

FEDERAL FUNDING FOR R&D AND R&D PLANT CONTINUES TO GROW IN THE 21ST CENTURY

by Ronald L. Meeks

Federal obligations for R&D and R&D plant are expected to reach \$103.1 billion in fiscal year 2003, according to the National Science Foundation's (NSF's) annual Survey of Federal Funds for Research and Development. The Federal dollars for R&D and R&D plant in FY 2003 are expected to increase nearly 6 percent over the FY 2002 amount of \$97.5 billion.

The FY 2003 obligations represent a 3.5 percent annual growth rate (or average annual percent change) over the FY 1990–2003 period. When adjusted for inflation, the annual growth rate over the same time period is 1.3 percent. The annual growth rates (before adjusting for inflation) for the largest R&D funding agencies vary considerably, ranging from about 1 percent per year for the Department of Defense (DoD) to nearly 10 percent per year for the Department of Health and Human Services (HHS) (table 1).

The statistics here are from NSF's annual Survey of Federal Funds for Research and Development. The data were collected in 2002, and agencies provided actual data for FY 2001. Agencies also reported preliminary data for FY 2002 and FY 2003. Data are subject to change as Federal agencies' budgets are updated to reflect approved programs.

Agency Shares

Based on their FY 2003 budget requests, the six agencies providing the most funds are expected to account for 96 percent of the total Federal R&D and R&D plant funding in FY 2003. These six agencies are DoD, HHS, the National Aeronautics and Space

Administration (NASA), the Department of Energy (DOE), NSF, and the Department of Agriculture (USDA).

The HHS share of total Federal funding for research is expected to be 50 percent in FY 2003; NIH accounts for most of this funding.

DoD continues to be the largest Federal funder of R&D, accounting for \$45.2 billion in funding in FY 2003; 85 percent of this is slated for development activities. However, the DoD share of Federal obligations for R&D and R&D plant has fallen from 57 percent in FY 1990 to an expected 44 percent in FY 2003. DoD's R&D and R&D plant dollars initially fell 1.3 percent annually (a 3.4 percent annual decrease in constant 1996 dollars) between FYs 1990 and 2000 before jumping an estimated 10.8 percent annually (or 8.5 percent in constant 1996 dollars) between FYs 2000 and 2003.

HHS provides the second largest share of total Federal R&D and R&D plant funding; this share is expected to be 27 percent in FY 2003, compared with 13 percent in FY 1990. The growth in this agency's share reflects the recent dramatic rise in HHS's National Institutes of Health (NIH) R&D budget. The HHS R&D and R&D plant budget in FY 2003 reflects a 9.7 percent average annual increase over its FY 1990 obligations (a 7.3 percent increase in constant 1996 dollars).



Table 1. Federal obligations for R&D and R&D plant: fiscal years (FYs) 1990–2003, selected years

By agency	FY 1990 actual	FY 1995 actual	FY 1999 actual	FY 2000 actual	FY 2001 actual	FY 2002 preliminary	FY 2003 preliminary	Average annual percent change FYs 1990–2003
(Millions of current dollars)								
Total.....	65,831	70,443	77,386	77,356	84,003	97,465	103,114	3.5
DoD.....	37,755	33,857	35,753	33,215	35,570	43,509	45,187	1.4
HHS.....	8,513	11,711	16,168	18,646	21,642	24,654	28,278	9.7
NASA.....	7,060	9,640	9,885	9,755	9,524	10,228	10,705	3.3
DOE.....	6,547	6,890	6,876	6,874	7,651	8,512	8,538	2.1
NSF.....	1,729	2,439	2,680	2,942	3,329	3,526	3,651	5.9
USDA.....	1,211	1,524	1,745	1,834	2,076	2,199	2,136	4.8
All other.....	3,016	4,383	4,280	4,091	4,211	4,838	4,619	3.3
(Millions of constant 1996 dollars)								
Total.....	76,503	71,851	73,884	72,363	76,799	87,248	90,650	1.3
DoD.....	43,876	34,534	34,135	31,071	32,520	38,948	39,725	-0.8
HHS.....	9,894	11,945	15,436	17,442	19,786	22,069	24,859	7.3
NASA.....	8,205	9,832	9,438	9,125	8,707	9,156	9,411	1.1
DOE.....	7,608	7,028	6,565	6,430	6,995	7,619	7,505	-0.1
NSF.....	2,009	2,488	2,558	2,752	3,043	3,156	3,210	3.7
USDA.....	1,407	1,554	1,666	1,715	1,898	1,969	1,878	2.2
All other.....	3,505	4,471	4,086	3,827	3,850	4,330	4,061	1.1

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

SOURCE: National Science Foundation/Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2001, 2002, and 2003*, volume 51, forthcoming

At 10 percent, NASA has the third largest FY 2003 share of the total Federal R&D and R&D plant funding. NASA's funding for R&D and R&D plant grew from \$7.1 billion in FY 1990 to \$10.7 billion in FY 2003, an estimated average rate of increase of 3.3 percent (or a 1.1 percent increase in constant 1996 dollars). Annual rates of change, however, fluctuated widely during this period.

