

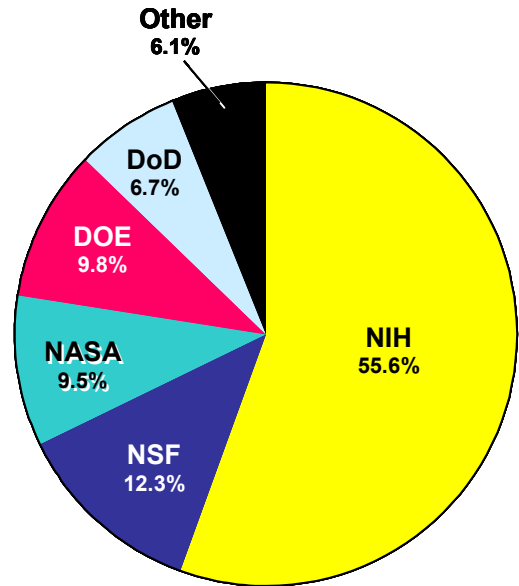
Chapter IV

DEFENSE BASIC RESEARCH FUNDING

A. FUNDING COMPARISONS

1. DoD and Other Federal Agency Basic Research Funding

To understand the funding of defense basic research in the proper context, it is useful to compare the funding levels of DoD basic research with those of other federal agencies. The basic research funding among federal agencies for FY03 (data from Reference 12) is shown in Figure IV–1. The chart shows that the National Institutes of Health (NIH) sponsored \$14.4 billion, or 55.6 percent of the total of federally funded basic research of \$26 billion. The National Science Foundation (NSF) funding was approximately \$3.2 billion (12.3 percent). The National Aeronautics and Space Administration (NASA) had a funding level of \$2.46 billion (9.5 percent), while the Department of Energy (DOE) sponsored \$2.54 billion, or 9.8 percent of the total. DoD sponsored approximately \$1.7 billion, or 6.7 percent, of the total federally funded basic research.



Source: Reference 12

Figure IV–1. FY03 Basic Research Funding Managed by Federal Agencies

The numbers for FY02 contrast sharply with those in FY79. At that time, DoD sponsored 11 percent of the total federally funded basic research. Thus, over this 23-year period, DoD support of basic research funding managed by federal agencies has decreased by 40 percent, or by almost a factor of two.

2. FY05 Appropriations for DoD Science and Technology

The DoD research, development, test, and evaluation (RDT&E) appropriation for FY05 is \$20.98 billion. The amount appropriated for 6.1 (basic research) is \$1.51 billion, or 7.21 percent of the RDT&E total. The DoD S&T appropriation for FY05 is \$13.33 billion. The amount appropriated for 6.1 (basic research) is \$1.51 billion, or 11.35 percent of the total S&T budget.

Figure IV–2 shows the FY05 appropriated funding for S&T by category for each military department, the Defense Advanced Research Projects Agency (DARPA), the Office of the Secretary of Defense (OSD), and other defense agencies.

The distribution of basic research funding appropriated in FY05 among the services, DARPA, OSD, and other defense agencies is shown in Figure IV–3.

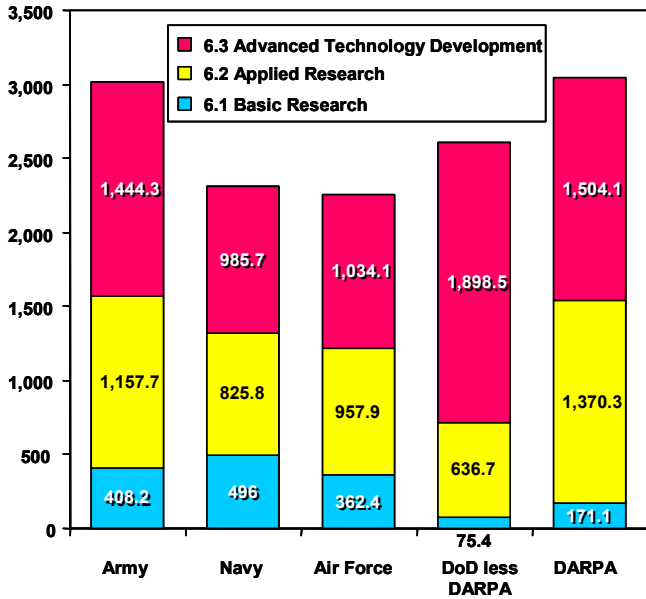


Figure IV-2. FY05 DoD S&T Appropriations Budget (\$Millions)

