

TALKS **MONEY**

The new ACDP report shows the changing reality for physiology in academia.

BY REBECCA A. CLAY

Good decisions start with good data. That's the idea behind the Association of Chairs of Departments of Physiology's (ACDP's) annual survey, which has gone out to North American physiology and physiology-related departments for more than two decades. The data allow chairs to make persuasive arguments for more resources and for departments to see how they measure up in areas such as the proportion of women and underrepresented minority trainees or department space designated for research. You can use the ACDP data, along with an accompanying salary survey, as a tool to advocate for yourself or your department.

The ACDP data offer a snapshot of faculty and student demographics, departmental budgets, research space, time spent teaching and other points of interest. This year's response rate was 27 percent, with 54 partial or complete surveys returned from 39 public medical schools, 13 private medical schools and two private non-medical schools.

The average annual departmental budget among respondents was \$9,007,876, with departments in private medical schools reporting average budgets of \$11,176,976 and those in public medical schools averaging \$8,603,269. (Outside research grants and contracts accounted for an average of \$5,054,693 of departmental budgets.) On average, departments reported that

they controlled 29,596 square feet of space, with 23,153 square feet of that space devoted to research activities. Average annual stipends were \$47,018 for postdoctoral trainees and \$26,977 for predoctoral trainees.

The survey results over the past few decades—with data since 1996 available online at www.acdponline.org/home/surveys/past-surveys—offer

a look at how physiology as a field has been changing. “This is a wonderful archive,” says Elsa I. Mangiarua, PhD, a professor of biomedical sciences at Marshall University’s Joan C. Edwards School of Medicine in Huntington, W.V., who has worked on the survey for the past five years. “It’s a great service to the community; it keeps historical data that we don’t have in any other place I know of.”

Take diversity among the next generation of physiologists. “There has been a concerted effort to enhance recruitment of women into science, technology, engineering and mathematics careers,” says ACDP President and APS Past President Patricia E. Molina, MD, PhD, FAPS, who heads the department of physiology at Louisiana State University Health Sciences Center in New Orleans. The statistics show those efforts are slowly paying off, with women accounting for 37 percent of graduate students and postdoctoral trainees in 1998 compared with 48 percent in 2018. Similarly, the percentage of racial and ethnic minorities among predoctoral graduate students and postdoctoral trainees who are U.S. citizens and resident

Student Contact Hours for Faculty per Year

	STUDENT TYPE	AVERAGE (HOURS)	NO. OF DEPTS.
Lab	Graduate	284	29
	Medical	47	24
	Other	284	29
Lectures	Graduate	61	45
	Medical	41	42
	Other	131	28
Small Group Discussions	Graduate	46	30
	Medical	23	36
	Other	61	16

aliens has edged up from 24 percent in 1998 to 28 percent in 2018.

The number of foreign predoctoral graduate students and postdoctoral trainees has fluctuated over the past two decades, jumping from 29 percent in 1998 to 43 percent in 2008, then declining to 36 percent in 2018. Recent immigration policies may be having an impact, particularly among students “from countries that have greater barriers for visas,” Molina says.

When it comes to salary information, ACDP now relies on data collected

by the Association of American Medical Colleges (AAMC). “We were getting smaller percentages of faculty responding, and AAMC can get 99 percent of all physiology departments to respond,” says Melinda Lowy, executive assistant for ACDP, who administers ACDP’s survey. “That’s much more valuable.”

The results from AAMC’s 2018 survey reveal that total compensation is “creeping up,” at least when it comes to physiology department faculty with PhDs, Lowy says. Median compensation for PhD faculty increased 4 percent between fiscal year 2016 and 2017 and fiscal year 2017 and 2018, with median salaries increasing from \$125,000 to \$130,000. For faculty with MDs, median compensation was down 2.8 percent over the same period, with median salaries decreasing from \$141,000 to \$137,000. (The data combine mean and median values for assistant, associate and full professors.)

