

Final FY 2001 Appropriations:

**A Preview Report for
*Congressional Action on Research and Development
in the FY 2001 Budget***

This Preview Report is a summary of AAAS estimates and analyses of **final FY 2001 appropriations** for federal R&D. This is a preview of the forthcoming publication *Congressional Action on Research and Development in the FY 2001 Budget*. (Ordering information is on the last page).

On December 15, more than two months into fiscal year (FY) 2001, President Clinton and the 106th Congress finally reached agreement on FY 2001 appropriations, including federal support for R&D. President Clinton will sign the agreement into law this week. The final omnibus appropriations bill is a compilation of four out of the 13 annual appropriations bills and dozens of pieces of unrelated legislation, and contains a **0.22 percent across-the-board cut** for most appropriated programs. Nine FY 2001 appropriations bills were enacted separately earlier in the year; the across-the-board cut applies to programs in these bills, also. (All figures in this report and in the tables have been adjusted to reflect the cut.)

The outgoing 106th Congress and President Clinton have agreed to provide record increases for R&D programs throughout the federal government, and have provided substantial increases to nearly all categories of R&D spending and most R&D funding agencies. Total federal R&D exceeds \$90 billion for the first time in FY 2001 to reach \$90.9 billion, an increase of \$7.6 billion over the FY 2000 funding level (up 9.1 percent).

Every year, AAAS analyzes appropriations for R&D as signed into law and provides detailed estimates on the federal investment in R&D for the new fiscal year in the publication *Congressional Action on Research and Development*. The FY 2001 printed edition will be published in mid-January; the full text will be available on line on the AAAS R&D Web site (www.aaas.org/spp/R&D) on December 29. Detailed information on the largest R&D funding agencies, historical tables, and other supplementary materials will also be available on the AAAS R&D Web site. This preview report offers selected highlights from the book.

Highlights of Federal R&D in FY 2001

After 21 continuing resolutions (temporary appropriations bills), President Clinton and the 106th Congress finally reached agreement on FY 2001 appropriations on December 15. Although the final funding levels for most R&D programs had been determined long before then, agencies such as the Department of Commerce and the National Institutes of Health (NIH) had to wait until this week to receive their final appropriations.

- In FY 2001, **total federal support of R&D exceeds \$90 billion** for the first time, thanks to a record dollar increase of \$7.6 billion over FY 2000. Because of increases across the entire breadth of R&D programs in the federal portfolio, federal R&D totals \$90.9 billion in FY 2001, an increase of 9.1 percent (see Table 1). **This total far exceeds the request** for \$85.4

billion, primarily because Congress allocates far more for R&D in the Department of Defense (DOD) and NIH, the two largest R&D funding agencies, than requested.

- **Nearly every major R&D funding agency receives a substantial increase over FY 2000,** and most receive more than the Clinton Administration request (see Figure 1). Of the major R&D funding agencies, only the National Science Foundation (NSF) receives less for R&D than requested, but NSF still receives 13.2 percent more for R&D than in FY 2000. (Details of final agency R&D appropriations are available on the AAAS R&D Web site, or by clicking on the links in the on-line version of this document.)

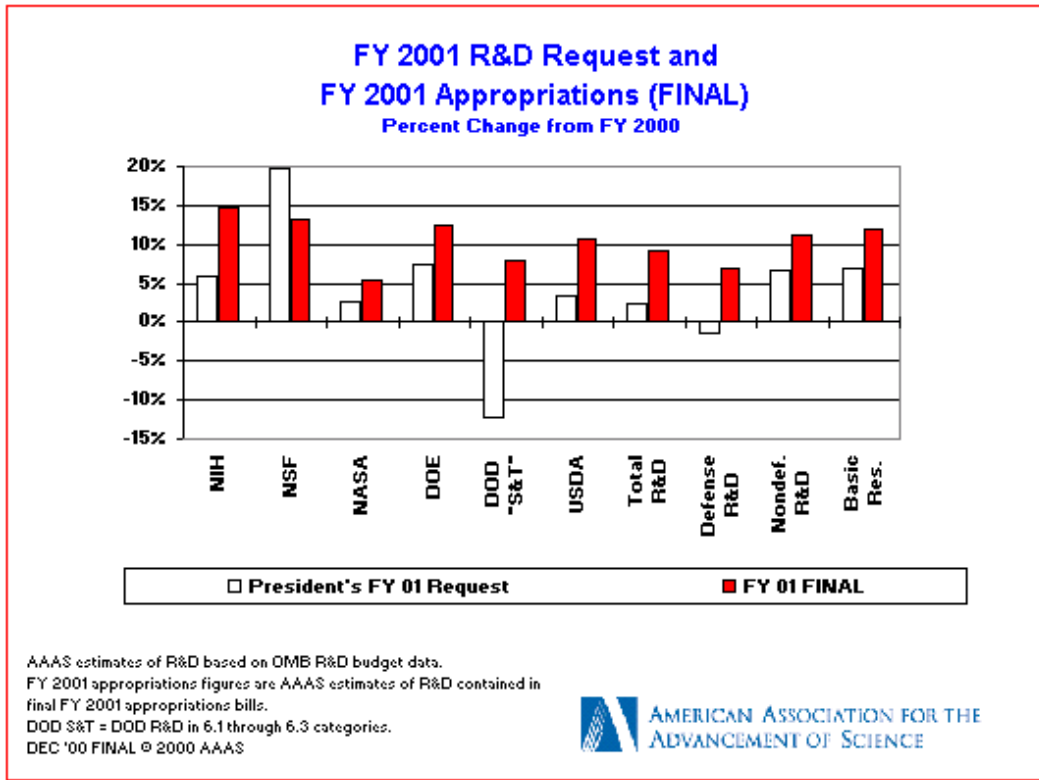


Figure 1. (click on the image to view or download a full-page version of this chart)

