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APS Leadership Meets With NIGMS

Jon R. Lorsch, director of the National Institute of General Medical Sciences (NIH photo by Bill Branson)

On Monday, March 31, 2014, APS President Kim Barrett, President-Elect David Pollock, and Past-President Sue Barman met with Jon Lorsch, Director of the National Institute for General Medical Sciences (NIGMS), and several other members of the institute's leadership. Discussion focused on research training, funding and new initiatives being undertaken at the NIH to maximize resources. Lorsch shared his views on a number of issues that are of interest to APS members and answered the following questions APS posed to him after the meeting.

APS: Years of stagnant budget growth have meant that scientists at every stage of their careers are at risk for losing their funding. What solutions is NIGMS considering to help support researchers throughout their careers?

During the period in which the NIH budget doubled (1998-2003), NIGMS invested some of the new funds in big programs such as the Protein Structure Initiative (*http://www.nigms.nih.gov/Research/SpecificAreas/PSI/Pages/default.aspx*), glue grants (*http://www.nigms.nih.gov/Research/SpecificAreas/Collaborative/GlueGrants/pages/default.aspx*), and large-scale research centers. We developed these programs after extensive consultation with the scientific community regarding the areas of greatest opportunity. At the time, it made sense to use a fraction of the money from the budget doubling to try to build under-developed scientific areas and experiment with new, larger models for conducting biomedical research. However, with the budget doubling now more than a decade behind us, it is time to re-equilibrate the system to function optimally in the new fiscal environment.

As part of this re-equilibration, we are renewing and reinvigorating our support for question-driven, investigator-initiated research. We are reducing our use of funding opportunity announcements (FOAs) targeting specific areas of science. We are also sunsetting a number of the large programs that started during the budget-doubling period, including the Protein Structure Initiative (see *http://loop.nigms.nih.gov/2013/09/examining-our-large-scale-research-initiatives-and-centers-including-the-psi/*). The funds freed up over the next few years by these changes will allow us to bolster support for investigator-initiated

Continued on page 191

A Matter of Opinion

Happy Anniversary DC Principles Coalition: A Decade of Striving for a Middle Ground

On March 16, 2004, APS and a group of scientific society publishers gathered at the National Press Club to launch the Washington DC Principles Coalition for Free Access to Science (DC Principles). The coalition's goal was to provide a needed middle ground amidst calls for immediate open access (OA) to the biomedical literature as a replacement for the existing system of subscription access, which OA advocates typically caricatured as a closed system controlled by greedy

Continued on page 189

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Contents

Annual Surveys

Association of Chairs of Departments of Physiology 2013 Survey Results

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The Association of Chairs of Departments of Physiology annual survey was sent electronically to 194 physiology departments throughout the U.S., Canada, Mexico, and Puerto Rico. A total of 43 surveys were returned for a response rate of 21%. This rate is similar to previous years. Of the 43 surveys returned, 12 were from private and 31 were from public medical schools.

The data provide the reader with general trends of faculty demographics and distribution, overall departmental

Table 1. Faculty Summary

Faculty Summary (*n* = 770)

	Male	Female	Total
Asian/Pacific Islander	95	37	132
Black (not Hispanic)	11	11	22
Hispanic	36	13	49
White (not Hispanic)	383	132	515
Foreign National	35	17	52
Total	**560**	**210**	**770**

Medical Physiology Course Type

	Yes	No	Total Responded
Integrated Disciplines	32	9	41
Traditional	32	10	42
Within Traditional	21	19	40

Tenure Status in Each Department by Degree

	Tenured	Not Tenured	Not Eligible	Total
MD	14	0	7	21
PhD	457	2	288	747
2 Doctorates	39	1	11	51
Other	5	0	0	5
Total	**515**	**3**	**306**	**824**

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

	Student Type	Average (hours)	Number (inst.)
Lab Hours	Graduate	348	23
	Medical	33	26
	Other	86	10
Lectures	Graduate	79	41
	Medical	54	42
	Other	91	24
Small Group	Graduate	33	22
	Medical	39	37
	Other	34	11

Teaching Interactions

MD/DO	41
DDS	15
DVM	4
Allied Health	21
Pharmacy	9
Other Biomedical	31
Life Science	22
Bioengineering	19
Other	14

Table 2. Student/Trainee Information

Student/Trainee Summary

		US Citizen/Resident Alien
Predoctoral	Male	222
Predoctoral	Female	223
Postdoctoral	Male	111
Postdoctoral	Female	85
Foreign		
Predoctoral	Male	99
Predoctoral	Female	137
Postdoctoral	Male	118
Postdoctoral	Female	94

Race/Ethnicity of Pre- and Postdoctoral Students/Trainees

	Predoctoral		Postdoctoral	
	Male	Female	Male	Female
Native American	1	0	0	0
Asian/Pacific Islander	20	34	18	24
Black (not Hispanic)	11	21	4	8
Hispanic	13	18	7	5
White (not Hispanic)	177	150	82	48

US Citizen/Resident Alien Postdoctoral Trainee Completions

	Male	Female
Native American	3	0
Asian/Pacific Islander	8	9
Black (not Hispanic)	2	9
Hispanic	6	3
White (not Hispanic)	42	27
Total	**61**	**48**

Average Annual Stipend (US $)

	Average	Number
Postdoctoral	$41,257.90	39
Predoctoral	$24,507.67	39

Predoctoral Trainee Completions During the Year Ending June 30, 2013

	Total
Female	73
Male	101
Total	**174**

Foreign National Predoctoral Trainee Completions

	Male	Female
African	1	0
Asian/Pacific Islander	19	9
Central/South American	1	5
European/Canadian, etc.	2	1
Middle Eastern	6	1
Total	**29**	**16**

Number of Foreign Pre- and Postdoctoral Students/Trainees

	Predoctoral		Postdoctoral	
	Male	Female	Male	Female
African	2	2	1	1
Asian/Pacific Islander	52	65	75	47
Central/South American	1	7	8	10
European/Canadian, etc.	7	14	20	23
Middle Eastern	14	20	12	5
Other	23	29	3	8
Total	**99**	**137**	**119**	**94**

Number of Foreign Pre- and Postdoctoral Trainees Whose Primary Source of Support is:

	Predoctoral	Postdoctoral
Institutional	55	27
Research Grants	111	197
Private Foundations	4	3
Home (foreign) Government	3	3
Other	19	11
Total	**192**	**241**

budgets, and space available for research. As a reminder, beginning in 2004, ACDP decided not to include faculty salary information in this report. AAMC salary data is more generally used, so the ACDP Council decided to no longer collect or report this data. Data are still collected on tenure status, gender, and ethnicity of faculty members (Table 1). Table 1 also includes information on the average number of teaching contact hours for faculty and the type of medical physiology course being taught.

Table 2 provides student/trainee information, including ethnicity for predoctoral and postdoctoral categories, as well as predoctoral trainee completions, stipends provided, and type of support.

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

For an update of AAMC salary data, please see the accompanying article, "AAMC Medical School Faculty Compensation Survey" (on p. 164).

Table 3. Institution Summary

Type of Institution (*n* = 43)	
Private	12
Public	31
Total	**43**

Space Controlled by Department	
	Average, sq. ft.
Research Space	19,651.84
Administrative Space	3,116.14
Teaching Space	2,034.38
Other Space:	2,754.89
Total Space	**27,557.26**

Table 4. Institutional Financial Information

Budget by Institution

	All Institutions	No. of Institutions	Mean No. of Faculty	Private Medical	No. of Institutions	Mean No. of Faculty
Institutional (hard money, e.g, operating costs, state allocations)	$2,859,588.75	41	16	$1,841,302.64	11	17
Outside Research Grants and Contracts (direct costs only)	$4,595,085.45	41	16	$4,031,685.36	11	17
Training Grants (direct costs only)	$370,251.31	18	20	$465,256.00	4	20
Endowments	$574,501.35	26	17	$287,834.67	6	16
Indirect Cost Recovery (amount returned to your department)	$295,526.93	28	18	$330,764.67	3	18
Other Budget Support (identify)	$1,155,313.28	37	16	$2,527,889.00	8	17
Average Departmental Budget	$5,727,070.87			$7,112,568.45		
Total faculty			**681**			**131**

	Public Medical	No. of Institutions	Mean No. of Faculty	Non-medical	No. of Institutions	Mean No. of Faculty
Institutional (hard money, e.g, operating costs, state allocations)	$4,400,923.83	25	14	$2,336,539.80	5	18
Outside Research Grants and Contracts (direct costs only)	$7,750,206.99	25	14	$2,003,364.00	5	18
Training Grants (direct costs only)	$614,175.93	13	16	$31,322.00	1	23
Endowments	$1,319,909.71	17	16	$115,759.67	3	19
Indirect Cost Recovery (amount returned to your department)	$430,514.13	22	15	$125,302.00	3	22
Other Budget Support (identify)	$510,032.33	21	15	$428,018.50	5	16
Average Departmental Budget	$5,373,003.74			$4,695,640.40		
Total faculty			**433**			**117**

Financial Information

	Average	No. of Institutions
Current fringe benefit rate most frequently used for primary faculty	30.72	43
Federally negotiated indirect cost rate for FY 13-14 off campus	26.03	37
Federally negotiated indirect cost rate for FY 13-14 on campus	51.37	43
Percentage of allocated salary dollars directly returned to your department	71.24	29
Percentage of indirect costs returned to your department	22.94	31
Percentage of total faculty salaries derived from research grants (does not include fringe benefits costs)	34.07	41

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	Total Research Space, sq. ft.	Rank Research Dollars/ sq. ft.	Research Dollars/ sq. ft.	No. of Faculty
1	101,833,903	3	8,668,507	5	376,892	2	44,170	17	196	23
2	23,837,296	1	15,178,697	2	632,446	6	36,042	2	421	24
3	17,787,149	2	10,860,075	6	362,003	7	34,591	6	314	30
4	11,323,918	5	6,063,835	8	336,880	4	38,751	25	156	18
5	9,978,392	4	8,019,804	7	348,687	10	27,510	7	292	23
6	9,766,870	8	5,110,555	13	232,298	20	18,799	9	272	22
7	9,079,548	11	4,382,766	17	219,138	11	26,926	23	163	20
8	8,967,876	20	3,438,903	22	180,995	38	10,486	5	328	19
9	8,735,077	6	5,494,592	14	228,941	14	20,947	10	262	24
10	8,686,889	19	3,535,132	30	121,901	13	24,166	27	146	29
11	8,562,979	7	5,145,014	3	395,770	5	36,384	30	141	13
12	8,489,672	12	4,354,432	27	155,515	31	12,729	3	342	28
13	8,232,407	14	3,947,121	26	164,463	9	28,199	32	140	24
14	8,133,664	9	5,054,385	16	219,756	18	19,554	11	258	23
15	7,944,542	21	3,366,952	20	198,056	21	16,975	16	198	17
16	6,873,688	10	4,807,520	1	1,602,507	8	30,000	24	160	3
17	6,724,959	23	3,133,715	33	111,918	1	49,427	38	63	28
18	6,680,943	29	2,355,144	32	112,150	3	38,849	39	61	21
19	6,564,668	13	4,129,367	25	165,175	26	14,492	8	285	25
20	6,552,694	17	3,722,784	9	310,232	15	20,873	20	178	12
21	6,343,341	18	3,659,416	10	261,387	22	16,401	14	223	14
22	6,012,035	24	2,878,093	19	205,578	12	25,288	34	114	14
23	5,864,508	31	2,198,607	38	81,430	34	11,903	19	185	27
24	5,552,100	16	3,802,778	11	237,674	23	16,265	13	234	16
25	5,345,479	35	1,888,694	36	94,435	17	19,821	37	95	20
26	5,309,292	33	2,050,000	31	113,889	33	12,048	22	170	18
27	5,226,876	25	2,836,104	12	236,342	16	19,848	29	143	12
28	5,159,768	28	2,446,029	28	152,877	32	12,484	18	196	16
29	4,963,994	15	3,811,252	4	381,125	36	11,236	4	339	10
30	4,961,131	26	2,816,638	21	187,776	43	3,395	1	830	15
31	4,794,061	22	3,199,040	15	228,503	29	13,391	12	239	14
32	4,735,243	34	2,043,826	34	107,570	19	19,040	35	107	19
33	4,658,514	32	2,154,615	23	165,740	25	14,774	28	146	13
34	4,305,630	41	150,000	41	7,500	37	10,526	41	14	20
35	3,968,001	27	2,484,293	24	165,620	24	15,924	26	156	15
36	3,881,108	30	2,304,423	18	209,493	30	12,994	21	177	11
37	3,863,404	38	1,305,421	39	56,757	39	6,165	15	212	23
38	3,779,450	37	1,334,105	35	95,293	28	13,500	36	99	14
39	3,391,207	40	656,809	40	41,051	27	13,867	40	47	16
40	3,150,422	36	1,363,654	29	136,365	35	11,329	33	120	10
41	2,124,839	39	741,345	37	82,372	40	5,283	31	140	9
42	1,178,098	42	58,000	42	7,250	41	5,064	42	11	8
43	920,560	43	23,500	43	4,700	42	4,613	43	5	5

