.

Lung Growth and Development begins with a chapter by P. Burri on the structural aspects of prenatal and postnatal lung development. A coauthor of the related chapter in the 1977 volume, Burri has substantially updated the original chapter, exploring the concepts that growth and differentiation processes in the prenatal lung occur in a centrifugal direction and that microvascular growth is intussusceptive. His recent studies of the effects of thyroid hormones and dexamethasone on septal outgrowth and precocious maturation of capillaries is relevant to both the neonatologist and the researcher interested in postnatal lung development.

Two chapters are devoted to the regulatory control of gene expression in the respiratory epithelium. In the first, Whitsett and Sever focus on thyroid transcription factor-1 and hepatocyte nuclear factor family members. In the second, B. Hackett and J. Gitlin provide a comprehensive summary of transcription factors that are potentially important during the development of the pulmonary epithelium, emphasizing the importance of temporal and spatial patterning for normal development. In "Epithelial-Mesenchymal Interaction in Lung Development," J. Shannon and R. Deterding address the interdependence of these lung cells during branching morphogenesis and the development of the vasculature, identifying the specific roles of extracellular matrix molecules and growth factors in these interactions. "Alveolar Epithelial Cell Differentiation in the Fetal Lung" by R. Mallampalli, M. Acarregui, and J. Snyder describes the physiological role of epithelial cells during fetal lung development. The morphological and biochemical characteristics of differentiated types I and II alveolar epithelial cells are compared and contrasted, and a comprehensive list of unique cell markers for each is presented. "Differentiation of Tracheobronchial Epithelial Cells," by R. Wu outlines the evolution of cell and organ culture techniques employed to better understand the functions of these cells. Also included in this chapter is a discussion of the role of vitamin A in airway mucociliary cell differentiation. "Clara Cells" by C. Plopper includes an in-depth discussion of the expression patterns of phenotypic markers during the differentiation of these cells.

In "Airway Gland Growth and Differentiation," authors C. Basbaum, J. D. Li, and M. Lim acknowledge a paucity of mechanistic studies of airway submucosal gland development and provide an informative discussion of the principals of gland growth, ending with a discussion of their recent work on the DNA regulatory elements and transcription factors controlling the bovine lysosome gene lys 5a and the rat mucin MUC 2 gene. "Development of Airway Smooth Muscle" by P. McCray and K. Nakamura covers the ontogeny of contractility, neural regulation during development, and the influence of the airway epithelium and cartilage on airway smooth muscle function during development. This chapter concludes with a discussion of diseases affecting airway smooth muscle in neonates.

In "Development of Innervation in the Lung," R. Dey and K. S. Hung chart the time course over which innervation of the major pulmonary structures of the pre- and postnatal lung occurs. "Neuropeptides and Lung Development" by M. Sunday provides a comprehensive summary of the pulmonary sources of neuropeptides and the potential roles for the bombesin-like peptides in cell proliferation and differentiation and in branching morphogenesis. Her review of the associations between pulmonary neuroendocrine cells and developmental lung disorders, e.g., pulmonary hypoplasia and dysmaturity, bronchopulmonary dysplasia, sudden infant death syndrome, and asthma will be of particular interest to the clinician.

The role of extracellular matrix in lung development is discussed in two additional chapters. In "Laminin," L. Schuger discusses the cell adhesive and mitogenic properties of this basement membrane component and describes her functional studies that established a role for laminin in branching morphogenesis. "Collagens and Elastic Fiber Proteins" by E. Crouch, R. Mecham, R. Davila, and A. Noguchi summarizes the current knowledge of the structural and functional properties of these connective tissue proteins. A related chapter, "Cell-Cell and Cell-Matrix Interactions in Development of the Lung Vasculature," was written by J. Roman, a major contributor to the field. A thorough review of cell surface receptors and their ligands is followed by a thought-provoking assessment of key questions that remain unanswered.

