

## National Institutes of Health in the FY 2008 Budget

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### HIGHLIGHTS

- **The National Institutes of Health (NIH) budget would fall \$329 million or 1.1 percent to \$28.8 billion in 2008 from the recently finalized 2007 budget** (see Table II-9).
- **Most NIH institutes and centers (IC's) would see their budgets remain flat for the fourth year in a row**, though in 2007 IC's would be freed of their obligation to transfer 1.2 percent of their budgets to the NIH-wide Roadmap for Medical Research, so they would have a small 2007 increase. But in 2008 they would once again transfer 1.3 percent of their budgets to the Roadmap, resulting in a 1.3 percent cut for most.
- NIH R&D spending, 97 percent of the total NIH budget except for some training and overhead costs, would fall 1.2 percent or \$333 million to \$28.1 billion.
- NIH would continue to fall well behind its own calculations of biomedical research inflation, estimated at 3.7 percent both this year and 2008. The NIH budget would fall 12 percent from 2004 to 2008 based on these calculations, and 8 percent based on economy-wide inflation.
- The Office of the Director (OD) budget balloons to \$1.1 billion in 2007 to centralize Roadmap funding, but would fall to \$517 million in 2008. The overall Roadmap would total \$486 million, up slightly from the 2007 final funding level.
- Because an unusually large number of existing research grants would end, NIH expects to offer more than 10,000 new research grants in 2008 for the first time since 2004, but at the cost of canceling inflationary adjustments for existing grants and cutting other programs such as intramural research and training funds (see Table II-10).

- R&D in the other Department of Health and Human Services (HHS) agencies combined would rise 3.1 percent to \$1.3 billion because of increases for healthcare quality and children's research (see Table II-8).

**OVERVIEW OF THE FY 2008 NIH BUDGET**

The National Institutes of Health (NIH) is the second-largest supporter of R&D in the federal government, after the Department of Defense. In its mission to promote biomedical research and other fundamental inquiries that may lead to medical advances, it is by far the largest federal supporter of basic research, applied research, and R&D at colleges and universities, and has a disproportionate impact on support for the biomedical life sciences and related fields.

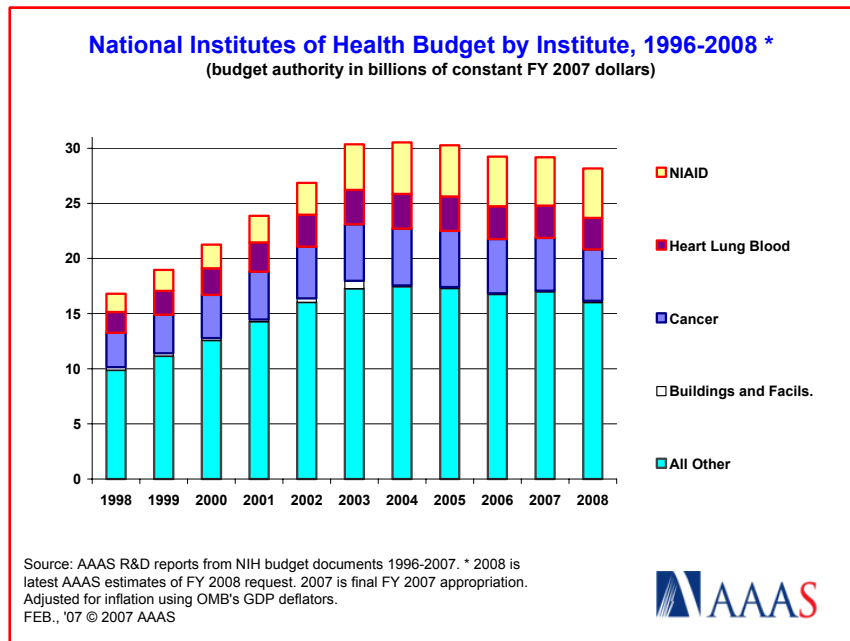


Figure 1.

The FY 2008 NIH budget of \$28.8 billion would be down \$329 million from the recently finalized 2007 budget, or a 1.1 percent cut (see Table II-9). A year ago, the Bush Administration requested \$28.6 billion for 2007, but the 109<sup>th</sup> Congress failed to complete 2007 appropriations; only in the last few weeks did the new 110<sup>th</sup> Congress

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add an unexpected \$600 million to the request to bring NIH to a final total of \$29.2 billion this year, a 2.3 percent increase over the previous year. President Bush signed the 2007 appropriation into law on February 15. The \$329 million cut becomes a \$529 million cut after adjusting for an extra \$200 million to the Global Fund for HIV/AIDS on top of the usual \$100 million, money that would be transferred out of NIH. If enacted as requested, 2008 would mark only the second time the NIH budget would decline since 1970 (2006 was the other year).