Annual Surveys

AAMC Medical School Faculty Compensation Survey

Each year, the American Association of Medical Colleges (AAMC) surveys all the U.S. medical schools as to faculty compensation. Because of this, the ACDP (see "Association of Chairs of Departments of Physiology 2013 Survey Results" on p. 159) decided to no longer collect the same data from its members.

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

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

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

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

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

		Northeast	Midwest	South	West	Total
All	Private Medical	27	11	14	3	55
	Public Medical	12	23	36	15	86
Physiology	All Medical Schools	17	18	27	8	70

Table 2. Summary Statistics on Physiology Department PhD Faculty Compensation (in Dollars)

		25th	Median	75th	Mean	No. of Faculty
Chair	All Schools	234,000	260,000	299,000	269,500	70
	Medical Public	231,000	260,000	279,000	254,100	46
	Medical Private	237,000	290,000	382,000	299,000	24
Professor	All Schools	134,000	158,000	189,000	164,800	547
	Medical Public	134,000	158,000	188,000	164,800	379
	Medical Private	134,000	162,000	190,000	164,900	168
Assoc. Prof.	All Schools	98,000	112,000	125,000	114,100	310
	Medical Public	97,000	111,000	124,000	112,900	215
	Medical Private	103,000	112,000	129,000	116,800	95
Asst. Prof.	All Schools	68,000	85,000	95,000	83,000	387
	Medical Public	67,000	84,000	94,000	81,900	255
	Medical Private	68,000	87,000	98,000	85,000	132
Instructor	All Schools	46,000	51,000	58,000	52,700	77
	Medical Public	46,000	51,000	56,000	51,700	52
	Medical Private	42,000	55,000	66,000	54,800	25

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

2012 - 2013		2011 - 2012		2010 - 2011		% Change 2010-2011 to 2012-2013	
Mean	Median	Mean	Median	Mean	Median	Mean	Median
126,700	118,000	124,300	115,000	123,200	114,000	1.9	2.6

Mean and median values were combined for assistant, associate, and professor

Table 4. Summary Statistics on Physiology Department PhD Faculty Compensation by Region (in Dollars)

		Northeast	Midwest	South	West
Chair	25th	235,000	215,000	230,000	261,000
	Median	254,000	258,000	259,000	273,000
	75th	308,000	329,000	293,000	290,000
	Mean	285,100	288,600	247,700	266,800
	Total faculty	17	18	27	8
Professor	25th	142,000	136,000	126,000	143,000
	Median	171,000	158,000	153,000	159,000
	75th	194,000	192,000	177,000	194,000
	Mean	168,500	166,400	157,200	176,300
	Total faculty	111	139	211	86
Assoc. Prof.	25th	107,000	98,000	95,000	106,000
	Median	115,000	108,000	105,000	120,000
	75th	131,000	123,000	120,000	144,000
	Mean	120,800	113,100	107,600	123,400
	Total faculty	71	106	102	31
Asst. Prof.	25th	68,000	69,000	67,000	69,000
	Median	93,000	85,000	81,000	92,000
	75th	104,000	94,000	90,000	100,000
	Mean	87,400	83,200	79,600	87,800
	Total faculty	73	108	162	44
Instructor	25th	55,000	41,000	46,000	45,000
	Median	62,000	43,000	50,000	58,000
	75th	75,000	54,000	57,000	60,000
	Mean	63,700	47,200	51,700	55,000
	Total faculty	9	14	45	9

Table 5. Salary Comparison Between All Basic Science Departments and Physiology Departments (in Dollars)

		All Basic Science Depts.	Physiology
Chair	25th	220,000	234,000
	Median	268,000	260,000
	75th	320,000	299,000
	Mean	272,300	269,500
	Total faculty	556	70
Professor	25th	136,000	134,000
	Median	164,000	158,000
	75th	199,000	189,000
	Mean	174,100	164,800
	Total faculty	4,342	547
Assoc. Prof.	25th	99,000	98,000
	Median	114,000	112,000
	75th	133,000	125,000
	Mean	117,900	114,100
	Total faculty	3,246	310
Asst. Prof.	25th	75,000	68,000
	Median	90,000	85,000
	75th	103,000	95,000
	Mean	89,900	83,000
	Total faculty	3,989	387
Instructor	25th	50,000	46,000
	Median	57,000	51,000
	75th	68,000	58,000
	Mean	62,400	52,700
	Total faculty	663	77

2015 Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Award Application Deadline: September 15, 2014

Current Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Awardee Michael Joyner.

The Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Award is to recognize an APS member who is judged to be both a superb mentor and an outstanding scientist. For more information, visit http://www.the-aps.org/schmidtnielsen. To nominate a member, visit *www.the-aps.org/awardapps*.

Education

APS Supports 75 Undergraduate Students to Conduct Physiology Laboratory Research

APS is pleased to announce the recipients of the five APS' undergraduate summer research fellowships:

1) Integrative Organismal Systems Physiology Fellowship (IOSP): 8 Fellows.

2) Short-Term Research Experience for Underrepresented Persons (STEP-UP) Fellowship: 23 Fellows.

3) Short-Term Research Education Program to Increase Diversity in Health-Related Research (STRIDE): 14 Fellows.

4) Undergraduate Summer Research Fellowship (UGSRF): 24 Fellows.

5) Undergraduate Research Excellence Fellowship (UGREF): 6 Fellows.

Each Fellow receives a stipend for 8-12 weeks of research. IOSP Fellows receive a housing allowance in addition to the stipend. Research hosts receive an unrestricted grant. Fellows also will receive additional travel funds to present their research at either the NIDDK STEP-UP Summer Research Symposium from August 4-8, 2014 at the National Institutes of Health in Bethesda, MD or Experimental Biology 2015 from March 28 to April 1, 2015 in Boston, MA.

During the program, each Fellow will participate in hands-on research experience in the lab of an established investigator and learn to develop a hypothesis, design and troubleshoot experiments, collect and analyze data, and write and present results. They will have opportunities to network with other undergraduates interested in biomedical research, to explore the nature of research and how scientists think about their specific question, and to explore career options and what it takes to be successful in those careers. Fellows will also write an abstract about their research at the end of their fellowship and put together a Personal Implementation Plan to guide their research and/or career over the next year.

The 2014 undergraduate Fellows and their research hosts are listed in the tables below.

For more information about these programs, including eligibility requirements, please visit www.the-aps.org/summerresearch or contact Brooke Bruthers, Senior Program Manager, Diversity Programs, or Melinda Lowy, Senior Program Manager, Higher Education Programs, at *education@the-aps.org*.

Table 1

2014 APS/IOSP Fellows and Research Hosts	
Fellow and Institution	Research Host and Institution
Mustafa Alrubaiee University of Maryland College Park	**Georges E. Haddad** Howard University
Mun Aw University of Arizona	**Thomas L. Pannabecker** University of Arizona
Yi Chen University of Maryland	**Sheng Wu** Johns Hopkins University School of Medicine
Aaron Clarke University of Minnesota Duluth	**Janet Fitzakerley** University of Minnesota Duluth
Madeline Espineira University of Arizona	**Thomas L. Pannabecker** University of Arizona
Billy Mullinax Presbyterian College	**Anthony Cammarato** Johns Hopkins University School of Medicine
Esteban Perez University of Florida	**Keith Choe** University of Florida
Carolina Ramirez Vizcarrondo Brown University	**Carlos Aizenman** Brown University

Table 2

2014 APS/NIDDK STEP-UP Fellows and Research Hosts	
Student Name and Institution	Research Host and Institution
Andrew Acuff University of Notre Dame	**Mae Ciancio*** Midwestern University
Carmen De Jesus Nova Southeastern University	**Robert C. Speth*** Nova Southeastern University
Kwame Doh University of Maryland, Baltimore County (UMBC)	**Carolyn Ecelbarger*** Georgetown University
Austin Eirk University of Kentucky	**Tony Ward** University of Montana
Clementine Etoundi Trinity Washington University	**Georges Haddad*** Howard University
Mata'uitafa Faiai Chaminade University of Honolulu	**Stephen T. McGarvey** Brown University School of Public Health
Hannah Finch University of Florida	**Leonardo F. Ferreria*** University of Florida
Laura Galarza-Paez Emory University	**Douglas C. Eaton*** Emory University
Agnellys Gonzalez Antillean Adventist University	**Henry J. Donahue*** Pennsylvania State University College of Medicine
Paulnisha Granger North Carolina A&T State University	**Lijie Grace Zhang** George Washington University
Chelsee Holloway McDaniel College	**Carolyn Ecelbarger*** Georgetown University
YaMarie Jallow Jackson State University	**James Bassingthwaighte*** University of Washington, Seattle
Shannon Jimmie George Fox University	**Kriya Dunlap** University of Alaska
An Nguyen Virginia Polytechnic Institute and State University	**Barry H. Paw*** Brigham & Women's Hospital–Harvard Medical School
Oluwatobiloba Osikoya Lee University	**Titilayo Ilori** Emory University School of Medicine
Yasminye Pettway Duke University	**Jennifer Pollock*** University of Alabama at Birmingham
Guillermo Rangel Rivera University of South Carolina	**Wayne Carver** University of South Carolina School of Medicine
Emanuel Russom Morehouse College	**Lijie Grace Zhang** George Washington University
Folasade Sofela Harvard College	**Elizabeth Engle** Boston's Children Hospital/ Harvard Univiversity

Table 2, *continued*

Student Name and Institution	Research Host and Institution
Erica Steele Rochester Institute of Technology	**Carolyn Ecelbarger*** Georgetown University
Corey Thompson Bishop Hartley High School	**Terrence Barrett** University of Kentucky
Sharday Young Mississippi State University	**Merry Lindsey*** University of Mississippi Medical Center
Yalun Zhang Yale College	**Peter S. Aronson*** Yale University

