



December 6, 2004 –  
Final FY 2005 NIH Appropriations

## NIH Budget Growth Slows to 2 Percent in 2005

### Highlights

- Congress recently finalized an FY 2005 omnibus budget bill that provides \$28.6 billion to **the National Institutes of Health (NIH)**, a 2.0 percent or \$573 million increase (see Table 1), the smallest percentage increase in decades.

- **Most NIH institutes receive increases in a narrow range between 1.6 and 2.5 percent**; there are no clear favorites this year, unlike the past two years when biodefense research was heavily favored.

- **NIH research (basic and applied) increases just 1.8 percent** to \$27.5 billion, far below the growth rates of the past six years.

- **The final NIH budget falls short of the NIH request by \$156 million. The shortfall will likely mean that the total number of NIH Research Project Grants (RPGs) will rise less than the planned 1.4 percent**; the number of new grants could rise slightly, but only near the FY 2003 number after falling last year. The RPG proposal success rate is likely to fall below the 27 percent rate for 2004. The average grant size would rise just 1.3 percent, well below the 3.5 percent expected inflation rate for biomedical research.

- NIH's Roadmap for Medical Research will receive up to \$237 million in FY 2005, nearly double last year's funding level.

- NIH will soon put into place a plan called for by Congress earlier in the year to allow public access to scientific journal articles resulting from NIH-funded research within six months of publication.

- R&D in the Department of Health and Human Services (HHS) rises 2.2 percent to \$29.1 billion. Although less than the request, R&D in the Food and Drug Administration (FDA), earmarked projects in the Health Resources and Services Administration (HRSA) and biodefense research in the Office of the HHS Secretary increase dramatically (see Table 2).

### NIH R&D in FY 2005 Final Appropriations

On November 20, Congress came to an agreement on an FY 2005 omnibus appropriations bill (HR 4818), which incorporates the final version of the FY 2005 Labor-HHS appropriations bill. The House is expected to give final approval on December 6, and President Bush is expected to sign the bill into law on December 8. The omnibus bill keeps funding for domestic programs flat in FY 2005; the National Institutes of Health (NIH) budget does better than the average for domestic programs, even after factoring in a 0.80 percent across-the-board cut for most domestic programs. (All figures in this analysis reflect the across-the-board cut.) The omnibus provides NIH with a budget of \$28.6 billion in FY 2005, a \$573 million or 2.0 percent boost over last year that falls short of the NIH request by \$156 million. NIH classifies 97 percent of its budget as R&D, including R&D facilities (the remainder is for overhead costs and research training). The final budget contains \$27.8 billion for NIH R&D, also a 2.0 percent increase over last year but 0.5 percent short of the request. (For details of the NIH request, see Chapter 8 of *AAAS Report XXIX: R&D FY 2005* or the February 20 AAAS R&D Funding Update).

NIH and the NIH community are adjusting to diminished expectations after years of favored treatment. After a completed five-year doubling campaign involving 15 percent increases for each of the five years between 1998 and 2003 (see Figure 1), biomedical researchers hoped for a 'soft landing' in following years, or a gradual easing into slower growth rates. Instead, growth has slowed dramatically. NIH enjoyed steady budget growth over the past several decades, as shown in Figure 1, but growth accelerated sharply after FY 1998 and continued to FY 2003 during the five-year NIH doubling campaign. But then growth slowed down to just ahead of the inflation rate in FY 2004, and slows down even further in FY 2005.

