

FEDERAL SCIENCE AND ENGINEERING OBLIGATIONS TO ACADEMIC AND NONPROFIT INSTITUTIONS REACHED RECORD HIGHS IN FY 2003

by Richard Bennof

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 \$26.7 billion to higher education institutions for academic science and engineering (S&E) activities in FY 2003, an increase of \$2.2 billion (9 percent in current dollars) over FY 2002 levels (table 1). This increase follows a 9 percent current-dollar increase (nearly 7 percent in constant dollars) in total federal academic S&E support between FY 2001 and FY 2002.

TABLE 1. Federal academic S&E obligations, by activity: FY 2002–03

Activity	Amount (millions of dollars)		Percent change	
	FY 2002	FY 2003	Current dollars	Constant 2000 dollars
Academic S&E obligations	24,431	26,656	9.1	7.2
Research and development	21,155	22,811	7.8	5.9
R&D plant	301	727	141.2	137.0
Facilities and equipment for S&E instruction	110	80	-26.8	-28.1
Fellowships, traineeships, and training grants	937	950	1.4	-0.4
General support for science and engineering	432	429	-0.7	-2.4
Other S&E activities	1,496	1,660	10.9	9.0

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 2003.

Categories of Support

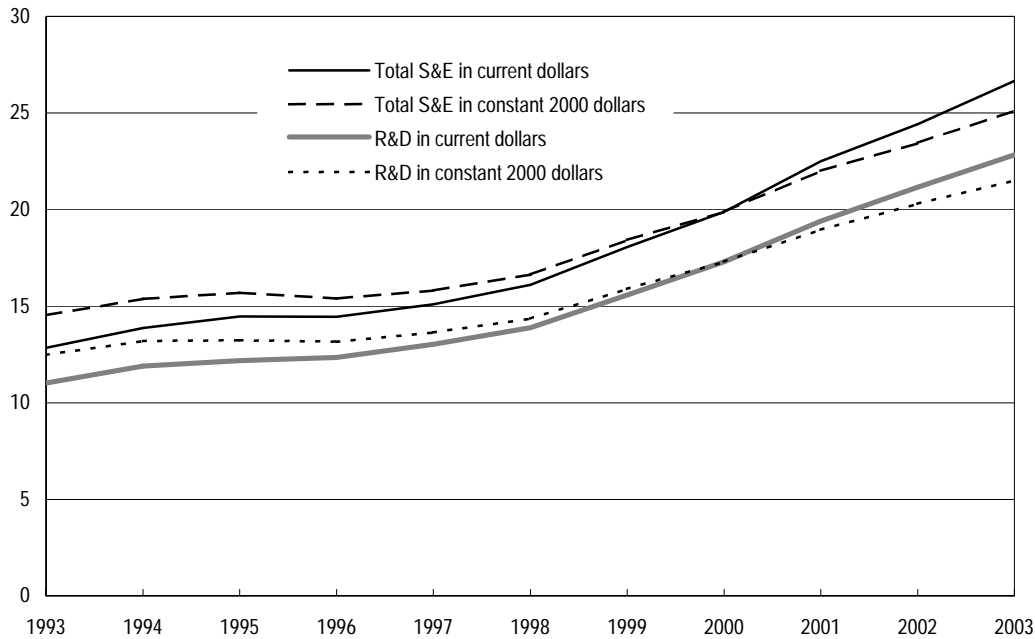
Federal academic S&E obligations are divided into six categories: research and development (R&D), which has accounted for 84–87 percent of total federal academic S&E obligations over the last decade (figure 1); R&D plant; facilities and equipment for S&E instruction; fellowships, traineeships, and training grants (FTTGs); general support for S&E; and other S&E activities.

Federal academic R&D support reached a new high of \$22.8 billion in FY 2003, nearly an 8 percent current-dollar increase (6 percent in constant dollars) over the previous year. The Department of Health and Human Services (HHS) accounted for 63 percent (\$14.3 billion) of all federal academic R&D obligations in FY 2003 (table 2) and 60 percent of the total R&D increase from FY 2002 to FY 2003.

Federal support in FY 2003 for R&D plant grew by 141 percent, from \$301 million in FY 2002 to an unprecedented level of \$727 million. The National Institutes of Health (NIH) (within HHS) was directly responsible for 90 percent of the academic R&D plant spike. The one-time major investment in academic facilities from NIH (NIH stated that it would not be repeated in FY 2004) was highlighted by increases exceeding \$100 million at both Boston University and the University of Texas Medical Branch at Galveston. Seven other universities reported increased facilities funding from NIH of at least \$10 million each.



FIGURE 1. Federal obligations for academic S&E activities and for S&E R&D: FY 1993–2003
(Billions of dollars)



SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions, FY 2003.