**APS member.*

Table 3

2014 APS/STRIDE Fellows and Research Hosts	
Fellow and Institution	Research Host and Institution
Angela Glean Kansas State University	**David C. Poole** Kansas State University
Gwendolyn Gonzalez University of California, Riverside	**Margarita C. Curras-Collazo** University of California, Riverside
Roberto Gutierrez University of California, Riverside	**Margarita C. Curras-Collazo** University of California, Riverside
Leyla Javadova University of Puerto Rico--Rio Piedras Campus	**Nelson Escobales** University of Puerto Rico-School of Medicine
Gurjit Kaur Millsaps College	**Malikarjuna R. Pabbidi** University of Mississippi Medical Center
Brittney McCormick University of Arizona	**Taben Mary Hale** University of Arizona College of Medicine--Phoenix
Alayna Robinson Xavier University of Louisiana	**Xiaonan Wang** Emory University
Anthony Sainz University of Utah	**Lisa Joss-Moore** University of Utah
Denisha Spires University of Mississippi	**Jan M. Williams** University of Mississippi Medical Center
Juliana Sucharov-Costa University of Colorado, Boulder	**Brian Stauffer** University of Colorado School of Medicine
Phi Trac Emory University	**My Helms** Emory University
Gavin Washington West Virginia University	**Mark Olfert** West Virginia University
Tracylyn Yellowhair University Of New Mexico	**Nikki Jernigan** University Of New Mexico
Ramsan Younatham University of Iowa	**Gary Pierce** University of Iowa

Table 4

2014 APS/UGSRF Fellows and Research Hosts	
Student/Student Institution	Research Host/Host Institution
George Bourdages University of Pittsburgh	**Bill J. Yates** University of Pittsburgh
Jenae Brown Alma College	**Esther E. Dupont-Versteegden** University of Kentucky
Erika Clary University of North Carolina	**Alan R. Hargens** University of California, San Diego
Slavina B. Goleva University of Kentucky	**Jeffrey L. Osborn** University of Kentucky
Laura Keller Bowdoin College	**Patsy S. Dickinson** Bowdoin College
Jenessa H. Kerr McGill University	**Indra R. Gupta** McGill University
Sally Kim Rutgers University	**Debra Laskin** Rutgers University
Camille M. Leon West Virginia University	**Jefferson C. Frisbee** West Virginia University
Sarah F. Macrorie University of Oregon	**Carrie E. McCurdy** University of Oregon
Eric Martin University of Florida	**Linda F. Hayward** University of Florida
Javier Martinez Cabañero University of Castile--La Mancha	**Barry H. Paw** Brigham & Women's Hospital/ Harvard University
Monika McCarter University of Florida	**Mohan K. Raizada** University of Florida
Brandon Muniz University of Texas at Brownsville	**Masako Isokawa** University of Texas at Brownsville
Gwendolyn Pelletier University of New England	**Markus Frederich** University of New England
Shahana Prakash University of Cincinnati	**Bryan Mackenzie** University of Cincinnati
Phillip Qu Amherst College	**Ruisheng Liu** University of Mississippi
Sierra N. Quinn Georgia Regents University	**Maria Eugenia Sabbatini** Georgia Regents University
Mohamed Rouabhi University of Iowa	**Kamal Rahmouni** University of Iowa
Kelara Samuel University of Florida	**David M. Baekey** University of Florida
Josh R. Sen University of Virginia	**Douglas A. Bayliss** University of Virginia
Maria A. Vicent Allende Williams College	**Steven Swoap** Williams College
Susan Voong University of Iowa	**Justin L. Grobe** University of Iowa

Table 4, *continued*

Student/Student Institution	Research Host/Host Institution
Rachelle Walter Front Range Community College/University of Colorado Denver	**Richard K. P. Benninger** University of Colorado
Michael Warren University of Chicago	**Jerrold R. Turner** University of Chicago

Table 5

2014 APS/UGREF Fellows and Research Hosts	
Student/Student Institution	Research Host/Host Institution
Andrielle Cowl University of Minnesota	**Thomas P. Olson** University of Minnesota
Lucy Gao Johns Hopkins University	**Mark Donowitz** Johns Hopkins University
Shreya Kashyap Tulane University	**Sarah Lindsey** Tulane University
Ting Ruan University of Utah	**J. David Symons** University of Utah
Melinda Schneider University of California, San Diego	**Kim E. Barrett/Melanie Gareau** University of California, San Diego
Julia York University of British Columbia	**William Milsom** University of British Columbia

APS News

Zucker Reappointed Editor of *AJP – Heart and Circulatory Physiology*


Irving H. Zucker

Irving H. Zucker has been reappointed editor of the *American Journal of Physiology – Heart and Circulatory Physiology* for a 3-year term starting January 2015.

Zucker is the Theodore F. Hubbard Professor of Cardiovascular Research and Chairman of the Department of Cellular and Integrative Physiology at the University of Nebraska Medical Center (UNMC) in Omaha, Nebraska. Zucker is also a professor in the Department of Internal Medicine in the Division of Cardiology. Hailing from New York City, he received a BS from The City College of New York in 1965, an MS from The University of Missouri at Kansas City in 1967, and a PhD in physiology from New York Medical College in 1972, where he held an NSF predoctoral fellowship. Zucker's early PhD training with Gabor Kaley in the area of renal function and volume regulation led him to a National Institutes of Health (NIH) postdoctoral fellowship with Joseph P. Gilmore at UNMC from 1972 to 1973. Zucker joined the faculty in the Department of Physiology and Biophysics at UNMC as an assistant professor in 1973. Zucker rose through the ranks and was appointed professor in the Department of Physiology and Biophysics in 1983. Following the retirement of Gilmore, Zucker was appointed chairman of the department in 1989. The Theodore F. Hubbard Endowed Chair was awarded in 1998.

Zucker's primary area of research interest is neurohumoral regulation of the cardiovascular system in health and disease. He has focused on regulatory cardiovascular reflexes in heart failure models. His early work characterized the electrophysiolgical properties of cardiovascular sensory endings in the heart and blood vessels in experimental heart failure. His work has more recently concentrated on the central mechanisms that are responsible for alterations in autonomic tone in the setting of chronic heart failure and the role of exercise training in modulating neuronal changes in autonomic control areas of the brain. The mechanisms for the alterations in reactive oxidant species and angiotensin II in the central nervous system have been the focus of the laboratory for several years. Zucker has authored over 200 original papers, reviews, book chapters, and editorials. He has edited one text on the reflex control of the circulation and has published 250 abstracts. Zucker's laboratory has been continuously funded by NIH, by The American Heart Association (AHA), and by industry since 1975. This included a MERIT Award from the National Heart, Lung, and Blood Institute from 1992 to 2002 and a PPG from 1999 to the present. Zucker has supervised 16 graduate students, 18 postdoctoral fellows, 22 medical students, and 20 undergraduate students, as well as delivered over 200 invited lectures throughout the world.

In 1977, Zucker received an Established Investigatorship from the AHA and a Research Career Development Award from the NIH. Other awards and honors over the years have included The University of Nebraska Merit Award in 1983, the Outstanding Research and Creative Achievement Award from the University of Nebraska in 1993, Fellow of the Circulation Council and of the AHA from 1980, and Fellow of the Council on High Blood Pressure Research from 1993. Zucker received the Wiggers Award from the Cardiovascular Section of the American Physiological Society (APS) in 2008 and received the Scientist Laureate Award from the UNMC, also in 2008. He received the Carl Ludwig Award from the Neural Control and Autonomic Regulation section of APS in 2012.

Zucker has served or currently serves on the editorial boards of numerous journals, including *The American Journal of Physiology – Heart and Circulatory Physiology, The American Journal of Physiology – Regulatory, Comparative and Integrative Physiology, Circulation Research, Hypertension, Basic Research in Cardiology, Heart Failure Reviews, The Journal of Biomedical Science, Drugs under Clinical and Experimental Research, The Journal of Cardiac Failure*, and others.

Zucker has served on several national, regional, and local committees for research organizations. These include the National Research Committee of the American Heart Association, Chair of the Great Plains Regional Review Committee of the American Heart Association, the National Scientific Advisory Board of the International Academy of Cardiology, and the Publications Committee of the Heart Failure Society of America. He has also served on various review panels, including The NIH Cardiovascular and Renal (CVB) Study Section from 2002 to 2003, the NIH Clinical and Integrative Cardiovascular Sciences Study Section from 2003 to 2006 (both as permanent members), and The Pathophysiology Study Section of the American Heart Association from 2000 to 2002.

Zucker has served in a leadership capacity at several levels. He was a member of the council for the Society for Experimental Biology and Medicine from 1998 to 2002. He was the founder and served as the first President of the Nebraska Physiological Society from 1998 to 2000. He was President of the Association of Chairs of Departments of Physiology in 2003. He has served on the APS Animal Care and Experimentation Committee and was Chair of the Public Affairs Committee. Zucker served on the Executive Committee of the Council on Basic Cardiovascular Sciences of the American Heart Association from 2000 to 2002. He was also President of the APS from 2008 to 2009. ●

Current Calls for Papers

Physiological Genomics

- Epigenetics and Epigenomics *(Submission deadline: July 31, 2014)*
- Mitochondrial Metabolism
- NextGen Sequencing Technology-Based Dissection of Physiological Systems

Advances in Physiology Education

- Teaching and Learning of Professional Ethics

American Journal of Physiology – Gastrointestinal and Liver Physiology

- Physiology and GI Cancer
- Intestinal Stem Cells in GI Physiology and Disease
- Innovative and Emerging Technologies in GI Physiology and Disease

American Journal of Physiology – Heart and Circulatory Physiology

- Cadiovascular Consequences of Obesity and Type 2 Diabetes *(Submission deadline: September 15, 2014)*
- Autophagy in the Cardiovascular System *(Submission deadline: September 15, 2014)*

American Journal of Physiology – Lung Cellular and Molecular Physiology

- Biomarkers in Lung Diseases: From Pathogenesis to Prediction to New Therapies
- Real-Time Visualization of Lung Function: From Micro to Macro *(Submission deadline: January 1, 2015)*
- Bioengineering the Lung: Molecules, Materials, Matrix, Morphology, and Mechanics
- Nanoparticles and the Lung: Friend or Foe? *(Submission deadline: March 1, 2016)*

American Journal of Physiology – Regulatory, Integrative and Comparative Physiology

- Central Control of Fluid and Electrolyte Homeostasis *(Submission deadline: December 31, 2014)*
- Central Control of Cardiovascular Function *(Submission deadline: January 31, 2015)*
- Oxygen as a Regulator of Biological Systems *(Submission deadline: April 30, 2015)*

American Journal of Physiology – Renal Physiology

- Renal Hypoxia *(Submission deadline: July 31, 2014)*

For a complete list of current Calls for Papers, visit the APS homepage and click on the tab for Calls for Papers.

Science Policy

NIH Finalizes Chimpanzee Housing Requirements

On April 4, 2014, NIH published a notice finalizing housing requirements for chimpanzees the agency owns or supports. NOT-OD-14-051 states that the primary living space for each chimpanzee should be at least 250 sq. ft. This is instead of the 1,000 sq. ft. per animal that was originally recommended. With this decision, NIH can proceed with its plans to retire all but 50-NIH owned or -supported chimpanzees from research.

In 2010, NIH asked the Institute of Medicine (IOM) to convene an expert panel to study the need for chimpanzees in NIH-funded research. The panel issued a report, *Chimpanzees in Biomedical and Behavioral Research: Assessing the Necessity,* in 2011. It recommended that NIH approve chimpanzee research only when there is no alternative to address an important health issue and that it ensure that chimpanzees are provided an ethologically appropriate physical and social environment. NIH Director Francis Collins accepted the IOM's recommendations in principle and put a moratorium on new studies until NIH could implement them.