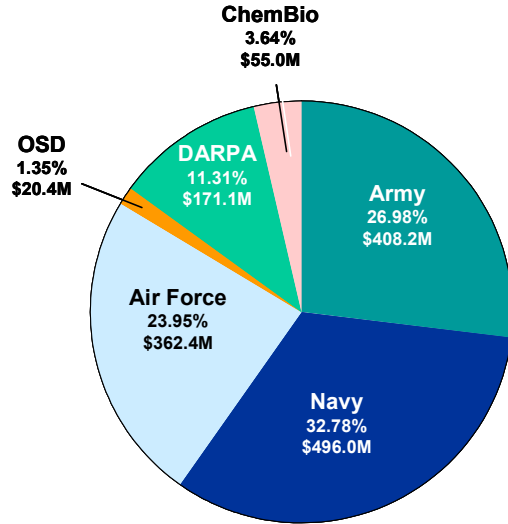


Figure IV-3. Distribution of DoD FY05 Basic Research Funding

The distribution of FY05 S&T funds among the three S&T funding categories (6.1, 6.2, and 6.3) is shown in Figure IV-4. The figure indicates that 11.35 percent is invested in basic research, 37.13 percent in applied research, and 51.52 percent in advanced technology development.

3. Funding for Performers of Defense Basic Research

Figure IV-5 compares the FY03 funding levels for the principal performers of DoD basic research: universities (48 percent), in-house DoD laboratories (38 percent), industry (10 percent), and other (4 percent). Breakouts for FY04 were not available at the time of publication of this *Basic Research Plan*. It is expected that the distributions will remain approximately the same.

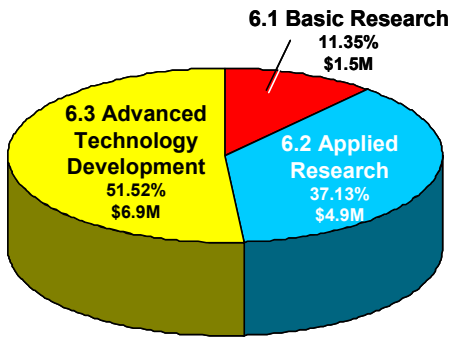


Figure IV-4. Distribution of FY05 Appropriated S&T Funds Among Basic Research, Applied Research, and Advanced Technology Development

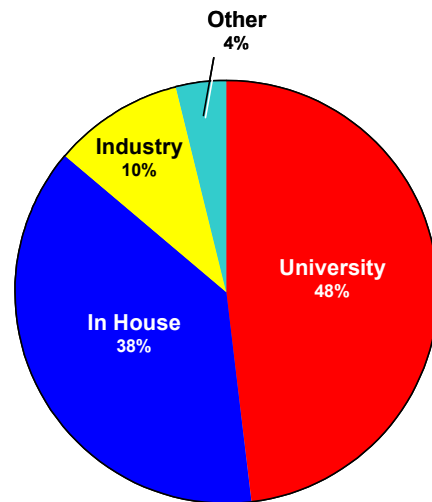


Figure IV-5. Performers of Defense Basic Research in FY03

Table IV–1. DoD Percentage of Federal Funding to Universities

Discipline/ Subdiscipline	DoD Percentage of Federal Funding	
	FY01	FY03
Life Sciences	5.7	1.6
Psychology	5.7	4.1
Physical Sciences	9.7	9.2
Chemistry	11.4	n/a
Physics	11.8	n/a
Environmental Sciences	11.7	10.2
Mathematics and Computer Science	16.8	15.9
Mathematics	11.4	n/a
Computer Science	11.4	n/a
Engineering	38.3	33
Aeronautical Engineering	25.6	n/a
Astronautical Engineering	44.6	n/a
Chemical Engineering	12.5	n/a
Civil Engineering	1.5	n/a
Electrical Engineering	71.8	n/a
Mechanical Engineering	74.5	n/a
Metallurgy & Materials Science	34.5	n/a
Other Engineering	18.3	n/a
Social Sciences	0	0.6
Other Sciences	0.8	0.8
DoD Total to All Science and Engineering	9.6	5.8

Source: NSF Division of Science Resources Statistics Survey of Federal Funds for Research and Development: Fiscal Years 2001, 2002, and 2003. (Tables C-65 through C-71) (Reference 12)

ity that is basic research, the second nonzero digit is a “1.” The letter appended to the PE number denotes the service or agency responsible for its execution: “A” for Army, “N” for Navy, “F” for Air Force, “E” for DARPA, “D” for OSD, etc. Table IV–2 presents all PEs in basic research for the years FY00 through FY05.