NIH classifies 97 percent of its budget as R&D, including R&D facilities. (The remainder is for overhead costs and research training.) NIH R&D would total \$28.1 billion next year, again a cut (down 1.2 percent) compared to the final 2007 appropriation. Recent budget trends of cuts or flat funding represent a sharp turnaround after a completed five-year doubling campaign involving 15 percent increases for each of the years between 1998 and 2003 (see Figure 1). Growth in the NIH budget slowed sharply in 2004, and in inflation-adjusted terms NIH funding has declined since then except for a slight uptick in 2007. The 2008 budget would continue the downward trend within a shrinking overall domestic budget.

NIH funding would lag well behind inflation in the economy as a whole, projected at 2.4 percent next year (see Figure 1). The 2008 NIH budget would be 7.8 percent below the 2004 peak after adjusting for inflation. But NIH would fall even further behind in its own calculations of biomedical research inflation. NIH calculates a Biomedical Research and Development Price Index (BRDPI), an index that attempts to calculate the inflation rate for goods and services purchased by the NIH budget. Recently, NIH projected the BRDPI increase for FY 2008 to be 3.7 percent, the same rate as 2007. In recent years, the BRDPI inflation rate has outpaced the economy-wide inflation rate by close to 2 percentage points a year. Using BRDPI, the 2008 budget would be nearly 12 percent less than the 2004 budget in biomedical inflation-adjusted terms. (AAAS and the federal government generally use the economy-wide GDP deflator to adjust R&D dollars for inflation.)

#### **NIH INSTITUTES IN THE FY 2008 BUDGET**

The NIH budget is actually appropriated in 26 separate budget accounts, roughly corresponding to NIH's institutes and centers (IC's; see Table II-9). There are 20 institutes with separate budgets, along with four centers,

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an Office of the Director (OD), and a Buildings and Facilities account. There are three other centers that are not separately budgeted.

**In the FY 2008 budget, nearly all IC's would see their budgets remain flat for the fourth year in a row.** Among the 20 independent institutes, only the National Institute of Allergy and Infectious Diseases (NIAID) would receive a significant increase of \$209 million to \$4.6 billion, but almost entirely because of an extra \$200 million contribution to the Global Fund for HIV/AIDS. Among the 19 other institutes, only the National Institute of Biomedical Imaging and Bioengineering (NIBIB) would see an increase greater than 1 percent, amounting to just \$4 million for a total of \$300 million. All of the other institutes, including the largest National Cancer Institute (NCI), would have slightly less money in 2008 than in 2005 even before inflation is factored in.

At least for 2007, however, flat funding for most IC's contained in the 2007 appropriation actually represents an increase of 1.2 percent. In the current fiscal year, the Office of the Director (OD) sees its budget increase dramatically from \$478 million to \$1.1 billion, primarily because Congress decided to allocate all funding for trans-NIH initiatives such as the Roadmap for Medical Research within OD. The 2008 budget proposes to distribute this funding among the IC's again, for an apparent 53 percent cut in OD down to \$517 million. In 2007, the IC's are freed from the obligation to transfer 1.2 percent of their budgets to the Roadmap, resulting in a 1.2 percent increase for their core programs compared to 2006. But on the flip side, the 2008 budget reinstates the transfer at 1.3 percent, meaning IC's with apparently flat funding in 2008 would actually have 1.3 percent less for their core programs than the current year. The 2007 OD budget includes, in addition to \$483 million for trans-NIH initiatives (the \$443 million requested for total Roadmap funding plus \$40 million in new money for Junior Pioneer Awards), \$69 million for the National Children's Study. This study is transferred from the National Institute of Child Health and Development (NICHD), where it received \$11 million in 2006.

Because of stagnant and declining funding in recent budgets and the 2008 request, all NIH IC's, except the Office of the Director, have lost ground significantly in inflation-adjusted terms (see Figure 1). The largest institute, the National Cancer Institute (NCI), would see its budget remain at \$4.8 billion in 2008, 9.6 percent below the 2004

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funding level in real terms. The National Heart, Lung, and Blood Institute (NHLBI) would have \$2.9 billion in 2008, an 8.9 percent inflation-adjusted loss compared to 2004. The other NIH institutes would see similar losses. Even NIAID, which received billions of dollars in additional funds in the aftermath of the fall 2001 anthrax attacks to become the second-largest NIH institute, has lost ground in more recent years with a \$4.6 billion 2008 request, 4.3 percent below its 2004 budget in real terms. (The losses would be even greater if calculated with the biomedical research BRDPI inflation index.)