NIH appointed a Working Group on the Use of Chimpanzees in NIH-Supported Research that analyzed NIH's current chimpanzee research portfolio in light of the principles articulated by the IOM panel. In June 2013, the Working Group issued 28 recommendations spelling out criteria for an ethologically appropriate physical and social environment; the disposition of the 360 chimpanzees NIH owns or supports; and the review process to be applied to requests to use chimpanzees in NIH-supported research in light of the IOM's findings.

NIH accepted most of the Working Group's recommendations with only minor modifications. The exception was the recommendation to provide 1,000 sq. ft. per chimpanzee. NIH opted instead to conduct another review of the available information about chimpanzee space requirements. In NOT-OD-14-051, NIH announced its final decision. "Based on both the literature review and recommendations from individual experts, it is clear that published guidelines for minimum living space area for captive research chimpanzees are variable," the agency said. It stated further:

> "Encouraging species-typical behavior among chimpanzees does not simply result from providing a minimum square footage of living space per animal. Rather, the characteristics (complexity) of the space as well as enrichment opportunities have a significant effect on promoting species-typical behavior. The environment should take into account the individual chimpanzees' and colony characteristics, including social, health, age, and biological factors."

In 2013, commenting on the Working Group's report, the APS urged NIH to review the 1,000 sq. ft. per animal space recommendation. The March 22, 2013 letter from then-APS President Sue Barman noted that the American Society of Primatologists had pointed out that "complexity and quality of space in which primates live is a more important predictor of activity than the amount of space available to them."

The final NIH decision on housing density incorporates this important consideration. ●

APS Urges OLAW to Revise "Significant Changes" Guidance

APS has urged that a proposed revision to guidance on the PHS Policy on Humane Care and Use of Laboratory Animals (PHS Policy) be revised to avoid "increas[ing] administrative burden rather than reduc[ing] it."

On March 11, 2014, the Office of Laboratory Animal Welfare (OLAW) published a request for comments on proposed guidance about what constitute "significant" changes to ongoing animal research activities. Significant changes require IACUC approval, and the proposed guidance included examples of such changes. It also provided examples of minor changes that can be approved administratively with the caveat that the IACUC "is to be informed of changes handled by the IACUC staff."

"The humane use of animals in research is critical to helping us understand basic biological systems and processes," APS President David M. Pollock wrote in a letter to OLAW Director Patricia A. Brown (*http://the-aps.org/IACUCProtocolChanges*). The letter went on to state that the APS "strongly supports efforts to ensure that federally-funded researchers can pursue important lines of research involving animals in an optimal regulatory environment."

Image from Understanding Animal Research (*http://www.understandinganimalresearch.org.uk/*).

"Most IACUCs already fulfill all the points outlined in the Proposed Guidance" through their ongoing oversight of the research program at the institution, Pollock noted. However, there is a danger that if the guidance is interpreted to mean nonsignificant changes such as changes in personnel or documenting training must be reviewed each time the IACUC meets, this would lead to an unnecessary increase in the IACUC's workload.

The APS urged OLAW to clarify that IACUCs can review nonsignificant changes as part of their ongoing oversight of protocols. In addition, APS urged that IACUCs be encouraged to use designated member review to approve significant changes to approved protocols. ●

Learn How to Protect Your Organization from Animal Rights Extremism Attacks

FASEB has released a best practices guide designed to aid individuals and organizations in reducing the threat posed by animal rights extremists. *The Threat of Extremism to Medical Research: Best Practices to Mitigate Risk through Preparation and Communication* captures the recommendations from a FASEB summit that convened key stakeholders from the international animal research community. Guidance in the document is focused on 1) mitigation of the extremist threat through preparation and 2) communication and outreach to educate the public about the benefits of animal research. In addition to the document, FASEB is also providing a web site with further resources. Both can be found at *http://www.faseb.org/AESite/Home.aspx*. ●

Science Policy

Updated Advocacy Resource! FASEB State Fact Sheets Now Available

Looking for advocacy resources to help others understand how critical research funding is to your state's economy? The FASEB Office of Public Affairs offers newly updated fact sheets on NIH funding in all 50 states, Puerto Rico, and the District of Columbia. The fact sheets provide information on how much NIH funding goes to each state, what was lost as a result of sequestration, examples of research breakthroughs, and information about how federal investment in research has benefited the state's economy. The fact sheets are available for download on the FASEB website (*http://www.faseb.org/Policy-and-Government-Affairs/Advocacy-on-Capitol-Hill/Advocacy-Resources-for-Scientists/NIH-State-Information-Factsheets.aspx*). These fact sheets have been widely used in APS advocacy efforts, and they are welcomed by Congressional offices as an invaluable resource. ●

NIH Revises Policy on Amended Grant Applications

On April 17, 2014, the NIH announced that unsuccessful A1 grant applications can now be resubmitted as A0s without undergoing substantial revision. Since 2009, the NIH has allowed only one round of revision and resubmission for each grant application. Researchers whose applications were not funded after two tries were required to substantially change the scope of the proposed research before it could be resubmitted for consideration as a new application. This policy was implemented with the goal of funding more applications in earlier rounds of review, thus decreasing the amount of time from initial application to award funding.

Over the past several years the combination of stagnant budgets for the NIH along with the rising cost of research and increasing numbers of applications has brought success rates down to record lows, resulting in many excellent research proposals going unfunded even after two rounds of review. In response to concerns raised by the community about promising lines of research being abandoned, the NIH decided to revise the policy to allow investigators to resubmit their ideas without substantial modification. More information is available from the NIH Office of Extramural Research (*http://grants.nih.gov/node/133*). ●

APS Submits Testimony in Support of Research Agencies

Each year as Congress considers funding levels for federal agencies and programs, outside organizations have the opportunity to provide input by submitting testimony for the record. APS submits testimony annually on behalf of the NIH, NSF, VA, and NASA. For each agency, the APS recommends increased funding to support the research enterprise and to begin to reverse the damage done by reductions in federal spending. The APS also submitted testimony for a special hearing of the Senate Appropriations Committee on "Driving Innovation through Federal Investment."

To view the testimony, go to *http://the-aps.org/FundingRecommendations*. ●

NIH to Require Balanced Sex Representation in Animal and Cell Studies

In the May 14, 2014 issue of *Nature*, National Institutes of Health (NIH) Director Francis Collins and Office of Research on Women's Health Director Janine Clayton outlined the agency's plans to address sex differences in preclinical research. No policy changes have yet been announced or implemented. Rather, the article states that the NIH "is now developing policies that require applicants to report their plans for the balance of male and female cells and animals in preclinical studies in all future applications, unless sex-specific inclusion is unwarranted, based on rigorously defined exceptions" (*http://www.nature.com/news/policy-nih-to-balance-sex-in-cell-and-animal-studies-1.15195*). Citing an overreliance on male cells and animals in preclinical research, which can obscure sex differences that may be important in subsequent clinical trials, Collins and Clayton stated that the new policies would be phased in over the course of the next fiscal year, starting in October 2014.

The NIH plans to issue detailed policy guidance and to include training for investigators as part of the modules being developed to enhance overall scientific rigor. Parallel changes in the peer review process will also be implemented, and the agency will partner with scientific publishers to promote reporting of sex in research publications. Since 2012, APS journals have required "the reporting of the sex of experimental animals and material derived from experimental animals or humans, as well as the sex (or gender where appropriate) of humans used in studies published in their journals" (*http://ajpregu.physiology.org/content/302/9/R1023*).

Some in the scientific community have expressed concern about the cost of incorporating additional requirements for experimental design and data analysis at a time when resources are already constrained. Although the details of the policies and implementation have not yet been worked out, NIH officials have indicated that, even though balancing sex representation in animals and cells in preclinical research may increase costs in the short term, it will be cost-efficient in the long run because it will improve the reproducibility of research results. ●

Mentoring Forum

Following Faraday's Footsteps: Getting Involved in Science Outreach

Michael J. Ryan

Michael J. Ryan

Web address for forum: *www.the-aps.org/forum-outreach* to add comments or ask questions about this article.

Michael Faraday was a renowned English chemist who is widely remembered for his pioneering work to understand electromagnetism and for his development of the law of electromagnetic induction. If you are working in a laboratory that utilizes patch-clamp methods or are learning how to record nerve activity, you are especially familiar with one of his many scientific contributions, the Faraday cage. The cage is made of conductive material and is an essential tool that blocks external electrical noise, thus making it possible to record very small currents in physiological systems. Based on scientific discoveries alone, it is easy to see how Faraday's work benefits the modern physiologist. However, Faraday was exemplary for another, perhaps lesser known, reason: his pioneering efforts to promote education and science outreach.

Faraday and the Initiation of Outreach Programs

The major goal of outreach is to increase public awareness and understanding about science and its benefits to society. So, why is Michael Faraday associated with science outreach? In 1825, Faraday initiated the Christmas Lectures at the Royal Institution in London with the intention of explaining and demonstrating scientific principles to general audiences, including children (8). This lecture series, typically credited as the first scientific outreach program, has occurred every year since, with the exception of a short hiatus during World War II. The lectures are now televised in the United Kingdom and can be viewed on the Royal Institution web page so that they are accessible to large audiences. The purpose of this mentoring forum is to convey the importance of science outreach and to provide enough information that will hopefully encourage you to participate in an activity that is steeped in scientific tradition.

Why is Science Outreach Important?

It is well known throughout the scientific community that discovery and research can yield enormous benefits to society. As an example of this, work supported by the NIH has led to improved treatments for cardiovascular disease, cancer, diabetes, HIV / AIDS, and many others, all of which contribute to the increasing life expectancy and quality of life in the U.S. (7). In addition to the human health benefits afforded, scientific research is critical to the economic health of the nation. The NIH estimates that for every $1.00 invested by the NIH in research, $2.21 is generated in local economic growth. Annually, NIH-funded research employs 1 million people in the U.S., with approximately $84 million paid out in salaries (6). Although these benefits are well known to scientists, there is evidence to suggest that the public is not aware. To illustrate this, I recently blogged about the importance of science outreach at the APS's K-12 Confab: An Archive SciEd Blog (9) and highlighted some unfortunate trends related to science in the U.S. These included a general decline in the public trust in science, the poor standing of STEM (science technology, engineering, and math) education in the U.S. relative to other industrial nations, and the stagnant (effectively decreasing) NIH budget. Can we reverse the trends and improve the scientific literacy of the society? How do we encourage the next generation of physiologists that will discover ways to continually improve health and quality of life? Can we effectively convey to our representatives in government that investing in science is essential? The answer to these questions, at least in part, can come from effective outreach where we, as physiologists, can venture out of the laboratory to make connections with local teachers, libraries, and schools to increase the visibility of science, convey its importance to society, and demonstrate the viability and excitement that comes with scientific careers.

What Counts as Science Outreach?

One may wonder how closely we need to follow in Faraday's footsteps to be involved in effective science outreach. Do we need to develop our very own holiday-named lecture series as Faraday did? Do we always have to reach large audiences? Are elaborate demonstrations and visual aids required? Fortunately, the answer to all of these questions is "no." Science outreach can take many different forms and occur in many forums that you have likely already encountered. For example, museums and science fairs commonly provide the opportunity for the public to participate in hands-on activities that teach about basic scientific principles. However, effective outreach can be accomplished in less elaborate ways as well. For example, a simple visit to a local elementary school classroom to talk about science, volunteering to be a judge at a school science fair, or giving a laboratory tour are common mechanisms to provide outreach to the public. Therefore, although outreach activities can become quite involved, it does not have to be a daunting task or one that takes up an enormous amount of time. Importantly, getting involved in outreach activities can be made even easier if one takes advantage of one's professional societies.