Administrators often argue that a single “mega-department” combining all the basic sciences needs less funding and fewer resources than multiple individual departments, Lowy says. As a result, “departments have issues with being merged right now,”

Faculty Summary based on Race and Ethnicity

(n=53 depts.) “-” indicates no value

	MALE	FEMALE	NOT SPECIFIED	TOTAL
Asian/Pacific Islander	126	50	1	177
Black (not Hispanic)	7	1	-	8
Hispanic	31	20	-	51
Native American	0	1	-	1
White (not Hispanic)	494	210	1	705
Foreign National	40	15	-	55
Not identified race/ethnicity	-	-	-	-
Not identified gender	-	-	1	1
TOTAL	698	297	3	998

Race/Ethnicity of US Citizen/Resident Alien Pre- and Postdoctoral Students/Trainees

(n=48 depts.) “–” indicates no value

	PREDOCTORAL		POSTDOCTORAL	
	MALE	FEMALE	MALE	FEMALE
Native American	–	2	–	1
Asian/Pacific Islander	34	27	26	14
Black (not Hispanic)	18	30	6	7
Hispanic	27	31	5	10
White (not Hispanic)	230	232	85	69
Other	–	–	–	–
TOTAL	309	322	122	101

she says, adding that she hopes the ACDP and AAMC data will be both informative and useful for discussions with administrators. For example, chairs and program directors can use the ACDP data to make the case for more resources.

“This survey allows people to go to their deans, vice presidents for research or whomever and say, ‘We have all these research dollars, yet compared to other departments we don’t have as much space’ or ‘We’re not getting back some of the money from indirect costs

like other departments are,’” Lowy says. “Or they can say, ‘Our faculty have way more hours of teaching compared to other faculty and compared to the grants we’re bringing in.’”

Knowledge is power when it comes to salary negotiations—and the AAMC salary data can be especially useful for researchers planning their next career move. “If you’re applying for a job as an associate professor, you can see what the average salary is,” Lowy says. “If they’re offering you way under that amount or way over ... you have something you can go back in and negotiate with.” Chairs and program directors can also use the salary data to make the case for higher salaries for their faculty.

For those who already have jobs, the data allow comparisons with peers in similar institutions in their regions or nationally. “The salary data is always an eye-opener,” Mangiarua says. ⁹

View the full survey data at www.the-aps.org/tphysmag.

Budget by Institution

	ALL INSTITUTIONS	NO. OF DEPTS	MEAN NO. OF FACULTY	PRIVATE MEDICAL	NO. OF DEPTS	MEAN NO. OF FACULTY	PUBLIC MEDICAL	NO. OF DEPTS	MEAN NO. OF FACULTY
Institutional (Hard money, e.g., operating costs, state allocations)	\$2,558,936	49	21	\$2,690,457	12	18	\$2,493,982	35	22
Outside Research Grants and Contracts (direct costs only)	5,054,693	48	21	5,543,809	12	18	5,025,754	35	22
Training Grants (direct costs only)	334,002	22	22	370,358	6	20	320,369	16	23
Endowments	567,234	36	21	1,571,842	9	18	246,283	25	23
Indirect Cost Recovery (amount returned to department)	477,687	35	23	1,477,993	6	21	270,727	29	23
Other Budget Support	875,309	33	22	1,679,306	6	18	722,668	26	24
Avg. Departmental Budget	9,007,876	49	21	11,176,976	12	18	8,603,269	35	22
SD	6,526,012			9,382,670			5,249,988		
TOTAL FACULTY			1,015			212			776

Non-medical: only two departments responded so those numbers are not presented separately but are included in All Institutions.