- **Nondefense R&D increases by more than 11 percent** to reach \$45.3 billion, a boost of \$4.6 billion. In addition to a 14.6 percent or \$2.5 billion increase in NIH R&D, there are substantial increases to other nondefense agencies. R&D in the Department of Energy (DOE) increases by 12.3 percent to reach \$8.0 billion, including a 13.8 percent boost to programs in the Office of Science; NSF R&D increases by 13.2 percent to \$3.2 billion, with substantial boosts to all the research directorates; and Science, Aeronautics, and Technology (SAT) R&D in the National Aeronautics and Space Administration (NASA) increases by nearly 11 percent.
- **Defense R&D increases by a smaller but still substantial 7.0 percent** to \$45.5 billion, bringing defense and nondefense R&D near parity for the first time in 20 years. Although defense R&D has exceeded nondefense R&D every year since the defense buildup of the early 1980s, the gap has narrowed in recent years. **DOD basic research ("6.1") increases by nearly 13 percent**, while applied research ("6.2") jumps by nearly 8 percent. Although

the Clinton Administration requested a steep cut in DOD's "S&T" investments (basic and applied research plus exploratory development), Congress awarded an 8.0 percent increase (see Figure 1). DOE's defense R&D continues the gains of recent years with a 12.0 percent gain in FY 2001, including expanded investments in defense computing and stockpile stewardship activities.

- In his budget request, **President Clinton placed a strong emphasis on achieving a better balance among science and engineering disciplines**. A series of large increases for the National Institutes of Health (NIH) has resulted in an emphasis on biomedical and life sciences research in recent years within the federal research portfolio, and in response the FY 2001 budget proposed large increases for R&D programs in non-life sciences disciplines. Although NIH receives a 15 percent increase for the third year in a row, non-biomedical research also wins big this year. NSF, the only R&D funding agency responsible for the entire range of science and engineering disciplines, with a particular emphasis on fundamental research and non-life sciences disciplines, receives the largest dollar increase in history which translates into a 13.2 percent boost for its R&D programs. DOE's Science programs, which support fundamental research in the physical sciences, receive a 13.8 percent boost to \$3.0 billion. As a result, nondefense R&D excluding NIH increases by 8.9 percent in FY 2001, a smaller increase than NIH but a sharp contrast to stagnant or declining funding in recent years. In addition, DOD support of basic (up 13 percent) and applied research (up 8 percent), which supports a range of physical sciences and engineering disciplines, also increases.
- The Clinton Administration's **multi-agency initiatives do well in FY 2001**, though in general funding levels fall short of the dramatic increases the Administration requested. Final estimates on these initiatives' budgets are sketchy because agencies have considerable freedom to allocate funding within budget accounts. The Administration's new **Nanotechnology** initiative proposed to double funding for existing nanotechnology programs from \$247 million in FY 2000 to \$495 million in new and continuing programs in FY 2001; the final FY 2001 total is an estimated \$418 million, up 55 percent over last year. NSF's leading role in the initiative was reduced from a proposed \$217 million down to \$150 million, but this still represents a more than 50 percent boost over the \$97 million FY 2000 funding level.
- The **Information Technology R&D** initiative also does well in FY 2001: NSF's \$215 million for IT Research represents a dramatic jump from \$90 million in FY 2000, though it falls short of the \$280 million request. NSF also receives funding to construct a second terascale (trillions of operations per second) computing site for \$45 million, and receives a 24.5 percent increase for the budget (including IT research) of the Computer and Information Science and Engineering (CISE) directorate. Total IT R&D spending should total \$2.1 billion in FY 2001, an increase of nearly 24 percent over FY 2000. The largest supporter of IT R&D is DOE with \$657 million, including substantial investments in both its defense and science portfolios.
- **Basic and applied research receive large increases in FY 2001 appropriations** (see Table 2). Federal support of basic research, the majority of which is performed in the nation's colleges and universities, increases by 11.8 percent or \$2.2 billion to \$21.2 billion because of across-the-board increases to agencies' basic research-oriented programs, including increases of greater than 10 percent for basic research in NIH, NSF, and DOD. Folding in applied research, total federal support of research (basic and applied) is \$41.2 billion in FY 2001, a jump of \$4.7 billion or 12.8 percent over FY 2000. Again, there are across-the-board

increases to agencies' research portfolios, with six agencies (NIH, NSF, DOE, DOD, NASA, DOT) receiving increases greater than 10 percent.