Research by Field

DoD, HHS, and NASA are not only the top three agencies in terms of R&D and R&D plant support but are also the top three agencies obligating the most funds for research only (that is, basic research and applied research combined). In FY 2003, combined research dollars from DoD, HHS, and NASA are expected to account for 73 percent, or \$39.1 billion, of the total \$53.4 billion in research money provided by the Federal Government. The agencies exhibit quite distinct patterns

of research support, however. Total research obligations are reported for eight broad fields of science and engineering in the Federal Funds survey: life sciences; psychology; physical sciences; environmental sciences; mathematics and computer sciences; engineering; social sciences; and other sciences, not elsewhere classified.

HHS, the top funder of Federal research dollars, accounts for one-half (\$26.8 billion) of all Federal research dollars. NIH is responsible for 96 percent of the HHS research funding.¹ HHS plans to provide 90 percent (\$24.0 billion) of its total research dollars to the life sciences (table 2). The shares of the remaining seven fields would range from less than 0.5 percent (\$0.1 billion) for mathematics and computer sciences to 3 percent (\$0.8 billion) for psychology.

¹Beginning with its FY 2000 data, NIH reconsidered the nature of its R&D and reclassified all of its development activities as research.

DoD expects to allocate one-half of its total research money, or \$3.3 billion of a total \$6.5 billion, to engineering projects in FY 2003. The agency plans to obligate another 17 percent (\$1.1 billion) of its research funds to activities in mathematics and computer sciences. The life sciences are expected to account for 13 percent (\$0.9 billion) of DoD's total research dollars. Funding shares for each of the other five fields are expected to range from less than 0.5 percent for the social sciences to 9 percent for the physical sciences.

NASA plans to obligate 46 percent of its research dollars (\$2.7 billion of \$5.8 billion) to engineering projects. Nearly equal portions of 22 and 20 percent, respectively, would be allocated to the environmental sciences and physical sciences; that equals \$1.3 billion and \$1.2 billion, respectively. The expected shares to be obligated to the remaining five fields range from less than 0.5 percent for the social sciences to 7 percent for the life sciences.

Data Collection Notes

The 29 Federal agencies that report R&D obligations to the Federal Funds survey submitted actual obligations for FY 2001 and preliminary data for FYs 2002 and

2003. Survey data include totals by funding agency, character of work (basic research, applied research, development, and R&D plant), S&E field, and R&D performer. Data were reported during the period February through December 2002; therefore, the data for FYs 2002 and 2003 are based on agencies' budget requests and do not necessarily represent actual appropriations. Agencies later revise their preliminary data to reflect actual changes in R&D program funding levels. Agencies may also provide changes to prior-year data to reflect program reclassifications or other corrections. As an example of recent revisions to preliminary estimates, during the period March through November 2001, Federal agencies projected total R&D and R&D plant obligations of \$85.5 billion for FY 2001. As detailed in table 1 of this InfoBrief, agencies now report actual FY 2001 obligations of \$84.0 billion, a nearly 2 percent downward revision from earlier expectations.

The data presented in this InfoBrief are being released in advance of the comprehensive Detailed Statistical Tables Report, *Federal Funds for Research and Development: Fiscal Years 2001, 2002, and 2003*, volume 51.

Table 2. Federal obligations for research: fiscal year (FY) 2003

By agency	Total fields	Life sciences	Psychology	Physical sciences	Environmental sciences	Mathematics and computer sciences	Engineering	Social sciences	Other sciences, n.e.c.
(Millions of current dollars)									
Total.....	53,377	28,673	955	5,200	3,879	2,866	9,161	1,050	1,593
HHS.....	26,789	24,037	760	433	412	73	225	288	562
DoD.....	6,510	862	81	573	273	1,083	3,257	16	366
NASA.....	5,769	380	28	1,179	1,293	107	2,657	1	125
DOE.....	5,376	346	0	2,049	320	837	1,818	0	6
NSF.....	3,404	513	5	644	587	636	597	134	287
USDA.....	1,816	1,469	0	107	12	16	70	138	3
All other.....	3,713	1,066	81	215	983	114	537	474	245

KEY: DoD = Department of Defense; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; DOE= Department of Energy; NSF = National Science Foundation; and USDA = Department of Agriculture; and n.e.c. = not elsewhere classified

SOURCE: National Science Foundation/Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2001, 2002, and 2003*, volume 51, forthcoming

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