TABLE 2. Federal academic S&E obligations, by activity and agency: FY 2003
(Millions of dollars)

Activity	All obligations	DoD	DOE	HHS	NASA	NSF	USDA	Other agencies ¹
Academic S&E obligations	26,656.1	2,528.4	760.9	15,876.3	1,262.8	3,954.2	1,144.7	1,128.8
Research and development	22,810.6	2,223.7	754.4	14,347.2	1,085.6	3,054.4	652.5	692.8
R&D plant	726.5	0.0	6.5	479.0	20.6	209.9	0.1	10.3
Facilities and equipment for S&E instruction	80.3	8.5	0.0	26.1	0.1	16.2	1.0	28.6
Fellowships, traineeships, and training grants	950.1	25.2	0.0	733.7	39.6	35.2	29.4	87.1
General support for science and engineering	428.8	1.2	0.0	262.5	0.0	6.1	2.8	156.2
Other S&E activities	1,659.6	269.8	0.0	27.8	116.8	632.5	458.9	153.8

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 2003.

Two of the four remaining S&E categories were also at record funding levels in FY 2003.

- Federal obligations for FTTGs increased 1 percent to \$950 million, with HHS and the Department of Education providing most of the increase.
- Obligations for other S&E activities¹ increased by 11 percent, to \$1.7 billion, with NSF and the Department of Defense (DoD) supplying most of this increase.
- Funds for facilities and equipment for S&E instruction fell to \$80 million, a 27 percent decrease, with the Department of Commerce reporting most of the decline.
- Funding for general support projects² totaled \$429 million, a 1 percent decrease stemming almost entirely from decreased HHS support.

Agency Sources

The Department of Health and Human Services accounted for 60 percent of all federal FY 2003 academic S&E obligations. Three agencies, NSF (nearly 15 percent of academic S&E), DoD (over 9 percent of academic S&E), and HHS, when combined, provided 84 percent of total federal academic S&E funding (table 3). The National Aeronautics and Space Administration (NASA), the Department of Agriculture (USDA), and the Department of Energy (DOE) provided most of the remaining academic S&E total, 12 percent of academic S&E federal funding. Of these six agencies, only NASA decreased (by a fraction of 1 percent) its FY 2003 academic S&E levels in constant dollars.

University Shares

The Johns Hopkins University (including its Applied Physics Laboratory) continued to be the leading academic recipient of federal academic S&E support in FY 2003 (table 4). Together, HHS and DoD provided Johns Hopkins with almost four-fifths of its federal S&E funds. Nearly \$6 of every \$7 in the university's total federal S&E obligations (\$1.14 billion) supported R&D programs, with most of the remainder allocated to other S&E activities.

¹ Academic 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.

² Funds used for scientific projects and support for activities within a specified discipline; explicit purpose is not specified.

TABLE 3. Federal academic S&E obligations, by agency: FY 2002–03

Agency	Amount (millions of dollars)		Percent change	
	FY 2002	FY 2003	Current dollars	Constant 2000 dollars
All agencies	24,431	26,656	9.1	7.2
Department of Health and Human Services	14,493	15,876	9.5	7.6
National Science Foundation	3,582	3,954	10.4	8.5
Department of Defense	2,317	2,528	9.1	7.2
National Aeronautics and Space Administration	1,244	1,263	1.5	-0.3
Department of Agriculture	1,086	1,145	5.4	3.6
Department of Energy	736	761	3.4	1.6
Other agencies ¹	973	1,129	16.0	14.0

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 2003.

The top 20 universities in terms of federal academic S&E obligations accounted for 34 percent of the federal academic S&E total in FY 2003. Nineteen of these 20 academic recipients were also ranked among the top 20 recipients in the previous year. Boston University (ranked 17th in FY 2003, jumping from 32nd in FY 2002) replaced Cornell University (ranked 21st in FY 2003, dropping from 18th the prior year). About \$5 of every \$6 of the \$153 million dollar surge in academic S&E support to Boston University was attributable to the \$128 million supplied by NIH for R&D plant programs in FY 2003.

Federal S&E Support to Nonprofit Institutions

The National Science Foundation collects statistics on federal obligations to independent nonprofit institutions for two of the six S&E categories—R&D and R&D plant. Such federal obligations increased by over 8 percent, to a new high of \$5.7 billion, between FY 2002 and FY 2003 (table 5). Most of the increased funding was from HHS, primarily from NIH. Massachusetts General Hospital received the most federal R&D and R&D plant funds among nonprofits in FY 2003, with HHS providing most of its support. The 10 top-ranked nonprofit institutions in terms of these federal funds in

TABLE 4. Federal academic S&E support to the 20 top-ranked universities in order of total S&E obligations, by agency: FY 2003
(Millions of dollars)