An informative chapter, "Developmental and Hormonal Regulation of the Surfactant System" by M. Odom and P. Ballard, is followed by a chapter by S. Horowitz and J. Davis describing the impact of hyperoxia, barotrauma, and inflammation on subsequent development of the immature lung. The use of in vitro models to evaluate factors controlling cytodifferentiation is described in a chapter by R. Hilfer and R. Searls. In the final chapter, factors influencing compensatory lung growth and the relevance of this phenomenon to lung transplantation is discussed by K. Gilbert, L. Petrovic-Dovat, and E. Rannels. In summary, this text is a welcome addition to the lung cell and molecular biology literature. It will undoubtedly be a valuable resource for students and experienced investigators alike. ❖

Margaret C. Bruce
University of Kentucky

Book Reviews

Pathophysiology of Tachycardia-Induced Heart Failure

Francis G. Spinale (Editor)
Armonk, NY: Futura, 1996, 235 pp., illus., index, $49.95
ISBN: 0-87993-649-5

Pathophysiology of Tachycardia-Induced Heart Failure, edited by F. G. Spinale, is a comprehensive textbook devoted to the study of rapid ventricular pacing-induced heart failure. This topic is timely since many laboratories are currently utilizing this model. The areas covered include physiological studies of left ventricular (LV) systolic and diastolic function, changes in function during the recovery phase after rapid pacing is discontinued, and cardiac and baroreflex control of the circulation in the failing heart. Also, pathological studies of the remodeling of the myocardium after development of heart failure and pulmonary microvascular adaptations to heart failure are included. In addition, studies of isolated myocyte contractile processes and ß-adrenergic signaling in the failing heart are discussed.

The opening chapter contains a brief historical summary of the work performed using the tachycardia-induced heart failure model. This interesting background begins with the first report of the model in 1962 by Whipple, based on his observations in patients. There is a review of the development of the chronic heart failure model up until recently. In several chapters, data are presented showing changes in ventricular function and neurohumoral activation. Subsequent chapters review circulatory adjustments to chronic heart failure; measures of LV systolic function, including ejection fraction; and the peak rate of developed pressure, reduced in this model of heart failure. Changes in LV geometry and wall stress are described. Abnormalities in reflex control of the circulation, including depressed cardiac stretch reflexes, and the relationship between heart rate and LV function are explained. Rate-dependent changes in aortic pressure and flow are shown to result in activation of the renin-angiotensin-aldosterone system.

With diastolic dysfunction, the progressive loss of myocardial relaxation is shown to occur in parallel on the ventricular and isolated myocyte level. These findings suggest that significant myocardial remodeling is occurring. This is explored in another chapter that studies the histopathological changes found in these hearts. They describe LV chamber enlargement and wall thinning as well as changes in myocyte geometry and cytoarchitecture. Changes in ß-adrenergic-G protein-adenyl cyclase signaling are briefly outlined, showing the early and late changes in pacing-induced failure and demonstrating the similarities to human heart failure. Finally, evidence for chronic elevation in pulmonary vascular pressure in this model is associated with significant increases in endothelial, interstitial, and epithelial thickness.

Pathophysiology of Tachycardia-Induced Heart Failure is a most comprehensive review of this model. This book is well-written and easy to understand. The figures are carefully chosen to illustrate specific concepts. The editor has done an excellent job at organizing the various topics.

The limitations in several chapters include the omission of other investigators' work on this model since the book focuses primarily on the author's work. Most importantly, there is no evidence of critical examination of how the changes in this model differ from other models of heart failure or of human heart failure. The reader is left not knowing the extent to which changes are related to other models or if they are solely in this model. The etiology of heart failure in this model is still unknown. Potentially, this can also limit its usefulness. Overall, however, this text contains a coherent compendium of what is known about pacing-induced heart failure. ❖

Dorothy E. Vatner
Allegheny University of the Health Sciences

Pharmacology: Drug Actions and Reactions, Fifth Edition

Ruth R. Levine, Carol T. Walsh, and Rochelle D. Schwartz
New York: Parthenon, 1996, 569 pp., illus., index, $50.00
ISBN: 1-85070-780-4

This comprehensive volume is aimed at students of medicine, science, humanities, nursing, and veterinary medicine. It serves to concisely describe diverse areas of pharmacology in terms of general principles that transcend specific drugs and/or pharmacological systems.