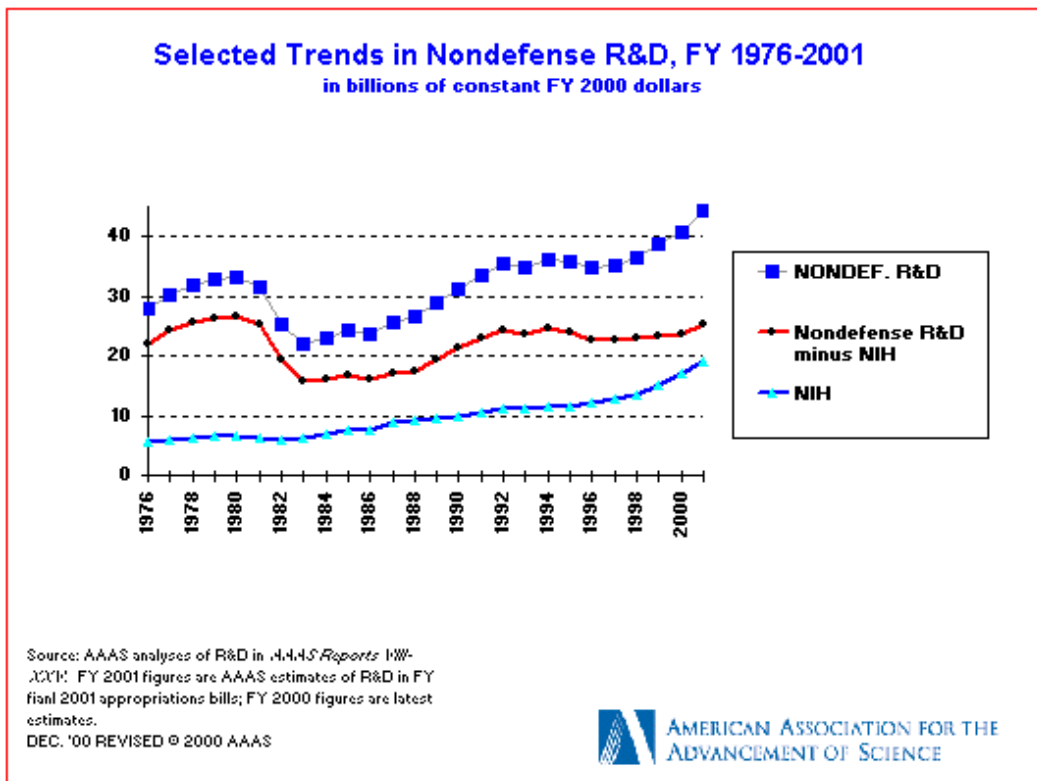


Figure 2. (click on the image to view or download a full-page version of this chart)

- **Nondefense R&D reaches an all-time high in FY 2001**, the fifth year in a row that nondefense R&D has increased in inflation-adjusted terms (see Figure 2). Much of the recent increase, however, has been due to steady growth in the NIH budget, including increases of nearly 15 percent for three years in a row. As a result, NIH R&D has become nearly as large as all other nondefense agencies' R&D funding combined. Funding for nondefense R&D excluding NIH has stagnated in recent years; after steady growth in the 1980s, funding peaked in FY 1994 and then declined sharply as a result of tight budget conditions in the mid-1990s. After hitting bottom in FY 1996, small increases from FY 1997 through FY 2000 barely kept pace with inflation. The FY 2001 increases for non-NIH agencies, while large, just barely brings these agencies back to the funding levels of the early 1990s.
- Most categories of R&D by national mission rise in FY 2001 (see Table 3). Health and defense-oriented R&D both rise by nearly \$3 billion. General science R&D increases by 13.5 percent to \$6.2 billion because of large increases for NSF and programs in DOE's Office of Science. Agriculture R&D increases 10.6 percent to \$1.7 billion, mostly because of an unusually large number of congressionally designated research projects.
- The **"21st Century Research Fund" rises by 12.1 percent in FY 2001** to \$44.9 billion (see Table 4). Most of this increase is due to a 14.4 percent increase to the total NIH budget, although there are increases for nearly all the programs in the Fund. The Clinton

Administration created the Fund to highlight programs that it considers important to the nation's science and technology enterprise. The Fund includes both R&D and non-R&D items while excluding large parts of the federal R&D portfolio (primarily in development).

R&D Appropriations for Key Agencies

Full information on final funding levels and program details for individual agencies can be found in revised AAAS R&D Funding Updates on the AAAS R&D Web site. (The on-line version of this document features links to the agency updates). Please see also the agency sections in *Congressional Action on R&D in the FY 2001 Budget*.

- **Department of Defense (DOD)** R&D totals \$41.8 billion, \$3.3 billion more than the request and \$2.5 billion or 6.4 percent more than FY 2000. **DOD's basic research ("6.1") totals \$1.3 billion, 12.8 percent above FY 2000**, while applied research ("6.2") totals \$3.7 billion, 7.7 percent above FY 2000. Including DOD's medical research programs, **DOD S&T ("6.1" through "6.3" programs, representing DOD's investments in basic and applied research and technology development) increases by 8.0 percent to \$9.4 billion**. There is a separate \$349 million appropriation for congressionally designated medical research, including \$175 million for breast cancer research. The Defense Advanced Research Projects Agency (DARPA) budget increases by \$121 million or 6.4 percent to \$2.0 billion, including increases for DOD's contributions to the multi-agency IT R&D initiative.
- **The National Institutes of Health (NIH)** is once again the beneficiary of strong congressional support for biomedical research. **The NIH budget of \$20.4 billion represents a \$2.6 billion or 14.4 percent increase over FY 2000**, keeping NIH on the third year of a course toward doubling its budget in five years.¹ Every institute receives an increase greater than 13 percent, and three receive increases greater than 20 percent. There is a new NIH institute in FY 2001: the National Center on Minority Health and Health Disparities receives \$130 million for its inaugural year for research on diseases and conditions that disproportionately affect minority groups. NIH plans to begin funding stem cell research in 2001 after putting into place a review board and strict guidelines on stem cell derivation; the final NIH budget does not contain a prohibition on stem cell research, but President-elect Bush has stated that he may take steps to block NIH funding of such research.
- The **National Aeronautics and Space Administration's (NASA)** total budget of \$14.3 billion in FY 2001, 4.8 percent more than FY 2000, is another piece of good news in 2000 after a bad 1999 of lost missions and cost overruns. Total NASA R&D, which excludes the Space Shuttle and its mission support costs, increases 5.3 percent to \$10.3 billion. The big winner is the Science, Aeronautics, and Technology (SAT) account, which receives \$6.2 billion, a stunning 10.7 percent above FY 2000. **Space Science** has 13.2 percent more than last year for a total of \$2.5 billion, including funding for a completely redesigned Mars program for the next decade. NASA receives \$2.1 billion for continued development and construction of the International Space Station, \$213 million less than FY 2000 because of a planned reduction in costs after several cost overruns last year. The Space Station now has a permanent three-person crew in three connected modules, with more modules on the way in 2001.