Institution	All obligations	DoD	DOE	HHS	NASA	NSF	USDA	Other agencies ¹
All institutions	26,656.1	2,528.4	760.9	15,876.3	1,262.8	3,954.2	1,144.7	1,128.8
Johns Hopkins U. ²	1,137.4	348.2	2.7	544.8	187.1	28.8	0.4	25.3
U. WA	631.1	45.3	14.9	454.8	8.2	79.6	4.4	24.0
U. MI	520.8	51.7	12.1	361.0	9.5	70.3	0.6	15.6
U. PA	495.3	21.4	6.6	439.4	1.6	22.7	0.9	2.7
U. CA-Los Angeles	475.7	39.0	24.4	342.0	13.3	54.2	0.1	2.7
Stanford U.	467.2	45.1	14.6	270.4	87.3	47.8	0.5	1.4
U. CA-San Diego	466.5	26.4	11.8	279.7	10.7	135.9	0.0	2.0
U. WI-Madison	422.1	21.1	23.5	250.6	9.2	86.5	26.7	4.6
WA U.	419.0	6.5	2.2	386.4	5.1	17.3	0.4	1.1
Columbia U.	412.7	13.6	10.1	290.6	11.7	71.7	0.1	15.0
Duke U.	412.1	18.4	7.7	350.7	1.7	29.0	1.0	3.6
U. Pittsburgh	394.7	14.4	4.5	353.0	2.0	18.2	0.0	2.6
U. CA-San Francisco	393.1	4.2	0.7	386.6	0.5	1.0	0.0	0.1
Harvard U.	384.9	10.3	6.6	308.6	9.7	39.1	0.0	10.6
U. Colorado	367.9	11.7	6.4	224.9	43.4	46.5	0.5	34.5
Yale U.	349.6	7.1	9.0	299.9	1.7	22.5	0.8	8.6
Boston U.	347.2	11.6	3.2	280.0	15.4	36.2	0.0	0.8
PA State U.-University Park	345.9	145.1	12.0	84.3	17.1	48.2	29.1	10.2
U. Minnesota	345.8	11.6	7.5	233.7	6.2	55.7	23.9	7.3
U. North Carolina-Chapel Hill	344.6	20.5	1.7	282.2	1.6	24.9	0.4	13.3
Top 20 institutions	9,133.3	873.2	182.0	6,423.5	443.0	936.1	89.5	185.9

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 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.

²Includes 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 2003.

FY 2003 received 29 percent of the total funding to all nonprofits. Seven of these 10 nonprofit recipients were hospitals or medical research institutes. Each of these leading 10 nonprofits in FY 2003 also ranked among the top 10 in the prior year. Of all nonprofit recipients that were not hospitals or medical research institutes, the Mitre Corporation received the largest amount (\$187 million) of federal R&D and/or R&D plant obligations.³

³ During editing of the FY 2003 Federal S&E Support database, NSF revised DoD's support to the nonprofit Mitre Corporation at \$211,508,000 for FY 2001 (previously reported by DoD as 0). DoD subsequently reviewed and concurred with these estimates.

Data Notes

The federal academic S&E obligations data to academic and nonprofit institutions presented in this *InfoBrief* were obtained from 18 agencies that participated in the FY 2003 Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions. The survey collects federal S&E support data by funding agency, institution, type of activity, type of institution, and geographic location. The full set of detailed statistical tables on the FY 2003 Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions will be available online at <http://www.nsf.gov/statistics/>.

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 2003

[Dollars in thousands]

Institution	All obligations	DoD	DOE	HHS	NASA	NSF	USDA	Other ¹
All nonprofit institutions	5,729,572	871,051	95,451	3,930,246	309,681	252,387	24,652	246,104
MA General Hospital	294,794	25,721	114	266,595	556	1,808	0	0
Brigham and Women's Hospital	220,221	1,422	0	216,617	1,047	201	0	934
Fred Hutchinson Cancer Research Ctr.	208,055	611	226	205,938	0	1,280	0	0
Mitre Corp.	187,210	186,721	0	0	0	489	0	0
Mayo Foundation	163,077	8,611	0	154,285	181	0	0	0
Battelle Memorial Institute	122,844	53,920	590	51,670	10,411	0	0	6,253
Dana-Farber Cancer Institute	122,344	3,847	0	118,497	0	0	0	0
Henry M. Jackson Foundation	108,814	82,758	600	24,582	51	823	0	0
Beth Israel Deaconess Medical Ctr.	106,555	3,219	150	102,589	480	117	0	0
Whitehead Institute for Biomedical Research	103,775	2,579	0	100,606	0	590	0	0
Top 10 institutions	1,637,689	369,409	1,680	1,241,379	12,726	5,308	0	7,187

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; 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 2003.

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/statistics/>) and on NSF's WebCASPAR database system, a Web tool for retrieval and analysis of statistical data on academic S&E resources (<http://webcaspar.nsf.gov>).

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