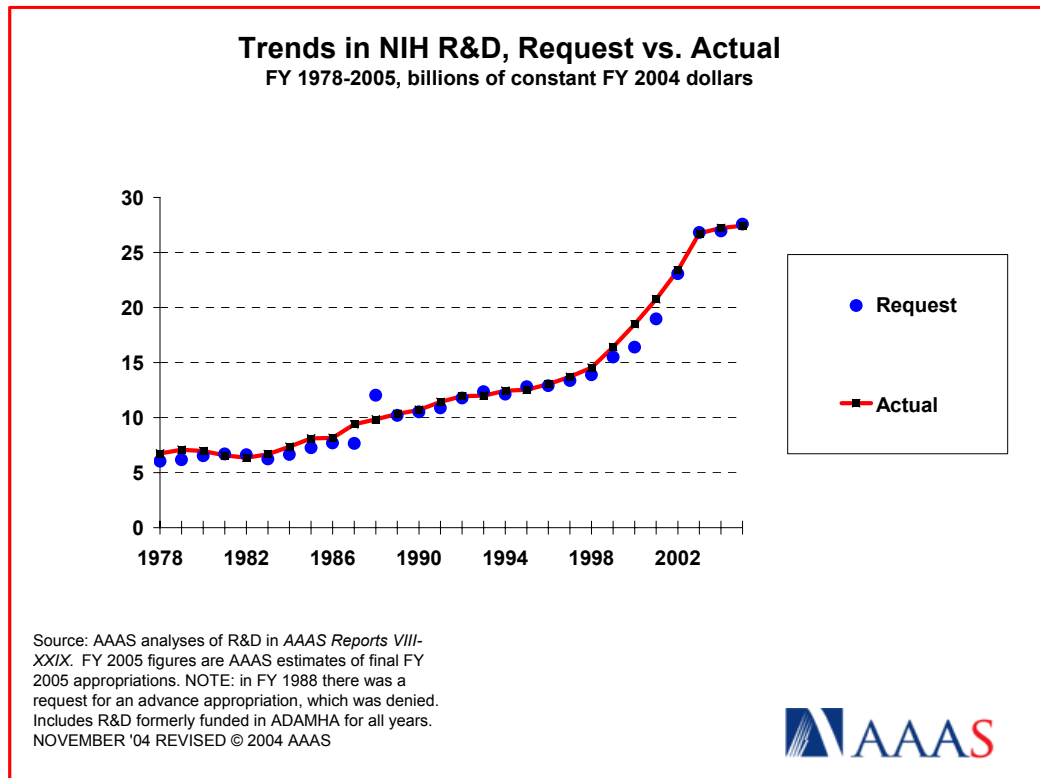


Figure 1. (click on the image to view or download a full-page color PDF version of the chart)

**Most NIH institutes receive increases in a narrow range between 1.6 and 2.5 percent** within the tight overall funding environment (see Table 1). There are no clear favorites, unlike the past two years when biodefense research, mostly in the National Institute of Allergy and Infectious Diseases (NIAID), was heavily favored.

**The final appropriation, because it falls short of earlier NIH plans for FY 2005, could cause NIH to fall short in its plans to allow research projects grants (RPG) funding to increase.** The majority of NIH's budget is distributed to external performers through Research Project Grants (RPGs), which are investigator initiated, peer reviewed, and competitively awarded. In February, NIH estimated that the request would support a record 37,744 RPGs, an increase of 515 awards over FY 2004 (up 1.4 percent). Because RPGs are multi-year grants, the number of new grants initiated in FY 2005 would be far smaller. In FY 2005, the number of new grants would rise slightly to 10,393, but only back to the FY 2003 level after falling this year. The final appropriation, falling 0.5 percent short of the request, will likely result in fewer total and new grants than previously estimated.

**The success rate for new grant applications could dip below 27 percent** in FY 2005, down from a high of 32 percent in FY 2001 and the lowest since FY 1995 because of recent surges in the number of applications outpacing the number of grants awarded. Although the number of RPGs has increased from 25,000 in the early '90s to more than 35,000, the number of grant applications has increased so fast that the success rate is now well below the success rates of the NIH doubling period 1998-2003 when they

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exceeded 30 percent. The FY 2005 request estimated that nearly every institute would fund a smaller percentage of proposals in FY 2005 than in the past, despite the recent doubling of the NIH budget. Expected success rates vary by institute, each of which conducts its own grant solicitation process, from a low of 15 percent (NIBIB) to a not-so-high rate of 33 percent (NHLBI and NIDDK). Among the largest institutes, the National Cancer Institute (NCI) expects a success rate of just one in four applications (24 percent), down steadily from 33 percent in 1998 before the doubling campaign. The National Heart, Lung and Blood Institute (NHLBI)'s 33 percent success rate may be high among the institutes in FY 2005, but would be down from 36 percent three years ago. Even the National Institute of Allergy and Infectious Diseases (NIAID), whose budget has grown the most dramatically recently, has seen the pool of applications grow even faster so that its 27 percent expected success rate in FY 2005 would represent a steady downward trend from 43 percent in 1997, again before the NIH doubling campaign. **Every NIH institute (except NIEHS) would have a lower success rate in FY 2005 than in at least one of the years just before the NIH doubling campaign. All these success rates could be even lower in FY 2005 because each institute received less than requested.**