4. Funding Comparisons by Disciplinary Areas

DoD is a principal supporter of basic research in some key technology areas, as shown in Table IV–1. An analysis of federal funding of basic research to universities indicates that DoD provides the majority of funds for academic research in electrical, mechanical, and astronautical engineering (data from Reference 12, NSF Report). On an overall basis for FY03, DoD provides 33 percent of the federal research funding provided to colleges of engineering—a major element of support for the Nation’s engineering programs. Note that the subdiscipline data for FY03 were not available at the time of publication of this BRP. Major changes are not expected.

B. TOTAL FY00–05 FUNDING FOR DEFENSE BASIC RESEARCH

Funding for all DoD activities is portrayed in the DoD budget by program elements (PEs), which are numbered by five nonzero digits. All R&D PEs have for the first nonzero digit the number “6.” Further, if the PE refers to an R&D activ-

Table IV–2. DoD Basic Research Funding by Program Element for FY00–05 (\$Millions)

PE	Title	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005
Services							
Army							
0601101A	In-House Laboratory Independent Research	13,800	13,983	13,726	20,255	23,914	23,971
0601102A	Defense Research Sciences	122,998	133,081	135,535	138,432	156,146	168,906
0601103A	University Research Initiatives	0	0	0	0	85,242	87,633
0601104A	University and Industry Research Centers	64,595	58,120	71,699	84,237	99,786	104,434
0601105A	Force Health Protection	0	0	0	0	16,505	23,288
	Total Army	201,393	205,184	220,960	242,924	381,593	408,232
Navy							
0601103N	University Research Initiatives	0	0	0	0	91,489	92,208
0601152N	In-House Laboratory Independent Research	15,262	13,698	16,095	12,878	17,196	19,564
0601153N	Defense Research Sciences	351,867	371,665	378,742	393,056	375,363	384,212
	Total Navy	367,129	385,363	394,837	405,934	484,048	495,984
Air Force							
0601102F	Defense Research Sciences	208,178	206,638	221,683	211,559	212,897	227,504
0601103F	University Research Initiatives	0	0	0	0	106,313	122,565
0601108F	High Energy Laser Research Initiatives	0	0	0	0	11,961	12,331
	Total Air Force	208,178	206,638	221,683	211,559	331,171	362,400
Total Services		776,700	797,185	837,480	860,417	1,196,812	1,266,616
Defense Agencies							
Office of the Secretary of Defense							
0601101D8Z	In-House Laboratory Independent Research	2,019	1,989	2,081	2,044	0	0
0601103D8Z	University Research Initiatives	223,366	292,355	248,997	232,653	0	0
0601105D8Z	Force Health Protection	24,645	29,366	36,442	14,156	0	0
0601108D8Z	High Energy Laser Research Initiatives	0	0	11,785	11,355	0	0
0601111D8Z	Government/Industry Cosponsorship of University Research	6,142	6,654	9,195	8,240	6,696	7,000
0601114D8Z	Defense Experimental Program to Stimulate Competit	0	21,797	16,824	15,197	9,578	13,389
	Total OSD	256,172	352,161	325,324	283,645	16,274	20,389
DARPA							
0601101E	Defense Research Sciences	62,940	99,647	141,900	171,383	139,434	171,129
	Total DARPA	62,940	99,647	141,900	171,383	139,434	171,129
Nuclear, Chemical, and Biological Defense Program							
0601384BP	Chemical and Biological Defense Program	42,827	38,369	44,815	53,162	51,380	55,019
Total Defense Agencies		361,939	490,177	512,039	508,190	207,088	246,537
Total DoD		1,138,639	1,287,362	1,349,519	1,368,607	1,403,900	1,513,153