

FEDERAL SCIENCE AND ENGINEERING OBLIGATIONS TO ACADEMIC AND NONPROFIT INSTITUTIONS REACHED RECORD HIGHS IN FY 2002

by Richard J. Bennof

Latest statistics from the National Science Foundation (NSF) Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions show that Federal agencies obligated a new high of \$24.4 billion for academic science and engineering (S&E) activities in FY 2002, an increase of \$1.9 billion (more than 8 percent) over FY 2001 levels (table 1). This follows a 13 percent current-dollar increase (nearly 11 percent in constant dollars) in total Federal academic support between FY 2000 and FY 2001.

TABLE 1. Federal academic S&E obligations, by activity: FYs 2001-02

Activity	Millions of dollars		Percent change	
	FY 2001	FY 2002	Current dollars	Constant 2000 dollars
Academic S&E obligations	22,492	24,394	8.5	6.6
Research and development	19,390	21,118	8.9	7.0
R&D plant	399	301	-24.5	-25.8
Facilities and equipment for S&E instruction	67	110	62.7	59.9
Fellowships, traineeships, and training grants	843	937	11.2	9.3
General support for science and engineering	332	432	30.1	27.9
Other S&E activities	1,461	1,497	2.5	0.7

NOTES: Percent change is based on unrounded numbers. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions: FY 2002.

Categories of Support

Federal academic S&E obligations are divided into six categories: research and development (R&D), which has accounted for 84 to 87 percent of total Federal academic S&E obligations over the last decade; R&D plant; facilities and equipment for S&E instruction; fellowships, traineeships, and training grants (FTTGs); general support for S&E; and other S&E activities.

Federal academic R&D support reached a new high of \$21.1 billion in FY 2002, a 9 percent current-dollar increase (7 percent in constant dollars) over the previous year. The Department of Health and Human Services (HHS) accounted for nearly two-thirds (\$13.4 billion) of all Federal academic R&D obligations in FY 2002 (table 2) and for more than five-sixths (85 percent) of the total R&D increase.

Federal support in FY 2002 for R&D plant declined by 25 percent, to \$301 million. Most of the decrease resulted from reduced funding by the National Aeronautics and Space Administration (NASA) and NSF.

All the remaining S&E categories were at record funding levels in FY 2002.

- Funds for facilities and equipment for S&E instruction rose to \$110 million, a 63 percent jump, with the Department of Defense (DoD) and HHS reporting most of the increase.



TABLE 2. Federal academic S&E obligations, by activity and agency: FY 2002
(Millions of dollars)

Activity	Total	DoD	DOE	HHS	NASA	NSF	USDA	Other agencies ¹
Academic S&E obligations	24,394.0	2,316.8	736.8	14,492.9	1,244.4	3,582.1	1,085.5	935.5
Research and development	21,117.9	2,056.9	728.2	13,353.9	1,082.0	2,758.4	602.0	536.5
R&D plant	301.2	0.3	8.5	97.5	3.2	188.4	0.0	3.2
Facilities and equipment for S&E instruction	109.7	15.3	0.0	24.2	0.0	16.4	0.5	53.3
Fellowships, traineeships, and training grants	936.9	15.0	0.0	700.1	36.1	80.7	30.0	75.0
General support for science and engineering	431.9	4.5	0.0	289.0	0.0	8.3	3.2	126.8
Other S&E activities	1,496.5	224.8	0.0	28.2	123.1	529.8	449.9	140.7

DoD = Department of Defense; DOE = Department of Energy; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation; USDA = Department of Agriculture.

¹Includes data for the following agencies: the Departments of Commerce, Education, Housing and Urban Development, Interior, Labor, and Transportation; the Agency for International Development; the Environmental Protection Agency; the Appalachian Regional Commission; the Nuclear Regulatory Commission; the Office of Justice Programs (part of Department of Justice); and the Social Security Administration.

NOTES: Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions: FY 2002.

- Federal obligations for FTTGs increased 11 percent to \$937 million, with NSF providing nearly two thirds of the increase and HHS funding most of the remaining third.
- Funding for general support projects¹ totaled \$432 million, a 30 percent rise stemming almost entirely from increased HHS support (largely from NIH).
- Obligations for other S&E activities² increased over 2 percent, to \$1.5 billion, with NSF supplying most of this increase.

Agency Sources

The Department of Health and Human Services accounted for 59 percent of all Federal FY 2002 academic S&E obligations. Together with NSF and the DoD, HHS provided 84 percent of total Federal academic S&E funding (table 3). NASA, the Department of Agriculture (USDA), and the Department of Energy (DOE) provided most of the remaining academic S&E total, 13 percent of total S&E Federal funding. Of these three agencies, only NASA increased its FY 2002 academic S&E levels (10 percent); in current dollars, USDA support was down over 9 percent, and DOE was down 4 percent.