Even for successful applicants, there would be some disappointments in the budget. NIH planned to award a **1.3 percent average increase for all grants between FY 2004 and FY 2005; not only could the final appropriation require a scaling back of the increase, but even the requested increase** would have fallen well behind the NIH-calculated Biomedical Research and Development Price Index (BRDPI) that attempts to calculate the inflation rate for goods and services purchased by the NIH budget. Earlier this year, NIH calculated the BRDPI increase for FY 2005 to be 3.5 percent. (AAAS, and the federal government, uses the economy-wide GDP deflator to adjust R&D dollars for inflation.)

**The average size of competing RPGs is set to decline in FY 2005.** The average new grant in the FY 2005 request was estimated at \$347,300, 0.6 percent below the expected average of \$349,300 last year, though slightly above the \$338,600 average of 2003. Much of the decline is due to an unusual number of large, one-time grants in FY 2004, according to NIH; the average new multi-year grant would be 1.0 percent larger, but again the final NIH budget, coming in below the request, could cause the increase to shrink or even disappear.

**NIH will fund \$297 million in R&D facilities and capital equipment in FY 2005, up 32 percent from last year** but a sharp drop from \$1.1 billion the year before. Much of this funding comes from the Buildings and Facilities account, which increases 11 percent to \$110 million in FY 2005; in 2003, this account was \$639 million because of a major investment in biodefense facilities construction. The B&F appropriation funds intramural construction at NIH facilities, while in the NIAID budget there is \$149 million allocated for extramural construction grants to build an additional 20 extramural biosafety (level 3) laboratories around the nation. The NIAID funding represents the second phase after a one-year pause in FY 2004; in FY 2003, NIAID initiated the first round of extramural biosafety facilities construction with \$373 million mostly for BSL-4 facilities.

**Congress saved a program for extramural construction from termination, but at a greatly reduced funding level. NIH planned to discontinue an annual \$120 million program for extramural construction** in the National Center for Research Resources (NCRR) in the FY 2005 request, leaving NCRR the only NIH institute to see its budget decline, but Congress provided \$30 million to continue the program. NCRR is still the only institute to see its budget decline (down 5.4 percent to \$1.1 billion).

The final omnibus bill contains only minor quibbles with NIH's policies. The bill's accompanying language denies NIH's request to fully fund the multi-year costs of selected grants entirely in the FY 2005 budget; instead, NIH must continue to fund all grants year by year except for a few small grants. NIH made a similar request last year, also denied. The bill also contains an annually renewed provision prohibiting NIH from funding human embryo research or any research in which human embryos would be destroyed.

**NIH will soon put into place a plan to allow public access to scientific journal articles resulting from NIH-funded research within six months of publication.** A few months ago, the report accompanying the House Labor-HHS bill included nonbinding language calling on NIH to outline a policy by December to

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allow public access to all NIH-funded research results. In response, NIH published a notice announcing a draft policy for public comment that would respond to the report language, and accepted comments on the draft until last month. The omnibus bill contains language supporting the earlier House language and calling for NIH to take into account the public comments in formulating a final policy. The draft policy would require that “grantees and supported Principal Investigators provide the NIH with electronic copies of all final version manuscripts upon acceptance for publication if the research was supported in whole or in part by NIH funding.” NIH would then archive the manuscript in its PubMed Central database six months after publication, making it freely available to the public. NIH is expected to finalize the details of this policy shortly, with only minor changes to the draft.

### **NIH Priority Areas**

**Congress approved the funds necessary for NIH to carry out an expanded Roadmap for Medical Research.** Last year, NIH Director Elias Zerhouni introduced a Roadmap for Medical Research involving all the NIH institutes and centers and aimed at three areas of NIH research: improving clinical research (dubbed “Re-engineering the Clinical Research Enterprise”), encouraging interdisciplinary research (“Research Teams of the Future”), and providing new knowledge and research tools to assist other researchers (“New Pathways to Discovery”). Congress approved \$12 million in the Office of the Director (OD) to begin the Roadmap, but with contributions from the other ICs and other OD funds total Roadmap funding was \$128 million last year. Total Roadmap funding will nearly double to \$237 million in FY 2005 with \$60 million coming from OD and the remainder coming from a tap of up to 0.63 percent of the other institutes’ FY 2005 budgets.