Complete Ranking According to Total Dollars

TOTAL DOLLARS		RESEARCH GRANT DOLLARS		RESEARCH DOLLARS PER FACULTY		RESEARCH SPACE		RESEARCH DOLLARS SQ. FT.		NO. OF FACULTY
RANK	\$	RANK	\$	RANK	\$	RANK	\$	RANK	SQ. FT.	
1	\$ 35,516,990	3	\$ 11,806,049	2	\$ 491,919	2	\$ 49,118	15	240	24
2	24,928,046	1	16,206,531	4	438,014	4	44,336	8	366	37
3	22,691,410	2	15,672,126	7	412,424	9	34,591	5	453	38
4	17,677,597	10	7,595,560	5	421,976	8	36,042	25	211	18
5	17,558,123	5	9,561,204	11	382,448	23	20,367	4	469	25
6	16,794,526	8	8,414,263	3	467,459	20	21,913	7	384	18
7	14,263,717	7	8,613,690	32	172,274	5	38,298	19	225	50
8	13,721,377	4	10,065,972	1	529,788	3	48,939	29	206	19
9	13,649,946	11	7,313,970	15	304,749	10	33,754	23	217	24
10	12,427,148	9	7,814,694	8	411,300	14	30,953	13	252	19
11	12,385,791	6	9,032,008	10	392,696	7	36,048	14	251	23
12	11,531,394	21	4,523,057	27	196,655	15	27,440	35	165	23
13	11,524,670	13	6,500,000	26	196,970	44	10,414	2	624	33
14	11,362,570	17	6,179,233	14	308,962	12	32,384	32	191	20
15	11,345,032	14	6,256,008	20	250,240	6	37,098	33	169	25
16	10,833,615	18	5,782,329	30	175,222	16	26,020	20	222	33
17	10,669,041	20	4,621,336	41	107,473	11	33,170	37	139	43
18	8,985,451	15	6,223,237	18	270,576	43	10,555	3	590	23
19	8,905,833	16	6,195,790	6	413,053	19	22,168	11	279	15
20	8,513,890	27	3,975,695	25	220,872	26	19,053	27	209	18
21	8,350,156	28	3,931,998	36	140,429	18	23,924	36	164	28
22	7,683,929	19	4,882,879	9	406,907	30	16,729	10	292	12
23	7,582,302	24	4,304,724	40	110,378	21	21,517	30	200	39
24	7,565,306	22	4,440,766	12	317,198	31	15,916	12	279	14
25	7,527,468	12	7,000,000	23	233,333	45	10,100	1	693	30
26	7,137,539	26	4,116,015	17	274,401	25	19,417	24	212	15
27	6,505,481	37	2,662,208	45	88,740	1	49,427	45	54	30
28	6,356,404	30	3,428,132	24	228,542	28	17,446	31	196	15
29	6,096,719	23	4,400,000	16	293,333	42	11,427	6	385	15
30	6,011,771	29	3,859,819	19	257,321	29	17,096	18	226	15
31	6,006,594	31	3,197,136	37	127,885	33	14,492	21	221	25
32	5,995,368	25	4,241,204	21	249,483	24	20,223	26	210	17
33	5,878,750	39	2,317,766	38	121,988	13	31,563	42	73	19
34	5,411,774	36	2,728,793	28	194,914	37	12,484	22	219	14
35	5,161,872	33	2,940,383	34	163,355	38	12,475	16	236	18
36	4,828,008	48	198,208	48	9,910	27	18,500	47	11	20
37	4,516,683	32	3,184,810	29	176,934	17	24,000	39	133	18
38	4,382,172	38	2,420,548	31	172,896	40	11,623	28	208	14
39	4,276,280	42	1,698,422	42	106,151	34	13,210	40	129	16
40	3,933,273	40	2,071,875	35	159,375	35	12,507	34	166	13
41	3,930,983	34	2,848,584	13	316,509	46	9,356	9	304	9
42	3,914,698	43	1,538,306	39	118,331	22	21,204	43	73	13
43	3,892,607	35	2,838,968	33	166,998	39	12,048	17	236	17
44	3,877,456	44	1,278,047	43	91,289	32	14,774	41	87	14
45	2,991,150	41	1,699,530	22	242,790	36	12,500	38	136	7
46	1,930,000	47	229,000	47	22,900	41	11,600	46	20	10
47	1,697,743	46	561,398	46	62,378	47	8,289	44	68	9
48	1,337,256	45	1,253,034	44	89,502					14
49	1,320,000					48	2,975			7