Physiologists Engaging in Outreach

Professional societies provide numerous benefits not only through scientific meetings, journals, and funding mechanisms but also through the promotion of advocacy and outreach. The APS offers opportunities for trainees to engage in outreach, several of which are discussed below.

Physiology Understanding (PhUn) Week. Among the programs supported by the APS, PhUn Week (5) is the most well known and widest reaching, making it an ideal way for trainees to become involved with outreach. PhUn Week occurs in November each year. A major goal of this outreach program is to form connections between scientists and local schools (K-12) as a way to enhance the interest and understanding of the physiological sciences for both students and teachers. To help members participate, the APS asks organizers to complete an event planner that collects information about the upcoming PhUn Week event activities, the projected number of students, and how many teachers and physiologists will be involved. Based on the information in the event planners, the APS provides materials including PhUn Week t-shirts for the volunteers and promotional items like squeezy hearts, PhUn Week bags, pencils, and rulers, which are popular with the students. If you have never organized a PhUn Week event before, resources that provide information on how to engage in outreach are available on the website (5). These resources include a database filled with activity ideas and, specifically, activities that have been used by other APS members during PhUn Week (3). Because of these resources, participation in PhUn Week is very easy and accessible to all career stages, although the program is ideally suited for trainees who are often creative and enthusiastic (key characteristics needed for successful outreach). This level of accessibility has facilitated the growth of the program, which now reaches over 11,000 K-12 students and 250 teachers annually, while engaging over 500 physiologists in science outreach.

Frontiers in Physiology. The Frontiers in Physiology program is another APS-sponsored outreach endeavor that aims to provide professional development for middle- and high-school teachers (1). The program began in 1990 and was designed to foster collaborations between physiologists and teachers to improve curriculum content, promote inquiry-based learning, and technology use in the classroom. The success of the Frontiers in Physiology program was instrumental in the development of PhUn Week, and the details of the program can be viewed at the website (1). The collaborations are initiated between the primary investigator (PI) of a laboratory and a local teacher, which seemingly limits the outreach opportunities for trainees. However, when a teacher is spending time in the laboratory, as they do through the Frontiers Research Teacher Fellowship, it is often the fellows and students who are in the laboratory running the experiments. Therefore, trainees may have a good outreach opportunity thrust upon them and need to be ready to take advantage of this.

K-12 Minority Outreach Fellowship. Another opportunity that is available through the APS is the K-12 Minority Outreach Fellowship (2). This is awarded annually to one minority graduate student or fellow with the goal of building outreach opportunities with local minority life science students at middle and high schools. The fellowship is for 1 year and includes activities to visit with schools and participate in teacher workshops for professional development, and the fellow is supported to attend the Experimental Biology meeting. Although this program supports one fellow per year, it is now in

its ninth year of developing experts that will be critical to promoting physiology now and in the future.

Local science fair. Perhaps one of simplest ways for physiologists in training to become engaged in outreach is to find out when your neighborhood elementary, middle, or high school is holding its annual science fair. Schools are often in need of volunteers who are able and willing to serve as judges. Importantly, at your request, the APS will provide a certificate and t-shirt that you can present to the top physiology-related project (4). This is a great way to increase the visibility of physiology in K-12 classrooms and can be used as a vehicle to initiate collaborations with local teachers that can ultimately segue into other outreach events like PhUn Week.

Tips for Getting Started in Outreach

As you begin to think about and plan the outreach activity, or activities, in which you will participate, there are several important factors that you may wish to consider.

Discuss your outreach interests with your mentor. If you are a trainee, communicating with your mentor about outreach is a critical hurdle that you will have to clear as a trainee who is interested in getting involved with outreach. If you have the type of mentor who is supportive of, and actively engaged in, outreach, then this step may involve nothing more than expressing your interests and starting to plan your activity. However, this is not the situation that all trainees will encounter. There are mentors who are not familiar with outreach or may not recognize its potential value, and may even expect you to be in the lab morning and night, 7 days a week. It is under these circumstances where open communication and clearly articulating why you are interested in participating in outreach is essential. Keep in mind that your mentor may be skeptical and the reasons outlined above may not mean more to your mentor than that piece of preliminary data needed for the next grant submission. Another factor to keep in mind when having this discussion is that quantitative assessments of the impact that science outreach has are somewhat limited. Given that scientists like to quantify everything, your mentor's skepticism may be difficult to quell in the absence of hard numerical data. The bottom line is that it is important for you to keep your mentor in the loop as you begin your plans to participate in science outreach.

Look for existing outreach activities. If you have never been involved with an outreach event or activity before, it can seem like an onerous task. To make your life easier, be sure to look for and take advantage of existing programs. As described above, the APS supports a number of outreach opportunities and provides the resources to help you plan a successful event. However, you can also look outside of your professional society. Many institutions have an Office of Science Outreach that can become a good resource or contact. In addition, institutions have offices of postdoctoral studies and associated student body organizations that often engage in outreach. If you are new to the process, it can be extraordinarily helpful to simply volunteer for existing outreach events. Once you have the experience and confidence, you can move on to organize your own events.

Understand the needs of your audience. When you are getting ready to engage in outreach activities, particularly at local schools, it may be important to become familiar with the curriculum being taught to the age group that you will visit. This information can easily be found on the web pages of state education departments. Alternatively, you can have a dialogue with the teachers to find out when topics will be covered in their classrooms. This approach may also provide better insight as to the dynamics that might exist within your audience and an idea of the knowledge they may already possess. Tailoring your activities to complement, or meet, curriculum goals within a school will increase your chances of getting your foot in the door and sustaining a partnership with that school. Sustainable partnerships are important to K-12 educators. If you can develop an outreach program that meets the needs of a teacher and can reliably take place every year, the impact of the outreach will be improved.

Clear communication is essential. The ability to communicate with the lay public about the importance of science should not be taken for granted. As scientists, it is easy for us to fall into a pattern of using scientific jargon that would utterly baffle a non-scientist. Therefore, it is important that you spend some time practicing communicating with non-science audiences. Fortunately for us (perhaps unfortunately for them), families and friends often make for great practice partners. This is because families and friends will often be curious to know what it is that you do on a daily basis. Use these opportunities as a way to develop clear and concise

messages about what type of science you are performing and why it is important.

Following Faraday

The Christmas Lectures initiated by Michael Faraday may be the first science outreach program, an impressive and widely regarded series that continues today. However, the opportunities for science outreach have greatly expanded since then and allow scientists to convey the importance of their work to the public. The APS has been, and continues to be, instrumental in championing outreach to increase the profile of physiology and improve science literacy overall. Because of these programs and resources, we as physiologists have a clear path toward continuing the tradition begun by Faraday.

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Michael J. Ryan is an Associate Professor of Physiology at the University of Mississippi Medical Center (UMMC) in Jackson, MS. He received his B.S. degree in biological sciences from the State University of New York (SUNY) College at Cortland, and his Ph.D. degree in physiology and biophysics from SUNY Buffalo. His postdoctoral training was conducted at the University of Iowa Carver College of Medicine. His current work is focused on understanding mechanisms by which immune system activation contributes to the development of hypertension, with an emphasis on renal hemodynamic changes during autoimmune disease. Ryan's work is funded by the American Heart Association and National Institutes of Health. He is an active member of the APS, having served, or is serving, on the Porter Physiology Development & Minority Affairs, Animal Care & Experimentation, Chapter Advisory, and Education Committees. He is also actively engaged in science outreach, having organized numerous PhUn Week events at local schools and museums, and is the director of "Discovery U," a UMMC School of Graduate Studies program designed to expose K-12 and undergraduate students to biomedical research and career opportunities in science. ●

Membership

New Regular Members

***transferred from student membership**

M. Kate Balaconis
Profusa, Bryan, TX

Feliz Garcia Bannach
Univ. of California-San Diego, Carlsbad, CA

Rocio Bautista-Pérez
Inst. Nacional de Cardiologia, Mexico

Denise D. Belsham
Univ. of Toronto, Toronto, Canada

Adil E. Bharucha
Mayo Clinic, Rochester, MN

Burns C. Blaxall
Cincinnati Children's Hosp. Med. Ctr., Cincinnati, OH

Mario Danilo Boada
Wake Forest Univ. Sch. of Med., Winston-Salem, NC

Dana Boatman
Johns Hopkins Sch. of Med., Baltimore, MD

Gerald S. Braun
RWTH Aachen Univ., Aachen, Germany

Brandon Paul Bucher
AD Instruments, Colorado Springs, CO

Andrea Carla Celotto
Faculty of Med., Ribeirao Preto, Brazil

Limei Cheng
Philips Res. North America, Briarcliff Manor, NY

Hyehun Choi*
Vanderbilt Univ., Nashville, TN

Ignasi Cos
Univ. Pierre et Marie Curie, Paris, France

Eugene Dimitrov
Rosalind Franklin Univ. Med. Sci., North Chicago, IL

Tobias H. Donner
Univ. of Amsterdam, Amsterdam, The Netherlands

David A. Dunn
State Univ. of New York at Oswego, Oswego, NY

Celine Cathy Duraffourd
Univ. of California-Los Angeles, Los Angeles, CA

Ayat Mahmoud El Sayed
Agriculture Res. Ctr., Giza, Egypt

Jack L. Feldman
Univ. of California-Los Angeles, Los Angeles, CA

Christopher D. Fiorillo
KAIST, Daejeon, Republic of Korea

Melanie J. P. Fraites*
US EPA, Ringwood, NJ

Celso Rodrigues Franci
Univ. of São Paulo, Ribeirão Preto, Brazil

David Gardner
Univ. of Nottingham, Nottingham, UK

Ludovic Gomez
INSERM, Lyon Cedex, France

Mei Han
Hebei Med. Univ., Shijiazhuang, China

Stephen Mathias Jakob
Univ. Hosp. Bern, Bern, Switzerland

Baoan Ji
Mayo Clinic, Rochester, MN

John Francis Kalaska
Univ. de Montreal, Montreal, Canada

Praghalathan Kanthakumar
Christian College, Velore, India

Amin Khalifeh Soltani
Univ. California-San Francisco, San Francisco, CA

Maria Knikou
City Univ. New York Coll. of Staten Island, Staten Island, NY

C. T. Paul Krediet
Amc-Univ. of Amsterdam, Utrecht, The Netherlands

Peter Mark Lackie
Univ. Southampton Fac. of Med., Southampton, UK

Abbi Lane
Univ. of Iowa, Iowa City, IA

Heather J. Leidy
Univ. of Missouri, Columbia, MO

Jennifer Rachel Levy
Univ. of Iowa Carver Coll. of Med., Iowa City, IA

Mikhail Yuryevich Lipin
Colorado St. Univ., Fort Collins, CO

Joshua H. Lipshutz
Univ. of Pennsylvania, Philadelphia, PA

Yahan Liu
Inst. Cardiovascular Sci., Beijing, China

David K. Meyerholz
Univ. of Iowa, Iowa City, IA

Henrik Oster
Univ. of Lubeck, Lubeck, Germany

John H. Peever
Univ. of Toronto, Toronto, Canada

Alberto Pereda
Albert Einstein Coll. of Med., Bronx, NY

Martha Perez
Havana Univ., Havana, Cuba

Lauren Jocelyn Points
Univ. of Iowa, Iowa City, IA

Laura Lucia Prieto Godino
Univ. of Lausanne, Lausanne, Switzerland

Vanesa Daniela Ramseyer*
Wayne St. Univ. Sch. of Med., Detroit, MI

Colin Reardon
Univ. of California-San Diego, La Jolla, CA

Crystal M. Ripplinger
Univ. of California-Davis, Davis, CA

Nicole C. Rust
Univ. of Pennsylvania, Philadelphia, PA

Tetsuro Sakai
Univ. of the Ryukyus, Nishihara Town, Japan

Bernd Schucher
Lungenclinic Grosshansdorf, Grosshandsdorf, Germany

Meike Annika Schweisfurth
Max-Plank Inst. for Biophysikalische Chemie, Goettingen, Germany