**Biodefense R&D continues to be a high priority in the NIH portfolio** with an investment of \$1.7 billion in FY 2005, up 3.8 percent from last year. As recently as three years ago, the NIH investment was only \$162 million. Most NIH biodefense R&D is funded by the National Institute of Allergy and Infectious Diseases (NIAID), which became the second-largest NIH institute in the aftermath of the fall 2001 anthrax attacks. NIAID would continue to award biodefense research grants in FY 2005, complete the establishment of 10 extramural Regional Centers of Excellence in Biodefense and Emerging Infectious Disease Research (RCE) with the designation of the final 2 centers, provide \$149 million for the second phase of extramural construction grants for biosafety level (BSL) 3 and 4 laboratories around the nation, and conduct animal and clinical trials of various candidate vaccines. In addition to funds in the NIH budget, there is an additional \$47 million in new funds from the Office of the (HHS) Secretary for NIH to spend on developing medical countermeasures against nuclear or radiological terrorist attacks.

### **R&D in Other HHS Agencies**

Total R&D in the Department of Health and Human Services (HHS) will be \$29.1 billion in FY 2005, an increase of 2.2 percent driven primarily by the NIH budget. Among the other HHS agencies, R&D in the Food and Drug Administration (FDA) increases by 14.3 percent to \$154 million, in part to boost the FDA’s laboratory and science capabilities in food safety. R&D in the Office of the Secretary will surge dramatically by 21.5 percent to \$148 million, most of which will be transferred to other HHS agencies such as NIH for medical countermeasures (see above) and the Centers for Disease Control and Prevention (CDC) for anthrax vaccine research and biosurveillance R&D. The Office of the Secretary will be taking on an expanded role in biodefense; in addition to its expanded R&D funding, the office recently took back ownership and management of the Strategic National Stockpile (SNS) of countermeasures such as treatments and vaccines against bioterror threats, and also gained legal authority to select eligible countermeasures for the \$5.6 billion, 10-year Project Bioshield funded by the Department of Homeland Security (DHS) to buy future products for the SNS. (See the AAAS R&D Funding Update on the Department of Homeland Security for details of Project Bioshield.) Finally, R&D in the Health Resources and Service Administration (HRSA) more than quadruples to \$101 million because of nearly \$80 million in R&D earmarks, mostly for laboratory construction projects in university medical schools and teaching hospitals around the country.