¹Funds used for scientific projects and support for activities within a specified discipline; explicit purpose is not specified.

²Academic S&E obligations that cannot be assigned elsewhere and activities in support of technical conferences, teacher institutes, and programs aimed at increasing precollege and undergraduate students' scientific knowledge.

University Shares

The Johns Hopkins University (including its Applied Physics Laboratory) continued to be the leading academic recipient of Federal S&E support in FY 2002 (table 4). Together, HHS and DoD provided Johns Hopkins with four-fifths of its Federal S&E funds. Six of every seven dollars in the university's total Federal S&E obligations (\$1.14 billion) supported R&D

TABLE 3. Federal academic S&E obligations, by agency: FYs 2001–02

Agency	Millions of dollars		Current dollars	Constant 2000 dollars
	FY 2001	FY 2002	Percent change	
All agencies	22,492	24,394	8.5	6.6
Department of Health and Human Services	12,831	14,493	13.0	11.0
National Science Foundation	3,321	3,582	7.9	6.0
Department of Defense	2,156	2,317	7.5	5.6
National Aeronautics and Space Administration	1,127	1,244	10.4	8.5
Department of Agriculture	1,199	1,086	-9.5	-11.0
Department of Energy	768	737	-4.0	-5.7
Other agencies ¹	1,089	936	-14.1	-15.6

¹Includes data for the Departments of Commerce, Education, Housing and Urban Development, the Interior, Labor, and Transportation; Agency for International Development; Environmental Protection Agency; Appalachian Regional Commission; Nuclear Regulatory Commission; Office of Justice Programs (part of Department of Justice); and Social Security Administration.

NOTES: Percent change is based on unrounded numbers. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions: FY 2002.

TABLE 4. Federal academic S&E support to the 20 top-ranked universities in order of total S&E obligations, by agency: FY 2002
(Millions of dollars)

Institution	Total	DoD	DOE	HHS	NASA	NSF	USDA	Other agencies ¹
All institutions	24,394.0	2,316.8	736.8	14,492.9	1,244.4	3,582.1	1,085.5	935.5
Johns Hopkins U. ²	1,136.5	386.2	2.3	523.8	167.2	33.0	1.0	22.9
U. Washington	576.7	39.1	14.6	419.9	9.7	73.8	3.1	16.5
U. Pennsylvania	479.9	18.3	6.8	423.4	1.5	26.7	0.9	2.3
U. Michigan	456.8	29.2	12.2	334.6	10.7	60.2	1.2	8.6
U. California-Los Angeles	439.8	37.1	21.8	322.8	14.4	40.4	0.3	3.1
Stanford U.	409.1	36.4	14.2	241.7	65.1	47.7	0.0	4.0
U. California-San Diego	408.7	29.3	10.9	246.4	12.0	107.1	0.7	2.5
U. Wisconsin-Madison	393.6	15.8	22.5	229.9	10.6	84.8	26.2	3.9
U. California-San Francisco	386.9	5.2	0.7	376.2	0.6	4.3	0.0	0.0
Washington U.	381.5	5.4	2.8	344.7	4.8	23.2	0.5	0.1
Columbia U.	372.9	8.2	9.3	269.3	12.3	65.7	0.2	7.9
U. Colorado	358.4	13.6	5.9	214.5	49.7	45.7	0.2	28.8
Harvard U.	356.5	15.7	9.5	284.2	8.5	32.6	0.0	6.1
Duke U.	355.3	27.5	8.2	283.8	2.2	31.7	0.2	1.7
U. Pittsburgh	351.4	13.5	3.0	316.9	2.0	13.7	0.3	2.0
Yale U.	334.4	9.2	10.1	289.6	2.5	21.6	1.1	0.3
U. North Carolina-Chapel Hill	329.0	6.7	2.3	278.6	2.7	19.9	0.7	18.1
Cornell U.	327.5	21.5	6.2	159.6	6.9	94.5	36.6	2.1
U. Minnesota	326.5	12.3	9.8	222.4	5.0	43.2	25.7	8.1
Pennsylvania State U.-University Park	317.8	123.4	8.0	80.5	20.8	45.7	29.0	10.4
Top 20 institutions	8,499.4	853.8	181.3	5,862.8	409.1	915.3	127.8	149.3

DoD = Department of Defense; DOE = Department of Energy; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation; USDA = Department of Agriculture.

¹ Includes data for the Departments of Commerce, Education, Housing and Urban Development, the Interior, Labor, and Transportation; Agency for International Development; Environmental Protection Agency; Appalachian Regional Commission; Nuclear Regulatory Commission; Office of Justice Programs (part of Department of Justice); and Social Security Administration.

² Includes funding for Applied Physics Laboratory.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions: FY 2002.

programs, with most of the remainder allocated to other S&E activities.