¹ NIH's R&D as shown in the Tables is slightly less than the total NIH budget after subtracting overhead and research training costs.

- The **Department of Energy (DOE)** went from crisis to crisis in 2000 but total DOE R&D in FY 2001 rises 12.3 percent to \$8.0 billion. In March, DOE moved its weapons-related activities to a new semi-autonomous agency within DOE called the **National Nuclear Security Administration (NNSA)**. The Weapons Activities program, the cornerstone of NNSA's mission to use science-based methods to ensure the safety and reliability of the nation's nuclear stockpile, receives \$2.5 billion for its R&D, a boost of 13.7 percent, including \$477 million, up \$80 million over FY 2000, for the Accelerated Strategic Computing Initiative. Despite controversies over ballooning project costs, construction of the National Ignition Facility (NIF) receives \$199 million, far more than the original \$74 million request in February. In the Science account, Congress provides \$3.0 billion for R&D, a substantial 13.8 percent boost consistent with the Clinton Administration's proposal for a more balanced research portfolio. The big winner in Science is Basic Energy Sciences, which receives \$1.0 billion for R&D in FY 2000 (up 29.7 percent). Most of the increase is for the Spallation Neutron Source (\$279 million, nearly double the FY 2000 funding level). Advanced Scientific Computing Research increases from \$128 million to \$168 million, a boost that will allow DOE to expand its participation in the IT R&D initiative. Other Science programs receive modest increases.
- Congress provides the **National Science Foundation (NSF)** with a large increase in FY 2001 to \$4.4 billion, an increase of 13.3 percent. **NSF's R&D** funding, which excludes NSF's education and training activities and overhead costs, totals \$3.2 billion (up 13.2 percent). Congress provides less than the requested 20 percent increase in NSF R&D, but the final budget contains substantial increases for most programs. Two research directorates receive increases of approximately 20 percent: the Computer and Information Science and Engineering (CISE) directorate receives \$483 million (up 24.5 percent), allowing CISE to expand dramatically its participation in the IT R&D initiative; the Social, Behavioral, and Economic Sciences (SBE) directorate receives \$176 million for a boost of 20.6 percent, including funds for a new Children's Research initiative. The large increase may be the first year of an effort by NSF supporters to double the NSF budget over five years.
- Funding for the **Department of Commerce's** R&D programs increases slightly in FY 2000. The National Institute of Standards and Technology (NIST) sees its R&D budget decline 8.5 percent to \$419 million because funding for NIST's Construction of Research Facilities declines from \$107 million to \$35 million; most of the FY 2000 funding was a one-time appropriation for a new Advanced Measurement Laboratory. NIST intramural laboratory R&D programs grow by 8.8 percent to \$257 million. Funding for Advanced Technology Program R&D grows by 6.8 percent to \$123 million despite a House vote earlier this year to eliminate the program. The National Oceanic and Atmospheric Administration's (NOAA) programs for natural resources and environment R&D increase by \$47 million or 8.0 percent to \$638 million.
- Thanks to a windfall of congressionally designated projects and a last-minute decision to allow a new mandatory grants program to proceed, **U.S. Department of Agriculture (USDA)** R&D totals \$2.0 billion in FY 2001, a boost of \$190 million or 10.8 percent. Congress allows the Initiative for Future Agriculture and Food Systems (IFAFS) program to spend its \$120 million allotment of mandatory funds in FY 2001 on its program of competitively awarded research grants, after earlier attempts to block it. Other competitively awarded research grants decline: the National Research Initiative receives

only \$106 million, well below \$119 million in FY 2000. Instead, Congress directs millions to congressionally designated research projects, including \$85 million (up 33.9 percent) for Special Research Grants and \$51 million in one-time projects in the June crop insurance bill.

- The **Department of the Interior's (DOI)** R&D budget rises 4.2 percent to \$597 million. The U.S. Geological Survey receives \$543 million for its R&D, a substantial 8.1 percent increase over FY 2000.
- The **Environmental Protection Agency (EPA)** has an FY 2001 R&D budget of \$686 million, \$39 million or 6.0 percent more than last year. The R&D total exceeds the request of \$673 million, but Congress reduces the request for R&D in the Climate Change Technology Initiative; most of the increase goes to more than 30 congressionally designated research projects, leaving most other EPA R&D programs with level funding.
- The **Department of Transportation (DOT)** has an R&D budget of \$701 million, a substantial boost of 15.5 percent or \$94 million over FY 2000. The Federal Aviation Administration receives \$292 million for R&D, a large gain of 29.3 percent because of guarantees of increased funding for FAA programs which became law earlier this year. Most DOT highway and traffic safety R&D programs increase substantially because of guaranteed funding increases written into a 1998 transportation law.