Lena Scott
Karolinska Inst., Solna, Sweden

Charles D. Searles
Emory Univ., Atlanta, GA

Jennie Si
Arizona St. Univ., Tempe, AZ

Felipe Simon
Univ. Andres Bello, Santiago, Chile

Sunder Sims-Lucas
Children's Hosp. of Pittsburgh, Pittsburgh, PA

Chantacha Sitticharoon
Siriraj Hosp., Mahidol Univ., Bangkok, Thailand

Lucas R. Smith
Univ. of Pennsylvania, Philadelphia, PA

John Michael Stafford
Vanderbilt Univ. Sch. of Med., Nashville, TN

Akinsomisoye Olumide Stephen
Obafemi Awolowo Univ., Ife-Ife, Nigeria

Charles M. Stevens
Child & Family Res. Inst., Vancouver, Canada

Hazel H. Szeto
Weill Cornell Medical Coll., New York, NY

Megha Talati
Vanderbilt Univ., Nashville, TN

David B. Thorp
Gonzaga Univ., Spokane, WA

Kartika Tjandra
Mount Royal Univ., Calgary, Canada

Maria Silvia Ventimiglia
Univ. of Buenos Aires, Buenos Aires, Argentina

Vineesh Vimala Raveendran
Univ. of Kansas Med. Ctr., Kansas City, KS

Vincent Vinh-Hung
CHU de Martinique, Fort-de-France Cedex, Martinique

Wei Wang
Chinese Acad. of Sci., Shanghai, China

Gina Whitaker
Simon Fraser Univ., North Vancouver, Canada

Jian Yao
Univ. of Yamanashi, Chuo Shi, Japan

Shaoyong Yu
Johns Hopkins Univ. Sch. of Med., Baltimore, MD

Shi Jiang Zhang
The First Affiliated Hosp. of Nanjing Med. Univ., Nanjing City, China

Nadezhda Zheleznova
Med. Coll. of Wisconsin, Milwaukee, WI

Z. Jimmy Zhou
Yale Univ. Sch. of Med., New Haven, CT

Tian-Biao Zhou
Sixth Affiliated Hosp. of Sun Yat-Sen Univ., Guangzhou, China

Zhiyong Zhu
Div. of Cardiovascular Med., Iowa City, IA

New Graduate Student Members

Innocent Abi
St. Luke Anglican Hosp., Nigeria

Yonis Abukar
The Florey Inst. of Neurosci. and Mental Hlth., Parkville, Australia

Tariq M. Alqahtani
Wright State Univ., Dayton, OH

Smriti Badhwar
All India Inst. Medical Scis., India

Jennifer Lynn Barker
California St. Univ.-Chico, Chico, CA

Adam Joseph Bittel
Washington Univ., St. Louis, MO

Daniel C. Bittel
Washington Univ. St. Louis, MO

Lauren Biwer
Univ. of Virginia, Charlottesville, VA

Carolina Cecilia Caniffi
Univ. of Buenos Aires, Argentina

David Cerny
Univ. of Berne, Berne, Switzerland

Manish Singh Chaudhary
Geetanjali Med. Coll. and Hosp., India

Nicole Coverdale
Western Univ., Ontario, Canada

Jesse Craig
Kansas St. Univ., Manhattan, KS

Nour Dayeh
Montreal Heart Inst. Res. Centre, Montreal, Canada

Russell Scott Emmons
Univ. of Illinois at Urbana-Champaign, Urbana, IL

Christine Elizabeth Genge
Simon Fraser Univ., Vancouver, Canada

Morton H. Harwood
Michigan Technological Univ., Houghton, MI

Aaron Michael Herndon
Oklahoma St. Univ., Stillwater, OK

Yanyan Jiang
Tulane Univ., New Orleans, LA

Suryanarayanan Sivaram Kaushik
Duke Univ., Durham, SC

Danielle E. Levitt
Univ. of North Texas, Denton, TX

Lee Mitchell Margolis
Tufts Univ., Allston, MA

Gabriela Virgínia Moreira
Univ. of São Paulo, Brazil

John David Mosinski
Case Western Reserve Univ., Cleveland, OH

John Obinna Onukwufor
Univ. of Prince Edward Island, Canada

Carmen Milagros Ortiz-Sanchez
Ponce Sch. of Med. and Health Scis., Puerto Rico

Kiswendsida Claude Ouedraogo
Univ. of North Dakota Sch. of Med., Grand Forks, ND

Connie P. Ow
Monash Univ., Melbourne, Australia

James Peth
Colorado St. Univ., Fort Collins, CO

Calvin Seneca Pohl
North Carolina St. Univ., Raleigh, NC

Mitchell Reed
Univ. of Alaska, Anchorage, AK

Amanda Caroline Reynolds
Georgia Southern Univ., Statesboro, GA

David M. Ryba
Univ. Illinois at Chicago., Chicago, IL

Sanam Shafaattalab
Simon Fraser Univ., Burnaby, Canada

Kristen Solocinski
Univ. of Florida, Gainesville, FL

Kathleen Marie Sturgeon
Univ. of Pennsylvania, Philadelphia, PA

Kristoffer Bradley Sugg
Univ. of Michigan, Dearborn, MI

Diana Trew
Georgetown Univ., Washington, DC

James Alexander Tuttle
Univ. of Bedfordshire, UK

Abdullahi Hussein Umar
Ahmadu Bello Univ., Kano, Nigeria

Luciana Cecilia Veiras
Univ. of Southern California, West Hollywood, CA

Hiroyuki Watatani
Okayama Univ. Graduate Sch. of Med, Japan

New Undergraduate Student Members

David Ferland
Michigan St. Univ., East Lansing, MI

Vanessa Lynn Russell
Univ. of New Hampshire at Manchester, Litchfield, NH

Mashhood M. Wani
Univ. of Maryland Baltimore County, Baltimore, MD

New Affiliate Member

Ronaldo Arkader
Med. Sch. of Sao Paulo, Sao Paulo, Brazil

People and Places

Miller Awarded Bernadine Healy Award

Virginia Miller was awarded the Bernadine Healy Award at the 22nd Annual Congress on Women's Health, April 4-6, 2014, in Washington, DC. Physicians, nurses, and allied healthcare providers from across the country gathered at the congress to learn practical, clinical information, cutting-edge therapeutic protocols, advances in diagnosis and management, and innovative translational research advances that impact women's health care. Miller joined Joann Manson and Vivian Pinn as the third recipient of this prestigious award.

The Bernadine Healy Award was created in honor of the work and memory of Bernadine Healy, former National Institutes of Health Director, founding editor of Journal of Women's Health, and a renowned advocate for women's health. Through her tireless passion and leadership, Healy encouraged discourse and exchange of information among health care professionals with the ultimate goal of promoting women's health as a high national priority. ●

Virginia Miller (top row, third from right) receives the Bernadine Healy Award

Agarwal Named Executive Vice Dean

Anupam Agarwal has been named executive vice dean of the School of Medicine at the University of Alabama at Birmingham, a new position at the institution. Agarwal, division director of nephrology and vice-chair for research in the Department of Medicine, served as interim senior vice president and dean from February to October 2013. ●

Houser Named Senior Associate Dean

Steven R. Houser has been named senior associate dean for research at Temple University School of Medicine. Houser will remain professor and chair of physiology, as well as director of Temple's Cardiovascular Research Center. ●

Positions Available

Oklahoma Medical Research Foundation (OMRF)
Free Radical Biology & Aging
Post-doctoral Fellow
Holly Van Remmen, Ph.D.

Postdoctoral Fellow. The Van Remmen Lab is seeking a postdoctoral to study the role of oxidative stress in age-related muscle atrophy (sarcopenia). Our previous studies have focused on a mouse model of accelerated sarcopenia that lacks the antioxidant enzyme CuZnSOD ($Sod1^{-/-}$ mice). Using this model, we have studied the role of oxidative stress in the initiation and progression of muscle atrophy during aging. One of the most striking phenotypes in aging and in $Sod1^{-/-}$ mice is the disruption and fragmentation of neuromuscular junctions (NMJs). The NMJ is the site of interaction between the motoneurons and skeletal muscle and is critical for muscle viability and performance. We are currently funded to study the role of disruption and fragmentation of NMJs in this process. Our hypothesis is that alterations in the neuromuscular junction play a critical role in sarcopenia through the initiation of downstream degenerative processes in skeletal muscle. To test this, we will negatively and positively modulate the NMJ through presynaptic and postsynaptic genetic alterations and determine the effect on downstream pathways in muscle that contribute to atrophy and muscle weakness. Specifically, we will use genetic mouse models in which CuZnSOD is deleted specifically in muscle or in motoneurons and measure changes in NMJ morphology, composition, and function, alterations in the acetylcholine receptor (AchR) and changes in gene expression in response to NMJ disruption using microarrays, and changes in muscle degenerative pathways (calpain protease and proteasome activities, mitochondrial function and ROS generation, and oxidative modification of muscle proteins). The goal

FACULTY POSITIONS
MISSISSIPPI CENTER FOR OBESITY RESEARCH
University of Mississippi Medical Center

Applications are invited for tenure track faculty positions with state salary support in the **Department of Physiology & Biophysics and Mississippi Center for Obesity Research (MCOR), University of Mississippi Medical Center (UMMC).** Applicants will be considered for ranks of assistant, associate or full professor and must have a Ph.D. and/or M.D. degree with appropriate postdoctoral research experience. Successful candidates will have significant extramural research funding with demonstrated scholarly productivity in diabetes or obesity-related basic or clinical research. Special consideration will be given to candidates with a strong background in neuroscience, endocrinology or genetics and their application to nutrition, obesity and metabolic disorders. MCOR faculty will be able to devote at least 90 percent effort to developing their research programs. The large group of researchers working in the area of obesity-associated cardiovascular, renal and metabolic diseases offers excellent opportunities for collaboration. The MCOR offers excellent core facilities and generous laboratory space in the new state-of-the-art Arthur C. Guyton Research Center. MCOR faculty members will receive competitive salaries and excellent start-up packages. UMMC has an outstanding research incentive plan for investigators with extramural grant funding. The MCOR, a new multidisciplinary research initiative at UMMC, is leading a state-wide effort to translate research results into programs that prevent and more effectively treat obesity and related metabolic diseases. UMMC has committed substantial resources to the MCOR which is poised for significant growth. Additional information about the MCOR can be found at the web site: http://www.umc.edu/mcor/. Jackson and the surrounding communities have a moderate climate, low housing costs and excellent schools. Information about the Jackson metro area can be found at: http://www.visitjackson.com/Visitor-Guides. Applicants should send curriculum vitae, including current extramural research funding, to: Dr. John E. Hall, Director, Mississippi Center for Obesity Research, University of Mississippi Medical Center, 2500 North State Street, Jackson, MS 39216-4505. e-mail: jehall@umc.edu. All applications will be treated confidentially. Equal opportunity employer, M/F/D/V.