## Impacts and Historical Trends for NIH R&D

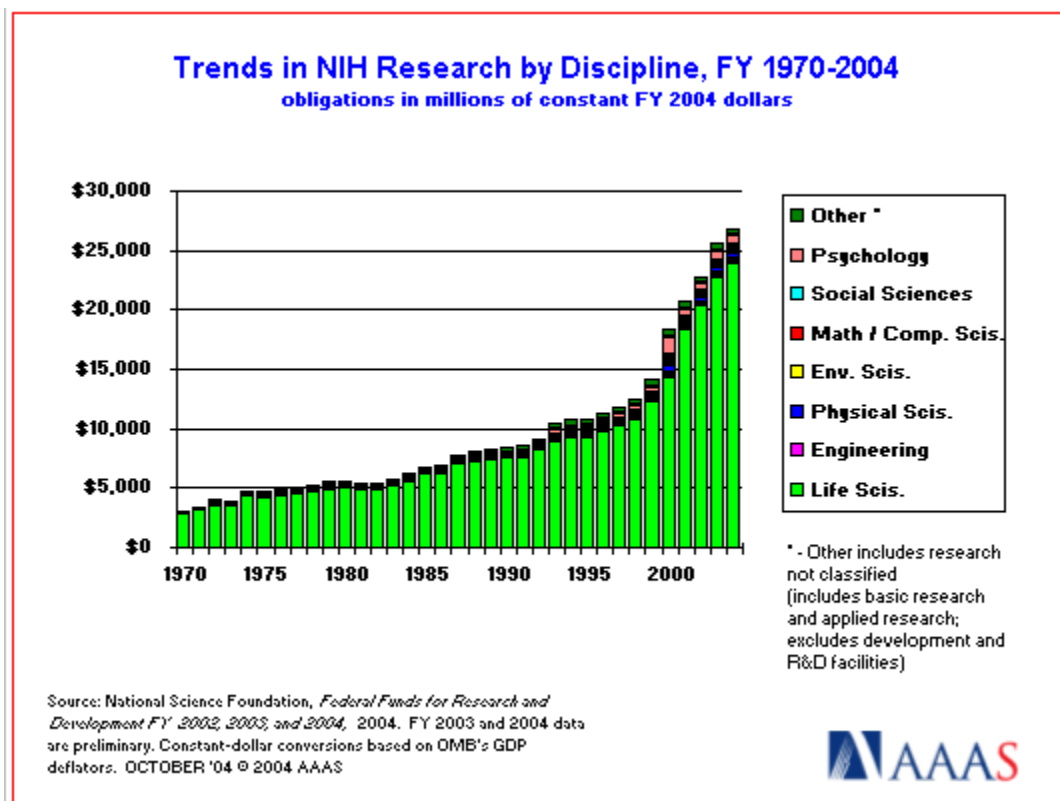


Figure 2. (click on the image to view or download a full-page color PDF version of the chart)

Although other R&D funding agencies have struggled to maintain their budgets in the past several years, NIH has enjoyed extraordinary success on Capitol Hill, and its budget growth accelerated between FY 1998 and 2003. As shown in Figure 1 and Figure 2, NIH has enjoyed steady growth in its R&D budget over the past two decades. NIH's budget growth accelerated during the NIH doubling campaign (in non-inflation adjusted terms) in the five years to FY 2003. But in FY 2004, growth slowed down considerably and slows down further in the enacted FY 2005 budget. Figure 2 also shows that NIH continues to invest 90 percent of its research portfolio in the life sciences, nearly exclusively biology and medical research. Thus, its recent spectacular budget growth has mostly benefited the life sciences; among other disciplines, psychology research makes up 3 percent of the NIH portfolio but no other discipline exceeds 2 percent. NIH support for these other disciplines like chemistry and computer sciences have grown dramatically as well, but they have remained relatively constant, small shares of an expanding total.

As shown in Figure 3, NIH provides nearly 80 percent of all federal support for the life sciences, and nearly 90 percent of federal support for the sub-discipline of the biological sciences. NIH also funds more than 80 percent of all federal psychology research. For most other science and engineering disciplines, NIH plays a relatively minor funding role. One exception is chemistry, for which the National Institute of General Medical Sciences (NIGMS) is a major sponsor and provides more than 30 percent of all federal support for chemistry. NIH is also a large supporter of social and behavioral sciences research. In FY 2005, because even the historically modest NIH budget growth would still far outpace growth in other agencies' research budgets, NIH alone is expected to fund a record 48 percent of all federal support for basic and applied research.