Association of Chairs of Departments of Physiology (ACDP) 2018 ANNUAL SURVEY

Faculty Summary Based on Position

(n=53 departments)

	NO.	AVERAGE NO. YEARS IN POSITION	NO.	AVERAGE NO. YEARS IN POSITION	GENDER NOT GIVEN	TOTAL NUMBER	TOTAL AVERAGE NO. YEARS IN POSITION
Chair	33	14.5	10	7.7	1	44	12.9
Professor	323	14.7	96	11		419	13.9
Associate Professor	174	8.1	80	7.1		254	7.8
Assistant Professor	135	5.1	78	5	1	214	5
Instructor	31	5	31	6.1		62	5.5
Rank not given	4		1			5	9.2
TOTAL	700		296		2	998	

Tenure Status in Each Department by Degree

(n=53 departments)

	TENURED		NOT TENURED BUT ELIGIBLE		NOT ELIGIBLE		NOT IDENTIFIED		
	NO.	YEARS IN POSITION	NO.	YEARS IN POSITION	NO.	YEARS IN POSITION	NO.	YEARS IN POSITION	
M.D.	13	12.8	6	6	6	14.8	1		26
Ph.D.	555	12.6	156	3.4	158	7	20	8.9	889
2 Doctorates	37	10.2	11	4.1	19	10.2	1		68
Other	2		0		10	7.1	1		13
Tenure not reported									2
TOTAL	607		173		193		23		998

Student/Trainee Summary

(n=48 departments)

	PREDOCTORAL		POSTDOCTORAL	
	MALE	FEMALE	MALE	FEMALE
US Citizen/Resident Alien	309	322	122	101
Foreign	80	97	186	118
TOTAL	389	419	308	219

Foreign National Predoctoral Trainee Completions

(as of June 30, 2018) (n=18 depts.)

	MALE	FEMALE
African	0	1
Asian/Pacific Islander	9	14
Central/South American	2	1
European/Canadian, etc.	2	2
Middle Eastern	2	3
Other	0	0
TOTAL	15	21

Number and Ethnicity of Foreign Pre- and Postdoctoral Students/Trainees

(n=48 departments)

	PREDOCTORAL		POSTDOCTORAL	
	MALE	FEMALE	MALE	FEMALE
African	3	4	1	0
Asian/Pacific Islander	44	53	102	46
Central/South American	8	5	12	15
European/Canadian, etc.	10	7	34	37
Middle Eastern	15	27	29	10
Other	0	1	8	10
TOTAL	80	97	186	118

US/Resident Alien Predoctoral Trainee Completions

(as of June 30, 2018) (n=34 depts.)

	MALE	FEMALE
Native American	0	0
Asian/Pacific Islander	5	10
Black (not Hispanic)	3	4
Hispanic	3	5
White (not Hispanic)	44	28
Foreign	80	97
TOTAL	55	47

Total Predoctoral Trainee Completions During the Year Ending June 30, 2018

(n=37 depts.)

	TOTAL
Female	68
Male	70
TOTAL	138

Primary Source of Support for Foreign Pre- and Postdoctoral Trainees

(n=46 depts.)

	PREDOCTORAL	POSTDOCTORAL
Institutional	103	23
Research Grants	139	244
Private Foundations	9	10
Home (foreign) Government	12	8
Medical	Non-medical	3
TOTAL	269	288

Teaching Interactions with Students in Fields of Study

(n=54 depts.)

	NO. OF DEPTS.	%
M.D./D.O	46	85
D.D.S	16	30
D.V.M.	5	9
Allied Health*	24	44
Pharmacy	9	17
Other Biomedical	37	69
Life Science	28	52
Bioengineering	25	46
Other**	14	26

* Allied Health is assumed to include: dental hygienist, nurses, occupational therapists, physical therapists, physicians' assistants, etc.