of these studies is to define the role of the NMJ in muscle atrophy and point to common pathways affected by NMJ disruption that might be important targets for interventions. Oklahoma Medical Research Foundation (OMRF) ranked third in the nation in *The Scientist* magazine's 2013 listing of Best Places to Work for post-docs. Postdoctoral fellows receive high-quality mentoring in a uniquely collaborative team environment in addition to enrichment programs specifically designed to assist post-docs in achieving their career goals. Postdoctoral fellows work in well funded, state-of-the-art laboratories, and receive comprehensive employee benefits. Oklahoma City is one of the most affordable cities in the U.S. based on its economic prosperity, solid job market, and housing cost. OMRF is an independent, not-for-profit, biomedical research institute adjacent to the campus of the University of Oklahoma Health Sciences Center (OUHSC) in Oklahoma City. OMRF investigators enjoy close scientific interactions with OUHSC faculty and participate in OUHSC graduate programs. Additional information about OMRF can be found at the Oklahoma Medical Research Foundation web site: *www.omrf.org*. Competitive individuals will have experience and knowledge of muscle physiology, function, histology, and biochemistry as well as basic molecular and biochemical techniques. Expertise in aging, sarcopenia, and neurobiology is a plus. Preferred candidates will demonstrate proficiency in interpreting assay results, summarizing findings, and assisting with manuscript preparation, grant writing, supervising graduate students, and presenting data at national meetings. PhD, MD, or PhD/MD is required. To apply, please visit *http://jobs.omrf.org/applicants/Central?quickFind=51262*. OMRF offers competitive salaries and comprehensive benefits. (EOE/AA) ●

News from Distinguished Physiologists

Letter to Keneth Baldwin


Jack Alan Rall

Jack Alan Rall writes: "Thank you for greetings from the American Physiological Society on my 70th birthday and the invitation to comment briefly on my current career. After 38 years as a faculty member in the Department of Physiology and Cell Biology at Ohio State University, I became an emeritus professor in 2012. During the last 3 years, I was the OSU faculty ombudsman. This was a challenging and rewarding position as it provided an opportunity to advise many colleagues across campus based on experience as a long-time faculty member. After many years in active research, I decided that science had passed me by. Nonetheless, I still had energy and felt a desire to make a contribution. As you know, the American Physiological Society has a strong interest in the history of physiology. I decided to write a book on the history of my research field titled *Mechanism of Muscular Contraction: Evolution of Ideas Since the Discovery of Sliding Filaments*. The society accepted a proposal for the book, sponsored the book, and located the publisher, Springer Science. It has been a sometimes daunting three and one-half year project. Hopefully, the book will appear by the end of 2014. I have learned a great deal from writing the book, some of which I should have known long ago. It has been gratifying late in a career in physiology to look back at those things that were exciting about muscle research and to try to share that excitement with others.

"I don't really have any words of wisdom for my younger colleagues, but I do like the quote often expressed by former president Jimmy Carter: 'We must adjust to changing times and still hold to unchanging principles.' It isn't easy, but it's worth it." ●

Books Received

History of Exercise Physiology

Edited by Charles M. Tipton
Champaign, IL: Human Kinetics, 2014, 608 pp, illus. $119 (hardback)
ISBN: 9780736083690

The Extreme Life of the Sea

Stephen R. Palumbi and Anthony R. Palumbi
Princeton, NJ: Princeton Univ. Press, 2014, 256 pp, 16 color illus., 28 halftones, 5 line illus. $27.95
ISBN: 9780691149561 ●

Meetings & Congresses

2014

July 1-4
SEB Manchester 2014, Manchester, England. *Information:* internet: *http://www.sebiology.org/meetings/Manchester/Manchester.html*

July 3-5
XIX Biennial International Conference on Infant Studies, Berlin, Germany. *Information:* Amy D. Glaspie, Meetings Manager; Tel.: 734 926-0614; fax: 734 926-0601; internet: *http://www.isisweb.org/view/0/ISISconference2014.html*

July 10-12
International Symposium on usher Syndrome and Family Conference, Boston, MA. *Information:* Krista Vasi; e-mail: k.vasi@usher-syndrome.org; internet: *http://www.cvent.com/d/q3qm4x*

July 23-26
Nicotinic Acetylcholine Receptors 2014, Cambridge, UK. *Information:* internet: *https://registration.hinxton.wellcome.ac.uk/display_info.asp?id=407*

August 2-6
1st Pan-American Congress of Physiological Sciences, Iguassu Falls, Brazil. *Information:* internet: *http://panam2014.com/*

August 3-8
14th International Congress on Amino Acids, Peptides and Proteins, Vienna, Austria. *Information:* no additional information provided.

August 17-20
8th International Congress of Neuroendocrinology 2014, Sydney, Australia. *Information:* internet: *http://www.neuroendocrinology2014.org*

August 23-28
9th International Congress of Comparative Physiology and Biochemistry, Krakow, Poland. *Information:* internet: *http://www.iccpb2015.confer.uj.edu.pl*

August 25-29
7th World Congress for Psychotherapy, Durban, South Africa. *Information:* Janie Koeries, Paragon-Conventions, Milnerton Mall, Loxton Rd., Milnerton, Cape Town, South Africa. Tel.: 021 552 8679; e-mail: jkoeries@paragon-conventions.com; internet: *http://www.wcp2014.com*

September 1-5
76th Harden Conference: Total Transcription, Hinxxton, Cambridge, UK. *Information*: internet: *http://www.wellcome.ac.uk/conferences*

September 2-6
Society of General Physiologists 68th Annual Symposium, "Sensory Transduction", Marine Biological Laboratory, Woods Hole, MA. *Information:* Emily Liman and Miriam Goodman, Organizers; internet: *http://www.sgpweb.org/symposium2014.html#papers; e-mail: sgp@mbl.edu*

September 5-6
4th Annual North American Artery Meeting: Arterial Stiffness: If You Don't Measure It, You Can't Manage It, Chicago, IL. *Information:* internet: *http://naartery.org/Events*

September 7-11
11th International Symposium on Resistance Arteries (ISRA 2014): From Molecular Machinery to Clinical Challenges, Banff, Alberta, Canada. *Information:* Suzanne Brett Welsh; tel.: 011 403.836.5631; e-mail: info@isra2014.org; internet: *http://www.isra2014.org*

September 9-12
Virtual Physiological Human Conference 2014, Trondheim, Norway. *Information:* internet: *http://www.ntnu.edu/vph2014*

September 10-12
Obesity – A Physiological Perspective, Newcastle United, UK. *Information:* internet: *http://physoc.org/non-society-meetings*

October 5-8
2014 APS Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology, San Diego, CA. *Information:* internet: *http://www.the-aps.org/mm/Conferences/APS-Conferences/2014-Conferences/Comparative*

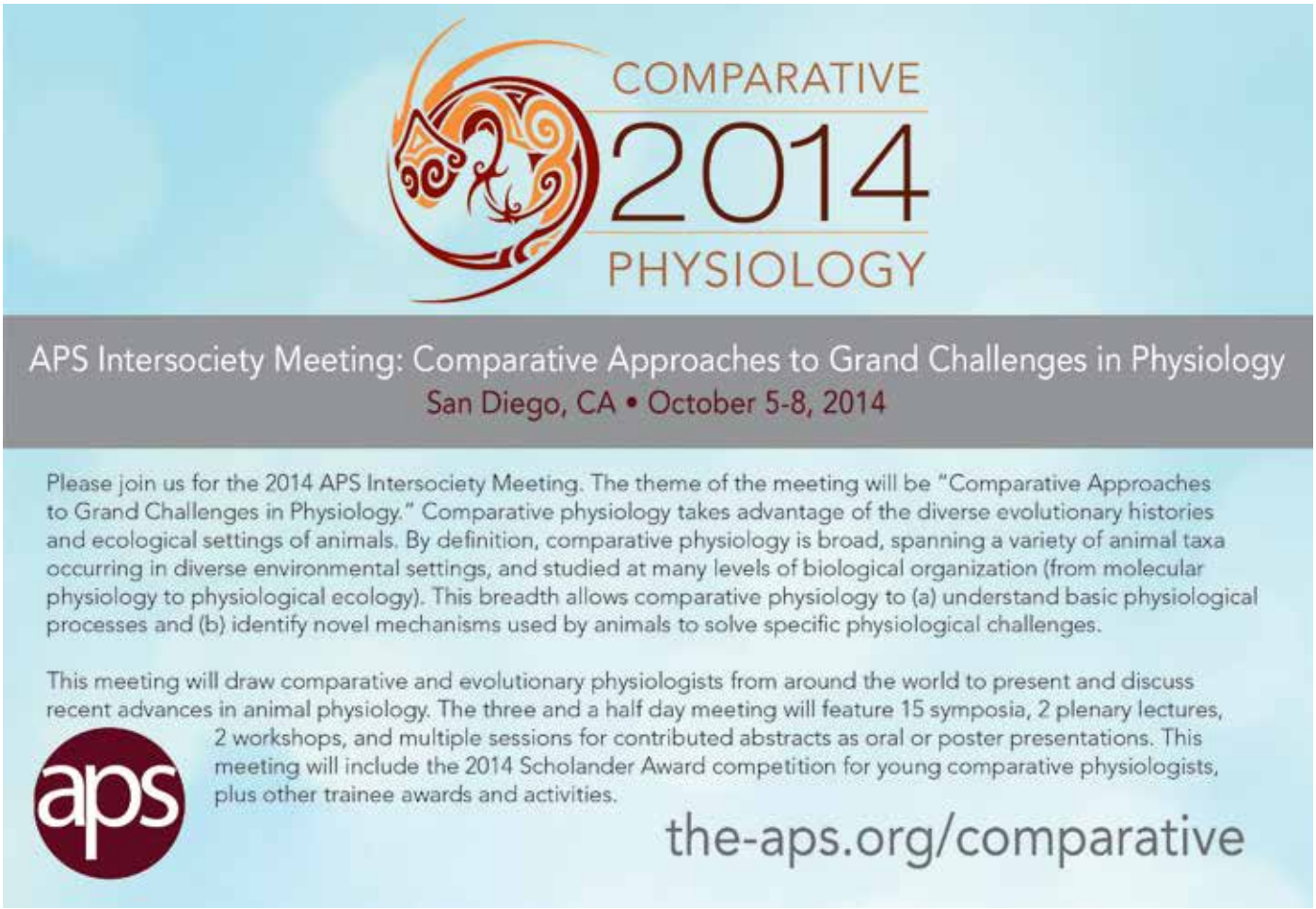
November 5-8
25th International Symposium on the Autonomic Nervous System, Rio Grande, Puerto Rico. *Information:* Anita Zeller, AAS Executive Secretary, American Autonomic Society, 18915 Inca Ave., Lakeville, MN 55044; tel.: 952-469-5837; fax: 952-469-8424; e-mail: zeller.anita@mayo.edu; internet: *http://www.americanautonomicsociety.org*

2015

March 18-22
AD/PD 2015, Nice, France. *Information:* internet: *http://www2.kenes.com/adpd/Pages/Home.aspx*

March 28 to April 1
2015 Experimental Biology, Boston, MA.

September 2-5
APS Conference: 14th International Conference on Endothelin: Pathophysiology and Therapeutics, Savannah, GA. *Information:* internet: *http://www.endothelins.com/Conferences/ET-14/*.



Continued from page 157:

Happy Anniversary DC Principles Coalition

commercial publishers. As Karin Wittenborg, University Librarian, University of Virginia, Charlottesville, noted at the DC Principles launch, society publishers were the "good guys in white hats" because they provided access to high-quality scientific content at reasonable prices. The DC Principles publishers, many of whom published electronic versions of their journals through Stanford's HighWire Press, believed in public access and wanted to ensure the broadest and freest possible dissemination of scientific literature.