The full report offers 17 detailed funding tables, several charts, a chronology of the events in the FY 2001 budget process, an analysis of funding trends, and analyses of the impacts of the FY 2001 budget on each of the major R&D funding agencies. Individual agency analyses, historical tables, agency funding tables, and charts of recent funding trends are also available on the AAAS R&D Web site in the "FY 2001 R&D" section (URL at the end of this report).

Total U.S. R&D Funding in 2000 and Other Funding Trends

The good news for federal R&D in FY 2001 follows the good budget news of FY 2000, when the federal government recorded its largest budget surplus in history. The **final FY 2000 surplus** was \$237 billion, the largest surplus ever and the third year in a row of surpluses.² At 2.4 percent of Gross Domestic Product (GDP), it was the largest surplus as a share of the economy since 1948. It was also nearly double the FY 1999 surplus of \$124 billion. The non-Social Security surplus was \$87 billion in FY 2000, the second such surplus in a row, up dramatically from \$1 billion in FY 1999. As a result of these surpluses, the federal government has been paying off the national debt to the public for the past three years, and as a percentage of the economy the national debt is shrinking dramatically. The most current budget projections show even larger unified and non-Social Security surpluses in FY 2001, but in wrapping up the FY 2001 appropriations process Congress and the President increased discretionary spending dramatically to \$635 billion (well above the \$611 billion assumed in the projections, the amount necessary to keep pace with inflation), eating into projected surpluses. There is also increasing concern that the U.S. economy is heading toward a period of slower growth, which would reduce tax revenues and could thus drastically reduce and perhaps even eliminate projected surpluses.

² These figures represent the unified surplus. The Social Security trust funds and the U.S. Postal Service are officially classified as off-budget, so there are separate on-budget (all federal government revenues and programs except SS and USPS) and off-budget accounts.

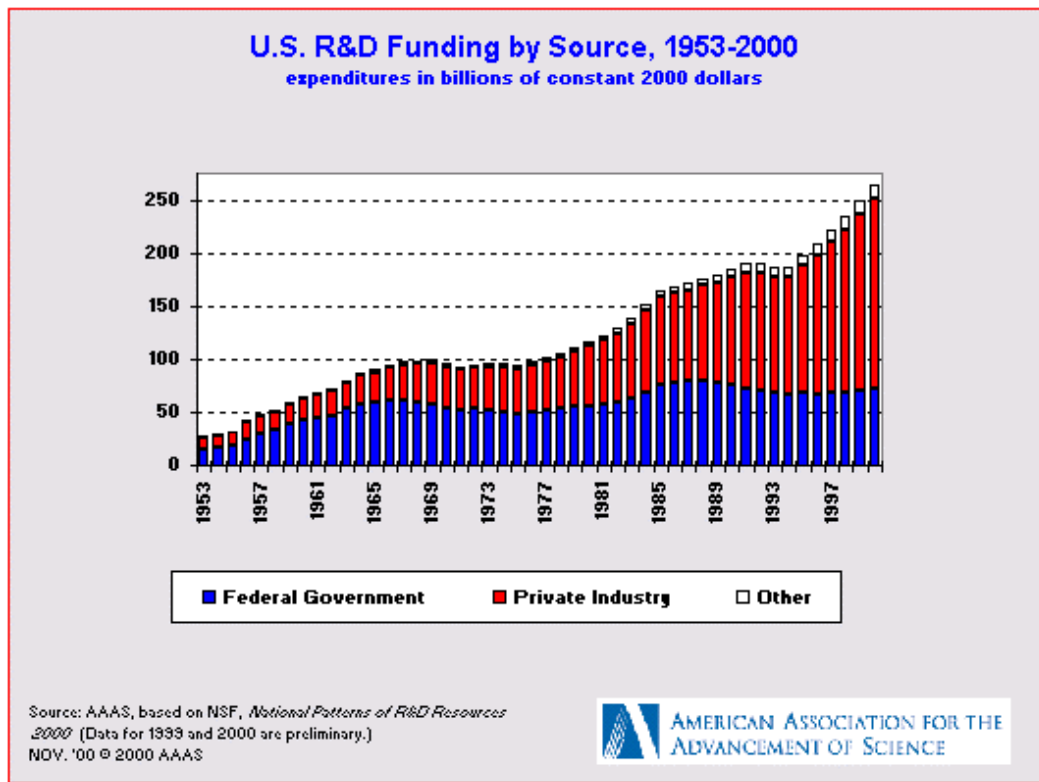


Figure 3.

As the federal investment in R&D, the U.S. economy, and the federal budget surplus all expand, and the national debt continues to shrink, there is also good news from U.S. industry. Once again, the **total U.S. R&D** enterprise continues to grow. Recently, the National Science Foundation (NSF) released its preliminary projections for total U.S. R&D in calendar years 1999 and 2000, including industry-funded R&D. NSF estimates that total U.S. R&D performance in 2000 will be \$264 billion (see Figure 3 and Table 5). This represents a 7.9 percent or nearly \$20 billion increase over the \$245 billion total in 1999, which itself was a 7.5 percent increase over 1998.