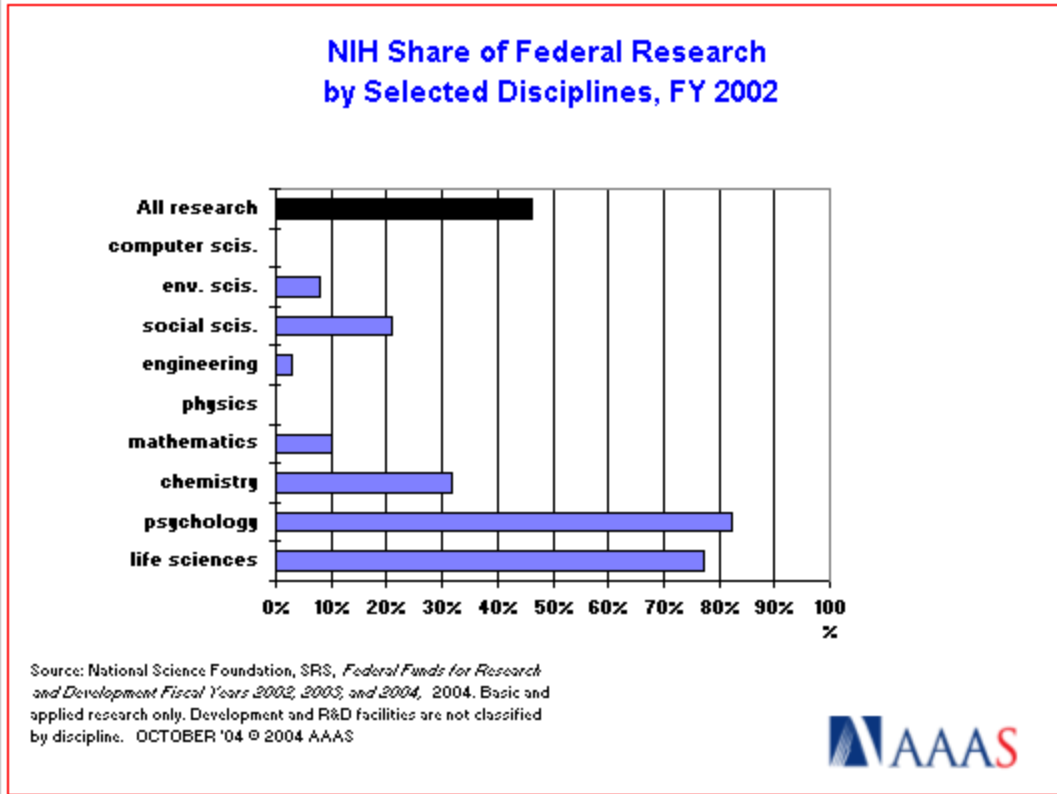


Figure 3. (click on the image to view or download a full-page color PDF version of the chart)

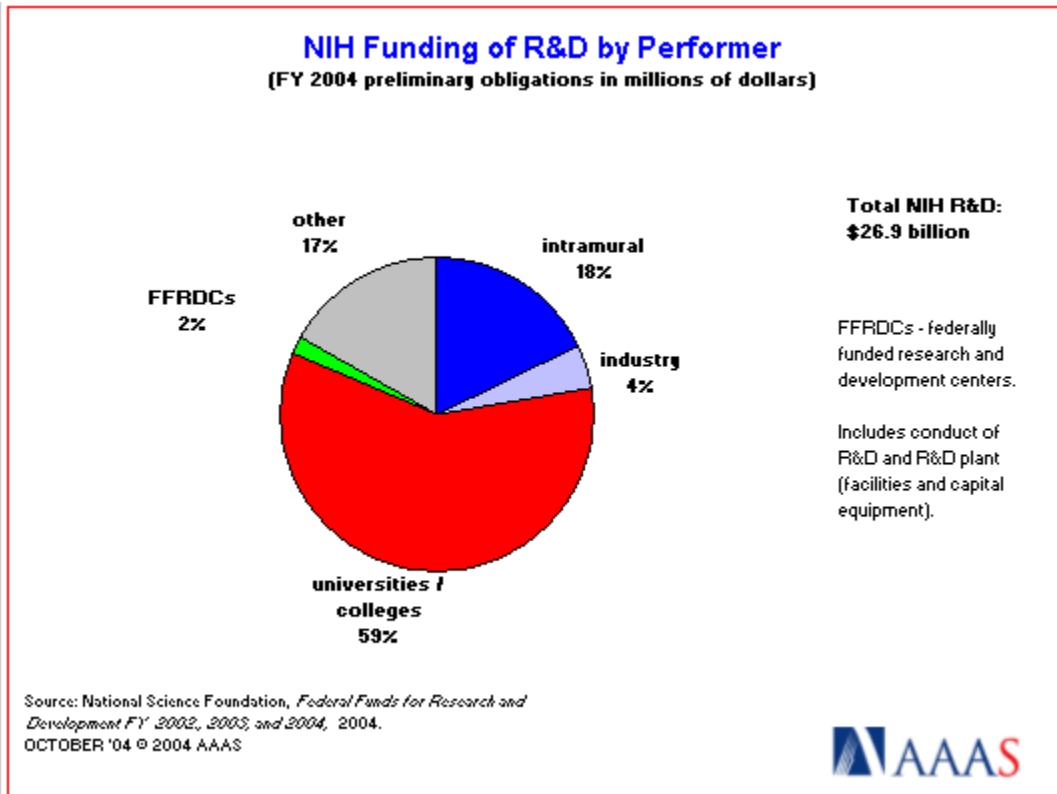


Figure 4. (click on the image to view or download a full-page color PDF version of the chart)

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**NIH alone now accounts for two-thirds of all federal support for R&D in colleges and universities.**

Figure 4 shows that a majority of HHS R&D funds go to colleges and universities; because of the size of the NIH budget in comparison to other federal agencies, NIH is the dominant funding source for nearly all colleges and universities with medical schools. NIH's intramural laboratories, mostly in Maryland, perform a fifth of total NIH R&D. Nearly all of the 17 percent of NIH R&D which goes to 'other' performers (see Figure 4) goes to independent nonprofit institutions, including non-university research hospitals and medical research foundations; NIH provides two-thirds of all federal R&D funds to nonprofits. Even with the moderating growth in NIH R&D in the FY 2005 budget, universities and colleges and medically oriented nonprofits can expect some increases in federal R&D support in FY 2005, especially those that are competitive in biodefense research, while the NIH laboratories will also receive increases.