The book is organized logically, beginning with historical and general subjects and then taking the reader down a pharmacological path of how drugs meet the physiological system with which they interact. The first 12 chapters are liberally endowed with figures, making it easier to understand the quantitative nature of the contents of these chapters. The admirable rate of figure inclusion drops off in later chapters since these chapters are more descriptive in nature — statistics of prevalence of side reactions, etc. — and use tables to advantage. Each chapter ends with a well-written synopsis; a list of suggested reading; and, most useful for students, a guide for study and review. This last feature is an excellent idea since many readers would like to have a sense of what they are gaining from reading a textbook. When the subject is as comprehensive as the description of a complete discipline, often this is not evident.

The book opens with a chapter on the historical development of pharmacology, and the reader is immediately impressed with the authors' obvious love of pharmacology as a science. This is an excellent way to introduce this topic to students for it is a colorful and rich history dating back to ancient times. The second chapter discusses nomenclature of drugs and terms within pharmacology. It also furnishes a very useful bibliography of sources of information about drugs. The third chapter discusses "how drugs act" and introduces basic information about chemical interactions that serve to unite drugs with their sites of action. This provides a good foundation for the following chapters since the concepts described here govern all the interactions in pharmacology. The section on receptors is basic and adheres to well-accepted but somewhat dated views. With the rapidly accumulating knowledge about receptor function and the advent of cloning of receptor cDNA, the hope is that by the time the sixth edition of this book is due, there will be sufficient confirmation of the presently emerging theories about the way drugs are thought to select receptor conformations and thus induce response.

The next chapters are arranged in the chronology of drugs as they go on to do their

therapeutic business. Thus, Chapters 4 and 5 discuss how drugs get to their locus of action, and Chapters 6-8 discuss factors that affect how quickly they get there, how long they stay, and how quickly they leave (distribution, excretion, biotransformation, etc.). The next two chapters (Chapters 9 and 10) discuss the quantification of drug response and the factors that may cause observed drug effects to show variation from ideal predicted behavior. Variability in response due to the biological system and variability in response due to conditions of administration are discussed in Chapters 11 and 12, respectively. These latter two chapters are most useful for students going into health care professions. The book ends with excellent chapters on drug toxicity, drugs of abuse, and the evaluation of new drugs. A comprehensive glossary follows. The book includes a most useful set of appendices on drug effects in the gastrointestinal tract, effects on renal function, chemotherapy, perception of pain, sedatives and hypnotics, psychiatric disorders, and central nervous system stimulants.

In general, this text provides an excellent basic knowledge base for students studying pharmacology, and I found this to be an excellent book, with very much to commend it to students in all categories for which it was intended.❖

Terry Kenakin

Parasitic Lung Diseases

Adel A. F. Mahmoud (Editor)
Lung Biology in Health and Disease, Vol. 101 (Claude Lenfant, Exec. Ed.)
Monticello, NY: Dekker, 1997, 272 pp., illus., index, $135.00
ISBN: 0-8247-9722-1

Parasitic infections are caused by unicellular protozoa or multicellular helminths (worms), organisms quite distinct from viruses, bacteria, or fungi. Characteristically, they have been the special health care problem of developing countries where the extreme prevalence of malaria, filariasis, schistosomiasis, leishmaniasis, and trypanosomiasis imposes major medical and economic burdens. The importance of parasite-mediated illness has received additional emphasis in both developed and developing nations by the emergence of toxoplasma, cryptosporidium, leishmania, strongyloides, and microsporidium, among others, as opportunistic pathogens in patients with HIV infection. Further, with marked population shifts because of economic hardships and political unrest, along with the relative ease of international travel, parasitic infections are no longer solely the domain of those living near or in the tropics.

The recognition of shrinking geographical boundaries has likely provided the impetus for the *Lung Biology in Health and Disease* series to devote a volume to parasitic lung diseases. Edited by Adel Mahmoud and written primarily by his colleagues and former colleagues from the Divisions of Geographic Medicine and Infectious Diseases at Case Western Reserve University School of Medicine, this compact volume, aimed at practitioners and physicians-in-training, examines the host-parasite relationship, with particular emphasis on the lower respiratory tract. Utilizing the breadth of clinical and investigative experience of multiple authors, this volume is in many ways a short treatise on important parasitic infections rather than an exposition strictly focused on pulmonary parasitic infections. Indeed, the book's utility is in placing each of the parasites into a clinical niche from which the salient pulmonary features are discussed.