** Other includes pre-professional and graduate students (both MS and PhD)

Average Annual Stipend

(US \$)

	AVERAGE	NO. OF INSTITUTIONS
Predoctoral	\$ 26,977	46
Postdoctoral	\$ 47,018	45

Space Controlled by Department

	AVERAGE SPACE (SQ. FT.)	NO. OF DEPTS.
Research Space	23,153	49
Administrative Space	3,539	48
Teaching Space	2,381	29
Other Space:	2,647	29
TOTAL	29,596	49

Other includes common space, prep room, storage, core facilities, offices

Type of Institution

	MEDICAL	NON-MEDICAL
Private	13	2
Public	39	0
TOTAL	52	2

Medical Physiology Course Type

	YES	NO	TOTAL RESPONDED
Integrated Course (Systems based)	38	12	50
Traditional (Discipline-based)	25	26	51
Integrated Preclinical Curriculum	40	11	51

Financial Information

	AVERAGE	NO. OF DEPTS.
Current fringe benefit rate most frequently used for Primary faculty	32	48
Federally negotiated indirect cost rate for FY 17-18 off campus	28	46
Federally negotiated indirect cost rate for FY 17-18 on campus	53	48
For faculty salaries raised from grants, etc., percentage of allocated salary dollars directly returned to your department	63	32
Percentage of indirect costs returned to your department	16	31
Percentage of total faculty salaries derived from research grants (do not include fringe benefits costs)	34	45
Percentage of faculty having extramural research funding greater than \$100,000/year	55	47

American Association of Medical Colleges (AAMC) 2018 MEDICAL SCHOOL FACULTY COMPENSATION SURVEY

Distribution of Medical Schools Responding to AAMC Medical School Faculty Compensation Survey

	NORTHEAST	MIDWEST	SOUTH	WEST	TOTAL
ALL					
Private Medical	28	12	14	5	59
Public Medical	13	23	38	17	91
PHYSIOLOGY					
All Medical Schools	17	20	29	9	75

Change in Total Compensation for Physiology Department Ph.D. and M.D. Faculty

	2017 - 2018		2016 - 2017		2015 - 2016		% CHANGE 2016-2017 TO 2017-2018	
	MEAN	MEDIAN	MEAN	MEDIAN	MEAN	MEDIAN	MEAN	MEDIAN
Ph.D. Faculty	\$ 141,700	\$ 130,000	139,200	125,000	136,200	125,000	1.8	4
M.D. Faculty	80	97	186	118	186	118	186	118

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

Summary Statistics on Physiology Department Ph.D. and M.D. Faculty Compensation

		25TH	MEDIAN	75TH	MEAN	NO OF FACULTY
CHAIR	All Schools	\$ 234,000	\$ 285,000	\$ 342,000	\$ 296,100	58
	Medical Public	240,000	288,000	334,000	293,500	39
	Medical Private	214,000	279,000	375,000	301,300	19
CHIEF	All Schools	201,000	240,000	299,000	248,000	5
	Medical Public					3
	Medical Private					2
PROFESSOR	All Schools	147,000	177,000	210,000	184,100	504
	Medical Public	147,000	174,000	206,000	182,400	331
	Medical Private	147,000	182,000	224,000	187,300	179
ASSOC. PROF.	All Schools	110,000	123,000	138,000	125,600	325
	Medical Public	108,000	123,000	137,000	123,000	214
	Medical Private	112,000	123,000	144,000	130,500	111
ASST. PROF.	All Schools	75,000	95,000	107,000	93,300	334
	Medical Public	74,000	93,000	105,000	91,100	228
	Medical Private	75,000	98,000	116,000	98,000	106
INSTRUCTOR	All Schools	53,000	60,000	71,000	63,100	85
	Medical Public	52,000	60,000	72,000	62,300	47
	Medical Private	55,000	62,000	70,000	64,200	38

Summary Statistics on Physiology Department Ph.D. and M.D. Faculty Compensation by Region