**NIH R&D is performed primarily in six states.** Just over half the NIH R&D portfolio is spent in California, Massachusetts, Maryland, New York, Pennsylvania, and Texas, each receiving more than \$1 billion annually from NIH. The FY 2005 budget provides \$220 million for NIH's Institutional Development Award (IDeA) program, up from \$214 million in FY 2004. IDeA provides support to enhance the research capacities of 23 states (and Puerto Rico) that have been underrepresented in winning NIH funds in the past. In FY 2002, just 8.5 percent of the NIH R&D portfolio went to these states, less than either California or Massachusetts received.

### **Outlook and Next Steps**

The omnibus bill is likely to be signed into law the week of December 6, bringing to a close a disappointing budget season for NIH compared to recent years.

Already, there is mounting concern about what FY 2006 portends for NIH. With Congress and the President apparently committed to reducing the budget deficit in half within the next five years primarily through holding down domestic spending, the consequences for NIH are becoming clearer. The FY 2005 budget contained preliminary projections for the NIH budget out to FY 2009; recently, the Bush Administration signaled that it intends to follow through on the broad outlines of these projections in the FY 2006 budget proposal scheduled for release in February. In FY 2006, the NIH budget could fall to \$28.2 billion, giving back even the modest increase for this year. Although the details of the FY 2006 request are still being negotiated inside the executive branch, NIH would be lucky to emerge with even a flat request much less an increase. (For more on the five-year projections for federal R&D, see the April 22 (revised May 7) AAAS Analysis of the Outyear Projections for R&D in the FY 2005 Budget.)

(This analysis is one of a series of AAAS R&D Funding Updates on the FY 2005 congressional appropriations process. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D in FY 2005 appropriations, is available on the AAAS R&D Web Site (<http://www.aaas.org/spp/rd>) in the "FY 2005 R&D" or the "What's New" sections.)

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Table 1. National Institutes of Health R&amp;D in FY 2005 Final Appropriations

**Table 1. National Institutes of Health  
Final Congressional Action on R&D in the FY 2005 Budget  
(budget authority in millions of dollars)**

	FY 2004 Estimate	FY 2005 Request	House-Senate Conference				
			<b>FY 2005 Approved</b>	Chg. from Request		Chg. from FY 2004	
				Amount	Percent	Amount	Percent
Cancer	4,736	4,870	<b>4,827</b>	-43	-0.9%	91	1.9%
Heart, Lung and Blood	2,878	2,964	<b>2,942</b>	-22	-0.7%	64	2.2%
Dental and Cranofacial Research	383	394	<b>392</b>	-2	-0.5%	9	2.3%
Diabetes, Digestive and Kidney <sup>1</sup>	1,821	1,876	<b>1,864</b>	-12	-0.7%	43	2.3%
Neurological Disorders and Stroke	1,501	1,546	<b>1,540</b>	-6	-0.4%	39	2.6%
Allergy and Infectious Diseases <sup>2</sup>	4,303	4,440	<b>4,404</b>	-36	-0.8%	101	2.4%
General Medical Sciences	1,905	1,960	<b>1,944</b>	-16	-0.8%	39	2.1%
Child Health & Human Development	1,242	1,281	<b>1,271</b>	-10	-0.8%	29	2.3%
Eye	653	672	<b>669</b>	-2	-0.4%	16	2.5%
Environmental Health Sciences <sup>3</sup>	709	731	<b>725</b>	-6	-0.8%	15	2.2%
Aging	1,025	1,056	<b>1,052</b>	-3	-0.3%	28	2.7%
Arthritis & Musculoskeletal & Skin	501	515	<b>511</b>	-4	-0.8%	10	2.1%
Deafness and Comm. Disorders	382	394	<b>394</b>	1	0.2%	12	3.2%
Mental Health	1,381	1,421	<b>1,412</b>	-8	-0.6%	31	2.2%
Drug Abuse	991	1,013	<b>1,007</b>	-6	-0.6%	16	1.6%
Alcoholism and Alcohol Abuse	428	442	<b>438</b>	-4	-0.8%	10	2.3%
Nursing Research	135	139	<b>138</b>	-1	-0.8%	3	2.5%
Research Resources	1,179	1,094	<b>1,115</b>	21	1.9%	-64	-5.4%
Human Genome Research	479	493	<b>489</b>	-4	-0.8%	10	2.1%
Fogarty International Center	65	67	<b>67</b>	-1	-0.8%	1	2.0%
National Library of Medicine	308	317	<b>315</b>	-2	-0.5%	7	2.2%
Office of the Director	327	360	<b>358</b>	-1	-0.4%	31	9.5%
Buildings and Facilities	99	100	<b>110</b>	11	10.8%	11	11.4%
Complementary & Alternative Med.	117	121	<b>122</b>	1	0.8%	5	4.4%
Biomed. Imaging/Bioengineering	289	298	<b>298</b>	1	0.2%	9	3.3%
Minority Health & Health Disparities	191	197	<b>196</b>	-1	-0.3%	5	2.5%
<b>Total NIH Budget</b>	<b>28,028</b>	<b>28,757</b>	<b>28,601</b>	<b>-156</b>	<b>-0.5%</b>	<b>573</b>	<b>2.0%</b>
<i>subtract:</i>							
- Estimated Research Training	749	764	<b>760</b>	-4	-0.5%	11	1.4%
- Other Non-R&D	59	71	<b>70</b>	0	-0.5%	11	18.4%
<b>Total NIH R&amp;D</b>	<b>27,220</b>	<b>27,923</b>	<b>27,771</b>	<b>-152</b>	<b>-0.5%</b>	<b>551</b>	<b>2.0%</b>