As shown in Figure 3, since 1994 total U.S. R&D has expanded dramatically due almost entirely to substantial increases in R&D funding from industrial firms. In 2000, U.S. industry is expected to spend \$179 billion on R&D with its own funds, an increase of 10.3 percent over the previous year, far outstripping the more modest growth in federal R&D. As Figure 3 shows, industry has consistently expanded its share of total U.S. R&D over the past four decades, and now funds two-thirds of total U.S. R&D. Other funding sources for R&D, though far smaller in dollar terms, are also expected to increase their R&D spending. This remarkable growth in industry R&D has been fueled by a record-setting economic expansion over the past ten years, the rapid growth of technology-dependent industries such as information technology and biotechnology relying heavily on R&D for future growth, and the ever-increasing importance of new technology as a key element in economic competition for a broad range of industries.

These increases in U.S. R&D spending cover all character-of-work categories. Despite worries in the mid 1990s that industry would cut back on its support of basic research, according to the NSF analysis industrial firms are expected to fund \$14.8 billion of basic research in 2000, an increase of 10.0 percent. This increase is far higher than the increase in federal support of basic research (up

5.1 percent), although the federal government continues to be the majority sponsor of basic research. Applied research and development are also expected to grow.

Because growth in total R&D is once again expected to exceed growth in the U.S. economy as a whole as measured by the Gross Domestic Product (GDP), NSF estimates that total U.S. R&D will reach 2.72 percent of GDP in 2000, up from 2.65 percent in 1999 and the highest share since 1967.

Heading into 2001, however, there is some doubt as to whether these large increases for industrial R&D can be sustained. In late 2000, there were abundant signs that the decade-long U.S. economic expansion was, if not coming to an end, at least entering a period of slower growth. Historically, industrial R&D has closely tracked the business cycle, so an economic slowdown may lead many companies to curtail their R&D activities. There is some question as to whether this historical correlation will hold up in the next economic slowdown or recession; some economists believe that heavily R&D-dependent high-tech industries will continue to invest heavily in R&D in the search for new technological breakthroughs regardless of economic conditions.

Publication Information

The AAAS publication *Congressional Action on Research and Development in the FY 2001 Budget*, from which this preview report is excerpted, will be available in mid-January from AAAS. **The full report, and supplementary material including detailed agency funding analyses, historical tables, and charts illustrating recent R&D funding trends, will be available on-line on December 29.** Ordering information is as follows:

Congressional Action on Research and Development in the FY 2001 Budget,
Kei Koizumi, Albert H. Teich, Stephen D. Nelson, Joanne Padrón Carney, 2000.
\$10.95; \$8.75 to AAAS members.

We are accepting advance orders for the report. Please send a check or purchase order and mailing information directly to AAAS Science and Policy Programs, 1200 New York Ave., NW #823, Washington, DC 20005 to receive the report as soon as it is published. The publication will be mailed automatically to all participants in the 25th Anniversary AAAS Colloquium on Science and Technology Policy (April 2000). After publication, the report may be ordered from the AAAS Distribution Center. Address: AAAS Distribution Center, P.O. Box 521, Annapolis Junction, MD 20701. For VISA / Mastercard orders call 1-800-222-7809 (8:30 AM - 5:00 PM ET). Fax orders to 301-206-9789. For shipments to CA and DC, add applicable sales tax. For shipments to Canada, add the GST. Please allow 2-3 weeks for delivery. Please add \$4.00 for postage and handling per order. Orders must be prepaid by check or accompanied by purchase order payable to AAAS.

- December 19, 2000

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Table 1. R&D by Agency in FY 2001 Appropriations (FINAL)

Table 1. Total R&D by Agency
R&D in FY 2001 Appropriations (FINAL)
(budget authority in millions of dollars)

	FY 2000 Estimate	FY 2001 Request	Final FY 2001 Appropriations				
			FY 2001 FINAL	Chg. from Request Amount	Percent	Chg. from FY 2000 Amount	Percent
Defense (military)	39,282	38,576	41,846	3,270	8.5%	2,564	6.5%
("S&T" 6.1,6.2,6.3 + Medical)	8,667	7,609	9,363	1,754	23.1%	696	8.0%
(All Other DOD R&D)	30,615	30,967	32,482	1,516	4.9%	1,868	6.1%
National Aeronautics & Space Admin.	9,777	10,040	10,298	258	2.6%	521	5.3%
Energy	7,117	7,639	7,994	355	4.7%	878	12.3%
Health and Human Services	18,082	19,168	20,829	1,661	8.7%	2,747	15.2%
(National Institutes of Health)	17,102	18,094	19,597	1,503	8.3%	2,495	14.6%
National Science Foundation	2,863	3,431	3,240	-190	-5.5%	377	13.2%
Agriculture	1,763	1,824	1,953	129	7.1%	190	10.8%
Interior	573	590	597	7	1.2%	24	4.2%
Transportation	606	778	701	-78	-10.0%	94	15.5%
Environmental Protection Agency	647	673	686	13	2.0%	39	6.0%
Commerce	1,073	1,148	1,111	-37	-3.3%	38	3.5%
(NOAA)	591	594	638	44	7.5%	47	8.0%
(NIST)	458	497	419	-78	-15.7%	-39	-8.5%
Education	233	271	263	-8	-2.9%	30	13.0%
Agency for Int'l Development	122	98	124	26	26.6%	2	1.7%
Department of Veterans Affairs	655	655	684	29	4.5%	29	4.5%
Nuclear Regulatory Commission	53	53	53	0	-0.2%	0	-0.2%
Smithsonian	113	122	119	-3	-2.3%	6	5.5%
All Other	376	362	393	31	8.7%	17	4.6%
Total R&D	83,334	85,427	90,891	5,464	6.4%	7,557	9.1%
Defense R&D	42,583	41,981	45,543	3,562	8.5%	2,960	7.0%
Nondefense R&D	40,751	43,446	45,348	1,901	4.4%	4,597	11.3%
Nondefense R&D minus NIH	23,650	25,353	25,751	398	1.6%	2,101	8.9%
Basic Research	18,965	20,259	21,207	948	4.7%	2,242	11.8%
Applied Research	17,577	18,355	20,024	1,669	9.1%	2,446	13.9%
Total Research	36,542	38,613	41,231	2,618	6.8%	4,689	12.8%
"21st Century Research Fund"	40,028	42,918	44,861	1,943	4.5%	4,833	12.1%

AAAS estimates of R&D in FY 2001 appropriations bills. Includes conduct of R&D and R&D facilities.