After setting out the basic concepts of pathogenesis, virulence, and immunity to protozoal and helminth infections, the book moves swiftly into nicely focused chapters detailing the biology, epidemiology, clinical features, diagnosis, and treatment of important protozoal and helminth infections, although not necessarily those primarily associated with significant pulmonary signs and symptoms. Indeed, it is not until the final few chapters that parasitic infections in which pulmonary manifestations are the major clinical presentations — e.g., paragonimiasis and pulmonary echinoccoccal disease — are discussed. With an eye always toward pulmonary manifestations of parasitic infections, the final chapter discusses in an authoritative manner the approach one should take toward the lower respiratory tract compromised by suspected parasitic infection.

While the strength of this book lies in filling a gap in our knowledge of pulmonary features of parasitic infection and concurrently providing those with an interest in pulmonary medicine a succinct discourse on parasitic etiologies for pulmonary signs and symptoms, the information contained in this volume is not always sufficiently detailed to allow this to be an authoritative reference for those needing to go significantly below the surface of a given problem. Nevertheless, this nicely presented volume should find a place on the bookshelves of those who have an interest in parasitic infections. It is the challenge of considering parasitic etiologies of lung disorders that this book addresses, and it should be useful reading for those needing general information on the ever-burgeoning field of tropical medicine and parasitology.❖

Thomas B. Nutman
NIH Laboratory of Parasitic Diseases

A New Video Available From APS: "Function of the Renal Pelvis"

A two-part video (39 minutes in length) developed by Bodil Schmidt-Nielsen in collaboration with Bruce Graves and Louis Clark on the "Function of the Renal Pelvis" is now available from APS. Part One is a real-time video of the actual events in the renal papilla and ureter during peristalsis. Part Two is a computer-generated animated model illustrating the model proposed by Schmidt-Nielsen for how energy supplied by the rhythmic contractions of the renal pelvic wall can contribute to the concentrating of urine in the collecting ducts.

The video can be purchased for $25.00 from the American Physiological Society, Circulation Department, 9650 Rockville Pike, Bethesda, MD 20814-3991. Tel: 301-530-7180; fax: 301-571-8305; e-mail: subscrip@aps.faseb.org.

Books Received

Borg's Perceived Exertion and Pain Scales.
Gunnar Borg.
Champaign, IL: Human Kinetics, 1998, 166 pp., illus., index, $24.00.
ISBN: 0-88011-623-4.

Calcium and Cellular Metabolism: Transport and Regulation.
J. R. Sotelo and J. C. Benech.
New York: Plenum, 1997, 166 pp., illus., index, $79.50.
ISBN: 0-306-45594-3.

Cardiac Gap Junctions: Physiology, Regulation, Pathophysiology, and Pharmacology.
Stefan Dhein.
Basel, Switzerland: Karger, 1998, 148 pp., illus., index, $112.25.
ISBN: 3-8055-6567-4.

Cilia, Mucus, and Mucociliary Interactions.
Gerald L. Baum, Zvi Priel, Yehudah Roth, Nadav Liron, and Ervin J. Ostfeld (Editors).
New York: Dekker, 1998, 616 pp., illus., index, $225.00.
ISBN: 0-8247-0138-0.

Chemistry and Biology of Serpins.
Frank C. Church, Dennis D. Cunningham, David Ginsburg, Maureane Hoffman, and Douglas M. Tollefsen (Editors).
Advances in Experimental Medicine and Biology, Vol 425.
New York: Plenum, 1997, 358 pp., illus., index, $95.00.
ISBN: 0-306-45698-2.

Connective Tissue Biology: Integration and Reductionism.
R. K. Reed and K. Rubin (Editors).
Werner-Gren International Series, Vol. 71.
Colchester, UK: Portland, 1998, 299 pp., illus., index, $127.50.
ISBN: 1-85578-118-2.