The origins of the debate over access to the biomedical literature go farther back to 1999. In March of that year, then-NIH Director Harold Varmus first proposed "an ambitious Web-based Publishing venture that could radically change the way biology papers are disseminated" (*Science* 283: 1610-1611, 1999; doi:10.1126/science.283.5408.1610). Science reported that Varmus told a congressional panel NIH was "considering throwing its weight and money" into "building a one-stop, public source for biomedical research papers." When the formal proposal for E-Biomed was published (*http://www.nih.gov/about/director/pubmedcentral/ebiomedarch.htm*), it called for the National Library of Medicine to set up an electronic publishing site that would provide "full electronic access to a wide body of life science literature, in a manner that is free of barriers, international in scope, and seamless in operation."

This ambitious plan provoked concerns from nonprofit publishers who worried about their ability to compete against the publishing platform of a government agency and feared this would undermine their ability to provide peer review and other editorial services. These concerns ultimately led to the founding of the DC Principles Coalition, representing 48 not-for-profit scholarly publishers of more than 380 journals whose members included more than 600,000 scientists and clinicians. The DC Principles Coalition ultimately grew to over 70 not-for-profit publishers.

Although E-Biomed went nowhere, in 2004, NIH announced a new proposal to require grantees to deposit the final version of their accepted manuscripts into PubMed Central (PMC), which would make the manuscripts publicly accessible after 6 months. PMC would be in direct competition with journals themselves. The DC Principles Coalition played a critical role in extending the embargo period of the NIH Public Access Plan to 12 months, arguing successfully that a 6-month embargo could have killed many quarterly research or specialty journals.

Most society publishers, especially those working with Stanford's HighWire Press, believed in public access. When the DC Principles Coalition was founded in 2004, most already made their content freely available within 12 months. The APS had been providing free access after 12 months since 2000, well before the 2005 proposal for NIH to establish its own public access program. HighWire publishers and many others were also providing free access to content to institutions in the developing world through a WHO initiative called HINARI and to patients through *Patient Inform.*

As a result of the critical role played by APS in the founding of the DC Principles Coalition, the Society found itself at the forefront of the public access debate, and I found myself personally embroiled in the discussions.

Soon after NIH's public-access program went into effect, the APS and other DC Principles Coalition members worked with NIH to create the NIH Portfolio Agreement so that publishers could deposit final published articles into PMC. This relieved individual authors of the requirement to deposit their manuscripts manually. This is an agreement that some commercial publishers now also use. Developing the agreement was not an easy task since NIH wanted to exert full control over the articles once deposited in PMC, cloning the articles for deposit in international PMC repositories (UK, Canada, Japan, etc.). Society publishers were able to convince NIH that they did not own the content and that they had to obtain the publisher's agreement before transferring copies to other PMC repositories. This is a critical distinction that continues to drive some of the discussions on public-access mandates.

In October 2005, the APS and other DC Principles Coalition members wrote to Dr. Zerhouni, inviting NIH to participate in a public-private partnership to provide public access by linking from the abstracts indexed in

the Medline/PubMed database to the article of record in the journal rather than hosting author manuscripts on the PubMed Central website. In so doing, NIH could provide access not only to NIH-funded manuscripts but to all research manuscripts, fulfilling the mission of the National Library of Medicine to provide an archive of the medical literature.

In February 2006, DC Principles Coalition members were joined by commercial publishers, along with a representative of HighWire Press, for a face-to-face meeting with Dr. Zerhouni and his senior staff to discuss the linking proposal. Although HighWire Press and the publishers viewed it as a feasible and cost-effective plan, NIH, led by David Lipman, rejected the proposal and moved forward with PMC and an annual expenditure of $4 million to provide access to 10% of the scientific literature, the portion of the literature supported by NIH research grants.

For me, the creation of the DC Principles Coalition placed demands on my time as I met with Congressional representatives, served on publisher panels, and coordinated written responses to legislative initiatives. I testified before the Subcommittee on Courts, the Internet, and Intellectual Property of the House Judiciary Committee on September 11, 2008 to debate H.R.6845, The Fair Copyright in Research Works Act. It was a fun 2-hour hearing before an interested audience, which included 11 subcommittee members, with 7 members asking questions (Representatives Berman, Coble, Conyers, Issa, Watt, Lofgren, and Goodlatte). H.R.6845 did not make it to the House floor for a vote, but the hearing served to educate members of the Congressional subcommittee, and hopefully it helped publishers convince legislators not to approve other public-access legislation.

The DC Principles Coalition was founded to give the nonprofit publishing community a voice in the debate over how best to disseminate high-quality research at a reasonable cost within a reasonable period of time. Most practice what is called delayed OA, using a mix of subscriptions and publication fees to support production costs so they can make all of their articles freely accessible after an embargo period. Reasonable subscription fees are an equitable way to support the publication of scientific literature. They spread the cost of publication across all users of the content, including those from pharmaceutical companies or researchers in other countries. Appropriate embargoes are critical for allowing such a system to continue. Some staunch OA advocates object to the notion that scholarly publishing should generate any kind of profit. They not only criticize commercial publishers, they also object to not-for-profit publishers deriving revenue from their publications. It doesn't matter to them that scholarly societies reinvest those revenues in activities that benefit scientists in their disciplines. Indeed, the APS invests over $1 million in award programs to support graduate students, postdoctoral fellows, and early career investigators.

To bolster their objection to subscriptions and incite public outrage, OA advocates typically cite the most expensive subscription and pay-per-view fees of commercial publishers. In contrast, they promise what sounds like a "free lunch." However, in reality, the OA business model relies on article publication fees, typically about $1,500 per manuscript. A 2010 article in *US News and World Report* indicated that the Harvard Medical School had paid $3.75 million for journal subscriptions that year. In the same year, Harvard faculty published over 12,000 articles. In an OA world with a $1,500 per article processing fee, the cost to Harvard would have been *at least* $18 million – and possibly much more. Meanwhile, readers at other research institutions and at pharmaceutical and biotechnology companies here and abroad would pay nothing to read the fruit of Harvard researchers' labors. OA's reliance on article publication fees not only puts the cost burden for publications on the research-intensive institutions, it also leads to the critical question, who pays these fees in the end? Will they come from individual's grants, from funding agency budgets, from other university resources, or perhaps from the authors' own pockets?

The DC Principles Coalition raised the visibility of not-for-profit society publishers and provided a voice for our middle-ground perspective in the increasingly heated debate between OA advocates and commercial publishers. The challenge facing the APS and other members of the DC Principles Coalition – then and now – is encouraging the federal government to work in a public-private partnership to facilitate public access to the scientific literature instead of diverting dollars from research and forcing the research-intensive institutions to pay for publication to provide the rest of the world with free access to the literature. Doing so is counter-productive to our mission: the development of treatments and cures for disease. We must work together to make that clear to the public and to our legislators.

Martin Frank

Continued from page 157:

APS Leadership Meets With NIGMS

projects, in particular those supported by R01s and similar grant mechanisms (see *http://loop.nigms.nih.gov/2014/01/bolstering-our-commitment-to-investigator-initiated-research/*).

New investigators are particularly vulnerable at the moment. NIH works hard to keep the success rate for R01 applications from early stage investigators (ESIs) the same as that for new R01 applications from established investigators. But it is still a steep climb for ESIs, and their future research careers often depend on being able to get an R01. In addition, even when they are successful in getting a grant, renewing it the first time is frequently harder for ESIs than for more established ones. With established investigators submitting more and more applications, ESIs are increasingly being squeezed out of the system. If we don't support ESIs sufficiently, we will end up with a devastating gap in the scientific talent pipeline that could affect biomedical research for years to come. We are exploring several models to counteract the potential loss of new investigators from the system.

A preliminary analysis done by NIGMS in 2010 (*https://loop.nigms.nih.gov/2010/09/measuring-the-scientific-output-and-impact-of-nigms-grants/*) indicated that, in general, the scientific return on our investments fails to keep pace with the increase in funding as an investigator's total support exceeds about $350,000 in direct costs, and output actually appears to diminish in absolute terms above about $750,000. These data illustrate some of the reasons why, when we make funding decisions, we consider factors in addition to the perceived scientific merit of a grant proposal, which was evaluated by the study section without any consideration of the investigator's existing level of grant support. NIGMS has long had a policy of giving extra scrutiny to well scoring applications from investigators with over $750,000 in direct costs from all sources, including the grant under consideration. Over the past year, we have been working with our advisory council to increase this scrutiny to ensure that we optimize the scientific return on the taxpayers' investment.

We are also exploring an alternative funding mechanism that would increase stability and flexibility for investigators and, we hope, also enhance their productivity, creativity, and willingness to take scientific risks, while at the same time improving the efficiency of our investments. Stay tuned to our Feedback Loop blog for more information (*http://loop.nigms.nih.gov*).

APS: NIGMS has a strong history of funding institutional training grants, and you recently announced that NIGMS will expand NRSA offerings to include F30s for MD/PhD students, and F31s for PhD candidates. Is this meant to shift graduate students and trainees from research grant support to individual and institutional training grants, as was suggested by the ACD Biomedical Workforce working group?

As you note, the Advisory Committee to the Director (ACD) Biomedical Workforce Working Group recommended that NIH shift support for graduate students from research grants to individual fellowships and training grants. In keeping with this, NIH decided that all institutes and centers would offer F31 and F30 individual fellowships to support PhD and MD-PhD students, respectively.

NIGMS will make a limited number of these awards. We hope to fund very promising students who do not have access to support from other NIH training programs. Because our pool of funds for training is fixed, we need to strike a careful balance between maintaining strong support for our critically important T32 institutional training programs and funding students who could benefit the most from individual fellowships.

APS: What discussions have you had about calibrating the size of the workforce by aligning the number of trainees with available funding and career opportunities?

This is a very important, but also very difficult, question. We know that unemployment among recent PhD graduates in the biomedical sciences is quite low, but we don't have good data on where these newly minted PhDs are ending up. Are they in jobs that utilize their scientific training? Are they doing work they find satisfying and that contributes in important ways to society? We can't adequately address the question of how many students we should be training without these kinds of data, but even if we had them, we would be trying to make predictions about the future based on what happened in the past. To address some of these issues, NIGMS has supported an FOA on

"Modeling the Scientific Workforce" (*http://grants.nih.gov/grants/guide/rfa-files/RFA-GM-14-011.html*) that funds researchers who are trying to understand the dynamics of the scientific workforce in the United States. It is also important to remember that NIH only controls some of the factors influencing the rate of production of PhDs in the biomedical sciences. Universities and researchers play major roles as well and may have to examine their practices and expectations to help set the right flow through the PhD pipeline.

APS: NIGMS has been a leader in efforts to increase diversity in the biomedical workforce. How will the new programs being undertaken by the NIH Director's office (the National Research Mentoring Network and the Building Infrastructure Leading to Diversity programs) affect existing NIGMS programs?

NIGMS has a longstanding commitment to promoting the development of a well trained, creative, and productive biomedical research workforce. A key part of this effort is to ensure that the workforce reflects the diversity of the U.S. population. Having a wide range of backgrounds, experiences, and perspectives strengthens the scientific enterprise. We are beginning a new process of evaluating all of our training programs, including those focused on building diversity. We hope to find ways to improve the efficacy and efficiency of our programs. Part of this effort will include increased coordination with other institutes and centers at NIH and with the new programs launched by the Office of the Director. We are extremely pleased that Dr. Hannah Valantine has joined NIH as the Chief Officer for Scientific Workforce Diversity, and we have already begun working closely with her to find ways to make our diversity-building efforts synergistic with those going on elsewhere at NIH and in other federal agencies.