All figures are rounded to the nearest million. Changes calculated from unrounded figures.

December 19, 2000 - Final FY 2001 appropriations funding levels.

All figures are adjusted to reflect rescissions and across-the-board cuts.

Table 2. Basic and Applied Research in FY 2001 Appropriations (FINAL)

**Table 2. Estimated Research by Agency
R&D in FY 2001 Appropriations (FINAL)
(budget authority in millions of dollars)**

	FY 2000 Estimate	FY 2001 Request	Final FY 2001 Appropriations				
			FY 2001 FINAL	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 2000 Amount	Chg. from FY 2000 Percent
Basic Research:							
Health and Human Services	9,834	10,399	11,255	856	8.2%	1,422	14.5%
<i>National Institutes of Health</i>	9,832	10,397	11,252	855	8.2%	1,421	14.5%
National Science Foundation	2,492	2,987	2,831	-156	-5.2%	339	13.6%
Department of Defense	1,161	1,217	1,310	93	7.6%	149	12.8%
Department of Energy	2,237	2,376	2,412	37	1.6%	176	7.9%
National Aeronautics & Space Admin.	1,947	1,895	1,981	87	4.6%	35	1.8%
Department of Agriculture	692	740	756	16	2.1%	64	9.2%
Department of the Interior	61	63	64	1	2.0%	4	5.8%
Smithsonian	102	108	105	-3	-2.5%	3	3.2%
Environmental Protection Agency	58	58	62	5	8.0%	4	7.3%
Department of Commerce	41	53	51	-2	-4.6%	10	25.1%
All Other	342	363	378	15	4.3%	36	10.7%
Total Est. Basic Research	18,965	20,259	21,207	948	4.7%	2,242	11.8%
RESEARCH (basic and applied):							
Health and Human Services	15,608	16,522	17,947	1,425	8.6%	2,338	15.0%
<i>National Institutes of Health</i>	14,687	15,513	16,811	1,298	8.4%	2,123	14.5%
National Science Foundation	2,656	3,180	3,013	-167	-5.2%	358	13.5%
Department of Defense	4,841	4,428	5,397	969	21.9%	555	11.5%
Department of Energy	4,145	4,517	4,681	164	3.6%	536	12.9%
National Aeronautics & Space Admin.	4,332	4,713	4,886	172	3.7%	553	12.8%
Department of Agriculture	1,499	1,561	1,597	36	2.3%	98	6.5%
Department of the Interior	543	550	564	15	2.7%	22	4.0%
Environmental Protection Agency	445	440	478	38	8.6%	32	7.3%
Department of Commerce	821	895	882	-13	-1.5%	61	7.4%
NOAA	534	535	575	40	7.4%	41	7.6%
NIST	281	350	301	-49	-14.0%	20	7.2%
Department of Transportation	444	581	515	-66	-11.4%	71	16.0%
Department of Veterans Affairs	638	638	666	28	4.5%	28	4.5%
Department of Education	152	167	162	-5	-2.9%	10	6.7%
All Other	418	422	443	21	5.0%	25	6.0%
TOTAL EST. RESEARCH	36,542	38,613	41,231	2,618	6.8%	4,689	12.8%

AAAS estimates of basic and applied research in FY 2001 appropriations bills.

All figures are rounded to the nearest million. Changes calculated from unrounded figures.

December 19, 2000 - Final FY 2001 appropriations funding levels.

All figures are adjusted to reflect rescissions and across-the-board cuts.

Table 3. Major Functional Categories of R&D in FY 2001 Appropriations (FINAL)

**Table 3. Major Functional Categories of R&D
R&D in FY 2001 Appropriations (FINAL)
(budget authority in millions of dollars)**

	FY 2000 Estimate	FY 2001 Request	Final FY 2001 Appropriations				
			FY 2001 FINAL	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 2000 Amount	Chg. from FY 2000 Percent
Defense ¹	42,583	41,981	45,543	3,562	8.5%	2,960	7.0%
Nondefense ²	40,751	43,446	45,348	1,901	4.4%	4,597	11.3%
Space	8,746	9,106	9,324	218	2.4%	578	6.6%
Health	18,663	19,742	21,422	1,680	8.5%	2,759	14.8%
Energy	1,264	1,350	1,381	31	2.3%	117	9.3%
General Science	5,501	6,400	6,241	-159	-2.5%	740	13.5%
Natural Resources & Environ.	2,076	2,136	2,199	63	2.9%	123	5.9%
Agriculture	1,552	1,587	1,716	129	8.1%	164	10.6%
Transportation	1,637	1,712	1,675	-38	-2.2%	37	2.3%
Commerce	481	553	471	-82	-14.8%	-10	-2.0%
International	142	114	140	26	22.9%	-2	-1.3%
All Other	690	746	779	33	4.5%	89	12.9%
Total R&D	83,334	85,427	90,891	5,464	6.4%	7,557	9.1%

AAAS estimates of R&D in FY 2001 appropriations bills. Includes conduct of R&D and R&D facilities.