CRC Desk Reference for Nutrition.
Carolyn D. Berdanier
New York: CRC, 1998, 358 pp., illus., $59.95.
ISBN: 0-8493-9682-4.

Development of Cardiovascular Systems: Molecules to Organisms.
Warren W. Burggren and Bradley B. Keller (Editors).
New York: Cambridge University Press, 1997, 360 pp., illus., index, $74.95.
ISBN: 0-521-56072-1.

The Human Use of Animals: Case Studies in Ethical Choice.
F. Barbara Orlans, Tom L. Beauchamp, Rebecca Dresser, David B. Morton, and John P. Gluck.
New York: Oxford University Press, 1998, 330 pp., illus., index, $26.50.
ISBN: 0-19-511808-8.

McDonald's Blood Flow in Arteries: Theoretical, Experimental, and Clinical Principles (4th Ed.).
Wilmer W. Nichols and Michael F. O'Rourke.
New York: Oxford University Press, 1997, 564 pp., illus., index, $150.00.
ISBN: 0-340-64614-4.

The Minimal Model Approach and Determinants of Glucose Tolerance.
Richard N. Bergman and Jennifer C. Lovejoy (Editors).
Pennington Center Nutrition Series, Vol. 7.
Baton Rouge, LA: Louisiana State University Press, 1998, 424 pp., illus., index, $90.00.
ISBN: 0-8071-2238-6.

Nitric Oxide Protocols.
Michael A. Titheradge (Editor).
Methods in Molecular Biology, Vol. 100.
Totowa, NJ: Humana, 1998, 324 pp., illus., index, $59.50.
ISBN: 0-89603-537-9.

Physiology.
Linda S. Costanzo.
Philadelphia, PA: Saunders, 1998, 429 pp., illus., index, $29.95.
ISBN: 0-7216-6611-6.

Proinflammatory and Antiinflammatory Peptides.
Sami I. Said (Editor).
Lung Biology in Health and Disease Series, Vol. 112.
New York: Dekker, 1998, 711 pp., illus., index, $195.00.
ISBN: 0-8247-0120-8.

Pulmonary Edema.
E. Kenneth Weir and John T. Reeves (Editors).
Armonk, NY: Futura, 1998, 411 pp., illus., index, $98.00.
ISBN: 0-87993-6894.

Satiation: From Gut to Brain.
Gerard P. Smith (Editor).
New York: Oxford University Press, 1997, 291 pp., illus., index, $65.00.
ISBN: 0-19-510515-X

The Scientist as Consultant: Building New Career Opportunities.
Carl J. Sundermann and Thomas K. Sawyer.
New York: Plenum, 1998, 341 pp., index, $29.95.
ISBN: 0-306-45637-0.

Why David Was A Threat to Goliath: Engineering Limitations to Enzyme Kinetics in Vivo.
Roland A. Coulson.
New York: Vantage, 1997, 150 pp., illus., index, $14.95.
ISBN: 0-533-122460-6.

Collaborations to Study Complex Biological Systems

The National Institute of General Medical Sciences (NIGMS) announces a new on-going program to support quantitative approaches to the study of complex biological processes by encouraging nontraditional collaborations across disciplinary lines. The collaborations will be funded through supplements to existing NIGMS grants to support the salary and expenses of investigators who have expertise in physics, engineering, mathematics, and other fields involving quantitative skills relevant to the analysis of complex systems.

Application deadlines: March 1, July 1, and November 1.

Details on this program are published in the *NIH Guide for Grants and Contracts* as Program Announcement PA-98-024. The program announcement and additional information for applicants can be found on the NIGMS Web site at **http://www.nih.gov/nigms/funding/pa/comsupp.html**.

Call for Proposals for the International Program for Animal Alternatives for Study of Effects in or on the Skin

The International Program for Animal Alternatives (IPAA) sponsored by the Procter & Gamble Company is committed to the development and validation of new methods for testing the efficacy and safety of drugs and consumer products that eliminate or reduce the use of animals or distress imposed on animals.