The top 20 universities in terms of Federal academic S&E obligations accounted for 35 percent of the Federal academic S&E total in FY 2002. Each of these 20 academic recipients was also ranked among the top 20 recipients in the previous year, an unprecedented occurrence.

Federal S&E Support to Nonprofit Institutions

The National Science Foundation collects statistics on obligations to independent nonprofit institutions for only two of the six S&E categories—R&D and R&D plant. Such Federal obligations increased by 42 percent, to a new high of \$5.3 billion, between FY 2001 and FY 2002 (table 5). Almost all of the increased funding was reported from HHS, mostly from the National Institutes

of Health (NIH), which is a part of HHS, and from DoD. Massachusetts General Hospital received the most Federal S&E funds in FY 2002, with HHS providing most of its support. The 10 top-ranked nonprofit institutions in terms of Federal S&E funds in FY 2002 received 29 percent of the S&E total to all nonprofits. Seven of these 10 nonprofit recipients are hospitals or medical research institutes.

The National Institutes of Health did not report any S&E obligations to Mayo Foundation for FY 1998 through FY 2000, even though the foundation received funding from NIH during this period. NIH has now provided NSF with revised totals for Mayo Foundation for each of the fiscal years 1991 through 2001. The Detailed Statistical Tables report produced by NSF for the Federal S&E Support Survey has been updated to include a complete history of S&E funding from NIH to

TABLE 5. Federal research and development and R&D plant obligations to the 10 top-ranked independent nonprofit institutions in order of total S&E obligations, by agency: FY 2002

(Thousands of dollars)

Institution	Total	DoD	DOE	HHS	NASA	NSF	USDA	Other agencies ¹
All nonprofit institutions	5,277,079	1,045,788	105,413	3,380,219	294,768	206,737	27,093	217,061
Massachusetts General Hospital	250,440	10,304	537	237,812	90	1,697	0	0
Mitre Corp.	226,312	226,312	0	0	0	0	0	0
Brigham and Women's Hospital	207,465	4,142	0	201,959	1,167	197	0	0
Fred Hutchinson Cancer Research Ctr.	175,631	9,610	216	165,236	0	569	0	0
Mayo Foundation	145,499	10,043	0	135,258	198	0	0	0
Henry M. Jackson Foundation	137,948	118,661	422	18,238	92	535	0	0
Dana-Farber Cancer Institute	103,973	8,488	0	95,110	0	375	0	0
Beth Israel Deaconess Medical Ctr.	101,072	2,780	655	97,273	164	200	0	0
Battelle Memorial Institute	98,854	59,239	600	21,721	12,183	0	0	5,111
Whitehead Institute for Biomedical Research	93,052	0	98	90,896	0	360	1,698	0
Top 10 institutions	1,540,246	449,579	2,528	1,063,503	13,894	3,933	1,698	5,111

DoD = Department of Defense; DOE = Department of Energy; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation; USDA = Department of Agriculture.

¹ Includes data for the Departments of Commerce, Education, Housing and Urban Development, the Interior, Labor, and Transportation; Agency for International Development; Environmental Protection Agency; Appalachian Regional Commission; Nuclear Regulatory Commission; Office of Justice Programs (part of Department of Justice); and Social Security Administration.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions: FY 2002.

Mayo Clinic (Rochester, Minnesota; Scottsdale, Arizona; and Jacksonville, Florida), which is under the umbrella of Mayo Foundation (see "Data Notes"). Support for science and engineering from NIH to Mayo Foundation increased from \$35 million in FY 1991 to \$64 million in FY 1998. From FY 2001 to FY 2002, funding increased from \$115 million to \$135 million. In FY 2002 Mayo Foundation ranked fifth among all nonprofit institutions in terms of Federal S&E obligations.

Data Notes

The Federal academic S&E obligations data presented in this *InfoBrief* were obtained from 18 agencies that participated in the FY 2002 Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions. The survey collects Federal S&E support data by funding agency, type of institution, institutional ranking, and geographic distribution. The full set of Detailed Statistical Tables on the FY 2002 Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions will be available later this year online (<http://www.nsf.gov/sbe/srs/>).

NSF makes available computer-generated institutional profiles for individual doctorate-granting institutions and

for schools with S&E departments that grant master's degrees. These profiles contain data from this survey and from NSF's other two academic S&E surveys: the Survey of Research and Development Expenditures at Universities and Colleges, and the Survey of Graduate Students and Postdoctorates in Science and Engineering. Data from the three surveys are also available on the Web (<http://www.nsf.gov/sbe/srs/stats.htm>) and on the Computer-Aided Science Policy Analysis and Research (WebCASPAR) database system, a Web tool for retrieval and analysis of statistical data on academic S&E resources (<http://caspar.nsf.gov>).

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