All figures are rounded to the nearest million. Changes calculated from unrounded figures.

Classifications generally follow the government's budget function categories except health (which here includes health R&D in HHS and VA).

¹ Includes DOD R&D and atomic energy defense R&D in DOE.

² Includes all R&D not in defense (domestic and international discretionary programs).

December 19, 2000 - Final FY 2001 appropriations funding levels.

All figures are adjusted to reflect rescissions and across-the-board cuts.

Table 4. "21st Century Research Fund" in FY 2001 Appropriations (FINAL)

**Table 4. "21st Century Research Fund" by Agency
R&D in FY 2001 Appropriations (FINAL)
(budget authority in millions of dollars)**

	FY 2000 Estimate	FY 2001 Request	Final FY 2001 Appropriations				
			FY 2001 FINAL	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 2000 Amount	Chg. from FY 2000 Percent
Health and Human Services	17,813	18,813	20,376	1,563	8.3%	2,563	14.4%
<i>(National Institutes of Health)</i>	<i>17,813</i>	<i>18,813</i>	<i>20,376</i>	<i>1,563</i>	<i>8.3%</i>	<i>2,563</i>	<i>14.4%</i>
National Science Foundation	3,897	4,572	4,416	-156	-3.4%	519	13.3%
Department of Energy	3,688	4,220	4,178	-42	-1.0%	490	13.3%
National Aeronautics & Space Admin.	4,896	5,165	5,369	204	3.9%	473	9.7%
Department of Defense	4,571	4,362	4,983	621	14.2%	411	9.0%
<i>(Basic Research)</i>	<i>1,161</i>	<i>1,217</i>	<i>1,310</i>	<i>93</i>	<i>7.6%</i>	<i>149</i>	<i>12.8%</i>
<i>(Applied Research)</i>	<i>3,410</i>	<i>3,144</i>	<i>3,673</i>	<i>528</i>	<i>16.8%</i>	<i>262</i>	<i>7.7%</i>
Agriculture	1,568	1,641	1,698	57	3.5%	130	8.3%
Commerce	832	894	815	-79	-8.8%	-18	-2.1%
Interior	813	895	883	-13	-1.4%	69	8.5%
Environmental Protection Agency	664	758	699	-59	-7.8%	35	5.3%
Veterans Affairs	321	321	350	29	9.1%	29	9.1%
Education	319	379	363	-16	-4.2%	44	13.9%
Transportation	646	899	732	-167	-18.6%	85	13.2%
Total "21st Century Fund"	40,028	42,918	44,861	1,943	4.5%	4,833	12.1%

Definitions for the 21st Century Research Fund do not correspond to definitions of R&D.

The Fund contains both R&D and non-R&D programs.

AAAS estimates of FY 2001 appropriations bills.

All figures are rounded to the nearest million. Changes calculated from unrounded figures.

December 19, 2000 - Final FY 2001 appropriations funding levels.

All figures are adjusted to reflect rescissions and across-the-board cuts.

Table 5. Total U.S. R&D, 1998-2000

Table 5. Total U.S. R&D, 1998-2000
(expenditures in millions of dollars)

(calendar years)	1998 Actual	1999 Preliminary	2000 Preliminary	% Change 1999-2000	% Share of Total ('00)
U.S. R&D by funding source:					
Federal Government	66,522	69,494	71,162	2.4%	26.9%
Industry	147,829	162,280	178,959	10.3%	67.7%
Universities and Colleges	5,166	5,534	5,951	7.5%	2.3%
Nonprofits	5,006	5,376	5,770	7.3%	2.2%
Nonfederal Government	1,993	2,143	2,322	8.4%	0.9%
Total U.S. R&D	226,515	244,828	264,165	7.9%	100.0%
U.S. R&D by performer:					
Federal Government	17,403	18,114	17,777	-1.9%	6.7%
Industry	167,102	182,017	199,170	9.4%	75.4%
Universities and Colleges	26,547	28,255	30,090	6.5%	11.4%
FFRDCs *	8,264	8,671	8,954	3.3%	3.4%
Nonprofits	7,198	7,772	8,174	5.2%	3.1%
Total U.S. R&D	226,515	244,828	264,165	7.9%	100.0%
U.S. R&D by character of work:					
Basic Research	40,892	42,515	45,471	7.0%	17.2%
<i>(from federal sources)</i>	20,289	21,361	22,441	5.1%	8.5%
<i>(from industry sources)</i>	13,366	13,436	14,777	10.0%	5.6%
Applied Research	45,866	52,269	56,704	8.5%	21.5%
Development	139,757	150,043	161,990	8.0%	61.3%
Total U.S. R&D	226,515	244,828	264,165	7.9%	100.0%
U.S. GDP** (billions of dollars)	8,760	9,255	9,708	4.9%	
U.S. R&D / GDP	2.59%	2.65%	2.72%		

Source: National Science Foundation, *National Patterns of R&D Resources, 2000*.

The complete data are available at <http://www.nsf.gov/sbe/srs/stats.htm>.

* Federally Funded Research and Development Centers.

** Gross Domestic Product.

These data are based on performer surveys of expenditures for calendar years, and thus differ from data presented elsewhere in this report (agency budget authority data by fiscal year). These data also exclude R&D facilities.