In 1998, up to three awards will be made. IPAA is seeking proposals that will lead to the development or validation of methods for study of effects in or on the skin for safety and efficacy testing. Irritation, contact hypersensitivity, aging, hair growth, photoprotection/photodamage, photo cocarcinogenesis, and hyperpigmentation disorders are of particular interest. Preference will be given to mechanism-based, in vitro biochemical or cellular methodology and computer modeling that could reduce or eliminate the need for in vivo tests. Maximum award is $75,000 per year for two years. The deadline for application is August 15, 1998.

Additional information and application materials can be obtained from the Program Administrator, IPAA, Procter & Gamble Company, Miami Valley Laboratories, PO Box 538707, Cincinnati, OH 45253-8707. Fax: 513-627-1153; e-mail: ExtResPrgIM@pg.com.❖

Lake Cumberland Biological Transport Group Meeting

It is time to plan for the 1998 Lake Cumberland Biological Transport Meeting (affiliated with APS). The central theme of the meeting is biological transport, but presentations in other areas are welcome. This is an excellent forum for principal investigators, postdoctoral fellows, and graduate students alike to present their data and receive feedback.

The scientific sessions will be held in the mornings and evenings on **Sunday, June 14 to Tuesday, June 16**. Afternoons are free to enjoy swimming, fishing, golfing, riding, hiking, or or any of the other activities available at the site of the meeting, Lake Cumberland State Resort Park, Jamestown, KY.❖

For more information, contact:

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or visit the Web site at:
http://iupucbio1.iupui.edu/cumberland/

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

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SmithKline Beecham Pharmaceuticals
Wyeth-Ayerst Laboratories

Scientific Meetings and Congresses

1998

May 1-3

Biomedicine '98: Medical Research From Bench to Bedside, Washington, DC. *Information:* Biomedicine '98, 1200 19th Street NW, Suite 300, Washington, DC 20036. Tel: 202-429-5161; fax: 202-223-4579; Internet: **http://www.afmr.org**.

May 22-24

6th International Congress on Physical Education and Sport, Komotini, Greece. *Information:* Savvas Tokmakidis, 6th International Congress on Physical Education and Sport, Department of Physical Education and Sport Science, Democritus University of Thrace, Komotini, 69100, Greece. Tel: +30-531-21764 or 21762; fax: +30-531-33582 or 26908; e-mail: stokmaki@kom.forthnet.gr; Internet: **http://www.cc.duth.gr/conf/icpes98**.

June 3-6

6th International Symposium on Resistance Arteries, Mol, Belgium. *Information:* Department of Pharmacology, Maastricht University, PO Box 616, 6200 MD Maastricht, The Netherlands. Tel: +31-43-3881417; fax: +31-43-3670940; e-mail: isra@farmaco.unimaas.nl.

June 11-14

International Behavioral Neuroscience Society 7th Annual Meeting, Richmond, VA. *Information:* Marianne Van Wagner, Division of Life Sciences, University of Texas at San Antonio, 6900 North Loop 1604 West, San Antonio, TX 78249-0662. Tel: 210-458-4481; fax: 210-458-4510; e-mail: editoff@lonestar.utsa.edu; Internet: **http://www.utsa.edu/Academics/COSAE/LifeSciences/IBNS**.

June 13-16

American Diabetes Association 58th Annual Scientific Sessions, Chicago, IL. *Information*: Lauren Brillante, American Diabetes Association, 1660 Duke Street, Alexandria, VA 22314. Tel: 703-549-1500, ext. 2271; e-mail: meetings@diabetes.org; Internet: **http://www.diabetes.org/am98**.

June 15-16

Bioinformatics and Genome Research, Boston, MA. *Information*: Cambridge Healthtech Institute, 1037 Chestnut Street, Newton Upper Falls, MA 02164. Tel: 617-630-1300; fax: 617-630-1325.

June 17-18

Protein Genomes: From Genes to Proteins, Boston, MA. *Information*: Cambridge Healthtech Institute, 1037 Chestnut Street, Newton Upper Falls, MA 02164. Tel: 617-630-1300; fax: 617-630-1325.