AAAS estimates based on FY 2005 appropriations bills. Includes conduct of R&D and R&D facilities.

FY 2004 and FY 2005 request figures based on OMB R&D data and supplemental agency budget data.

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

<sup>1</sup> Includes \$150 million in FY 2004 and FY 2005 in mandatory funding for juvenile diabetes.

<sup>2</sup> Includes \$149 mil. in FY 2004 and \$100 mil. in FY 2005 for the Global Fund for HIV/AIDS, Tuberculosis and Malaria.

<sup>3</sup> Funding for all years includes Superfund-related transfers and appropriations from the VA-HUD bill.

**FY 2005 Approved figures adjusted to reflect across-the-board reductions in the FY 2005 omnibus bill.**

**November 24, 2004 - AAAS estimates of final FY 2005 appropriations bills.**

Table 2. Department of Health and Human Services R&D in FY 2005 Final Appropriations

**Table 2. Department of Health and Human Services  
Final Congressional Action on R&D in the FY 2005 Budget  
(budget authority in millions of dollars)**

	FY 2004 Estimate	FY 2005 Request	FY 2005 Approved	House-Senate Conference			
				Chg. from Request		Chg. from FY 2004	
				Amount	Percent	Amount	Percent
National Institutes of Health	27,220	27,923	<b>27,771</b>	-152	-0.5%	551	2.0%
Centers for Disease Control	521	530	<b>537</b>	7	1.2%	16	3.0%
Food and Drug Administration	135	161	<b>154</b>	-7	-4.2%	19	14.3%
Centers for Medicare & Medicaid Services	78	68	<b>38</b>	-30	-44.4%	-40	-51.5%
Health Resources and Services Admin.	22	57	<b>101</b>	44	77.0%	79	358.6%
Healthcare Research and Quality	327	327	<b>316</b>	-11	-3.3%	-11	-3.3%
Administration for Children & Families	41	98	<b>43</b>	-55	-56.2%	2	4.6%
Office of Aging	3	0	<b>0</b>	0	--	-3	-100.0%
Office of the Secretary	122	197	<b>148</b>	-49	-24.8%	26	21.5%
<b>Total HHS R&amp;D</b>	<b>28,469</b>	<b>29,361</b>	<b>29,108</b>	<b>-253</b>	<b>-0.9%</b>	<b>639</b>	<b>2.2%</b>

AAAS estimates based on FY 2005 appropriations bills. Includes conduct of R&D and R&D facilities.

FY 2004 and FY 2005 request figures based on OMB R&D data and supplemental agency budget data.

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