		Ph.D. Faculty				M.D. Faculty			
		NORTHEAST	MIDWEST	SOUTH	WEST	NORTHEAST	MIDWEST	SOUTH	WEST
CHAIR	25th	\$ 234,000	\$ 240,000	\$ 228,000	\$ 281,000				
	Median	279,000	292,000	270,000	306,000				
	75th	342,000	377,000	329,000	353,000				
	Mean	302,200	322,700	272,400	308,300				
	Total faculty	14	14	23	7	2	3	4	2
CHIEF	25th								
	Median								
	75th								
	Mean								
	Total faculty	0	3	2	0	1	0	0	0
PROFESSOR	25th	\$ 154,000	\$ 153,000	\$ 140,000	\$ 155,000	\$ 187,000	\$ 117,000	\$ 132,000	\$ 161,000
	Median	179,000	179,000	170,000	187,000	213,000	178,000	192,000	196,000
	75th	208,000	216,000	204,000	223,000	280,000	224,000	276,000	244,000
	Mean	182,200	186,800	174,600	201,500	230,100	171,600	206,000	211,500
	Total faculty	96	142	179	87	21	5	26	12
ASSOC. PROF.	25th	\$ 118,000	\$ 109,000	\$ 106,000	\$ 115,000		\$ 109,000	\$ 104,000	
	Median	127,000	121,000	121,000	127,000		124,000	118,000	
	75th	143,000	137,000	137,000	143,000		148,000	142,000	
	Mean	133,800	123,500	121,500	127,100		128,900	118,300	
	Total faculty	79	93	123	30	3	11	16	3
ASST. PROF.	25th	\$ 75,000	\$ 74,000	\$ 74,000	\$ 76,000		\$ 55,000	\$ 73,000	
	Median	100,000	96,000	90,000	98,000		97,000	80,000	
	75th	116,000	106,000	104,000	111,000		102,000	92,000	
	Mean	98,700	94,200	89,000	96,400		81,300	80,300	
	Total faculty	64	97	135	38	2	7	16	4
INSTRUCTOR	25th	\$ 52,000	\$ 48,000	\$ 53,000	\$ 60,000				
	Median	59,000	58,000	60,000	72,000				
	75th	65,000	72,000	66,000	79,000				
	Mean	64,100	60,900	60,900	68,600				
	Total faculty	14	15	37	19	2	1	0	1

Salary comparison between all basic science departments and physiology departments for both PhD and MD faculty

		Ph.D. Faculty		M.D. Faculty	
		ALL BASIC SCIENCE DEPTS	PHYSIOLOGY	ALL BASIC SCIENCE DEPTS	PHYSIOLOGY
CHAIR	25th	\$ 245,000	\$ 234,000	\$ 291,000	\$ 280,000
	Median	305,000	285,000	400,000	350,000
	75th	361,000	342,000	484,000	449,000
	Mean	309,200	296,100	409,900	372,400
	Total faculty	500	58	110	11
CHIEF	25th	\$ 165,000	\$ 201,000	\$ 251,000	
	Median	227,000	240,000	323,000	
	75th	292,000	299,000	355,000	
	Mean	247,100	248,000	322,600	
	Total faculty	70	5	19	1
PROFESSOR	25th	\$ 155,000	\$ 147,000	\$ 176,000	\$ 156,000
	Median	185,000	177,000	217,000	204,000
	75th	227,000	210,000	275,000	271,000
	Mean	197,100	184,100	238,700	212,200
	Total faculty	4,510	504	628	64
ASSOC. PROF.	25th	\$ 110,000	\$ 110,000	\$ 119,000	\$ 108,000
	Median	127,000	123,000	143,000	123,000
	75th	147,000	138,000	182,000	147,000
	Mean	131,600	125,600	156,800	124,900
	Total faculty	3,508	325	352	33
ASST. PROF.	25th	\$ 83,000	\$ 75,000	\$ 88,000	\$ 68,000
	Median	100,000	95,000	111,000	90,000
	75th	118,000	107,000	150,000	102,000
	Mean	102,100	93,300	125,200	84,500
	Total faculty	4,215	334	414	29
INSTRUCTOR	25th	\$ 55,000	\$ 53,000	\$ 65,000	
	Median	62,000	60,000	78,000	
	75th	73,000	71,000	109,000	
	Mean	67,800	63,100	93,000	
	Total faculty	659	85	54	4