June 24-27

Endocrine Society 80th Annual Meeting, New Orleans, LA. *Information*: The Endocrine Society, 4350 East West Highway, Suite 500, Bethesda, MD, 20814-4410. Tel: 202-347-6659; fax: 202-347-6674; Internet: **http://www.endo-society.org**.

June 27-29

1st European Congress of Human Locomotion Sciences: From Scientific Research to Public Health, Verona, Italy. *Information:* G. Bovo, 37043 Castagnaro, Verona, Italy. Tel and fax: +39-0442-92436.

June 28-July 2

International Conference on Intensive Cardiac Care, Jerusalem, Israel. *Information:* ISAS International Seminars, PO Box 574, Jerusalem 91004, Israel. Tel: +972-2-6520574; fax: +972-2-6520558; e-mail: isas@netvision.net.il.

June 28-July 3

3rd International Congress of Pathophysiology, Lahti, Finland. *Information:* ISP98, Department of Physiology, University of Kuopio, 70211 Kuopio, Finland. Tel: +358-17-163-080 or 163-108; fax: +358-17-163-112; e-mail: isp98@uku.fi; Internet: **http://packer. berkeley.edu/conferences/isp98.html**.

July 19-24

International Symposium on Optical Science, Engineering, and Instrumentation (43rd Annual SPIE Meeting), San Diego, CA. *Information:* SPIE International Headquarters, PO Box 10, Bellingham, WA 98227-9861. Tel: 360-676-3290; fax: 360-647-1445; e-mail: sd98call@spie.org; Internet: **http://www.spie.org/info/sd**.

July 23-24

Cardiovascular Aging (XIII International Congress of Pharmacology Satellite Symposium), Nancy, France. *Information*: Cardiovascular Research Group, Faculty of Pharmacy, 5 rue Albert Lebrun, 54000 Nancy, France. Tel: +33-03-83-17-88-11; fax: +33-03-83-17-88-79; e-mail: atkinson@pharma.u-nancy.fr; Internet: **http://www. uhp.u-nancy.fr/Pharma/CRG**.

July 29-31

Immune-Neuroendocrine Interactions: Cellular and Molecular Mechanisms, University Park, PA. *Information:* Carey Shuey, Penn State University, 108 Althouse Laboratory, University Park, PA 16802. Tel: 814-863-1918; e-mail: cls20@psu.edu.

August 2-5

9th International Symposium on Vascular Neuroeffector Mechanisms, Porto, Portugal. *Information:* S. Giumarães, Institute of Pharmacology and Therapeutics, Faculty of Medicine, P-200 Porto, Portugal. Fax: +351-2-5502402.

August 17-21

Rice University Institute of Biosciences and Bioengineering Sixth Annual Seminar: Advances in Tissue Engineering, Houston, Texas. *Information*: Rice University, School of Continuing Studies - MS 550, 6100 Main Street, Houston, TX 77005-1892. Tel: 713-527-4803; fax: 713-285-5213; e-mail: scs@rice.edu; Internet: **http://www.rice.edu/scs/tissue**.

August 23-28

Fifth International Congress of Comparative Physiology and Biochemistry, Calgary, Alberta, Canada. *Information*: Secretariat, Fifth International Congress of Comparative Physiology and Biochemistry, Special Events and Conference Office, University of Calgary - Olympic Centre, 2500 University Drive NW, Calgary, Alberta, Canada T2N 1N4. Tel: 403-220-5261; fax: 403- 289-9311; e-mail: iccpb@acs.ucalgary.ca; Internet: **http://acs.ucalgary.ca/~iccpb99/**.

September 3-5

International Meeting on Ovarian Aging, Brussels, Belgium. *Information:* Belgian Menopause Society, 251 Avenue Reine Astrid, 1950 Kraainem/Belgium. Tel: +32-0-2-569-81-33; fax: +32-0-4-254-12-90; e-mail: ypc@compuserve.com.

September 6-9

European Atherosclerosis Society 70th EAS Congress, Jerusalem, Israel. *Information:* Yechezkiel Stein, 70th EAS Congress, PO Box 50006, Tel Aviv 61500, Israel. Tel: +972-3-5140014; fax: +972-3-5175674 or 5140077.