**NIH FUNDING MECHANISMS**

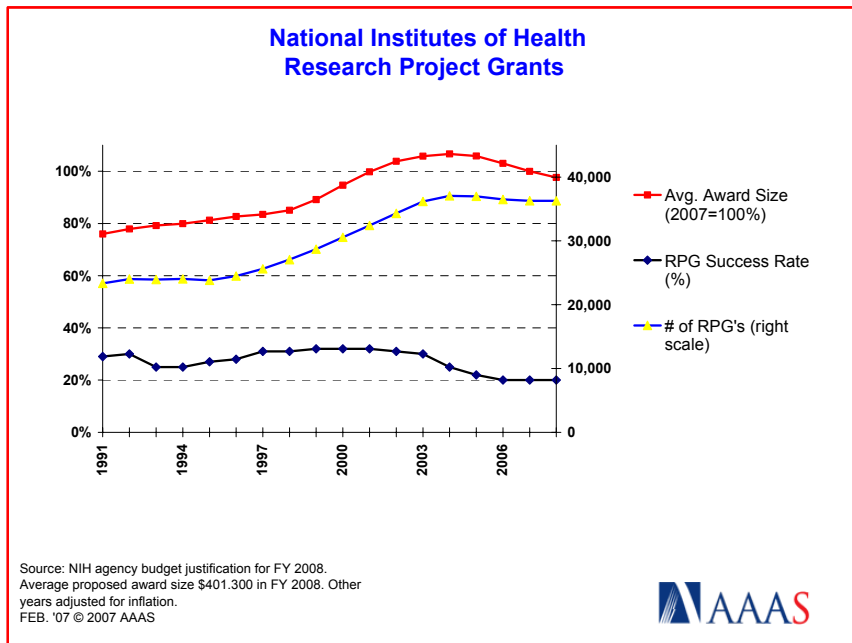


Figure 2.

The majority of NIH’s budget is distributed to external performers through Research Project Grants (RPG’s), which are investigator initiated, peer reviewed, and competitively awarded throughout the NIH budget. NIH projects a decline in the number of RPG’s in 2008, from a high of 37,060 in 2004 down to a projected 36,205 next year (see Table II-10 and Figure 2). Because of a large number of existing RPG’s ending this year, NIH expects to offer 10,188 new RPG’s in 2008, the first time since 2004 that new RPG’s would exceed 10,000. (RPG’s last 3.7 years

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on average, and nearly all are funded a year at a time in successive budgets.)

Total funding for RPG's would be \$14.6 billion in 2008, down from the likely 2007 allocation and the 2006 total (see Table II-10). RPG funding has declined steadily in real terms after peaking in 2004. Not only have RPG numbers declined, but the average RPG continues to lose ground to inflation (see Figure 2). In the 2008 budget, NIH once again warns researchers that they are unlikely to see any inflationary adjustments for the second or later years for their grants. In real terms, the average RPG of \$401,300 would be 8.4 percent smaller in 2008 than in 2004.

From funding an average of 1 out of 3 grant applications earlier in the decade, NIH now expects to fund 1 in 5 applications. **NIH projects the success rate for new grant applications will stabilize at 20 percent in 2007 and 2008, down steeply from a high of 32 percent in FY 2001** (see Figure 2) because recent surges in the number of applications have far outpaced the number of grants awarded. Although the number of RPG's increased from 25,000 in the early '90s to more than 35,000 (see Figure 2), 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 exceeded 30 percent. Several NIH institutes would see success rates well below the 20 percent NIH-wide average. The largest National Cancer Institute projects a 19 percent success rate in 2008, as do NHLBI and the National Institute of Neurological Disorders and Stroke (NINDS). The National Institute of Environmental Health Sciences (NEHS), most recently at 22 percent in 2006, projects only a 13 percent success rate in its 2008 grant competitions, while Roadmap funding could be particularly hard to come by with a 10 percent projected success rate next year.

NIH also distributes about 10 percent of its budget through R&D contracts (see Table II-10). **Funding for R&D contracts would continue to increase, by 8.9 percent to \$3.0 billion in FY 2008.** R&D contract funding has grown dramatically over the last few years as biodefense research became a top priority in NIH, doubling to \$2.8 billion between FY 2001 (before the fall 2001 anthrax attacks) and FY 2004. Expanded contract awards through the Global Fund for HIV/AIDS would be responsible for nearly all of the 2008 increase.

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NIH funding of research centers would also continue to grow in FY 2008, by 1.2 percent to \$2.9 billion, for support of 1,376 centers. These multi-year multidisciplinary commitments of funds, mostly to universities, have grown in importance over the past decade and would hit an all-time high of 10 percent of the total NIH budget in FY 2008. The 2008 growth would be due to center funding growing within the NIH roadmap.

The institutes also operate an enormous federal research enterprise, mostly in Bethesda, MD. Intramural research would total \$2.7 billion in 2008, continuing the downward trend of recent years in a tight budget environment where extramural funding remains the top priority.

**NIH is heavily involved in research training** of the next generation of biomedical researchers. Research training programs would receive \$761 million in FY 2008, down slightly from the current year (see Table II-10). Tight budgets would keep NIH at approximately 17,520 full-time training positions. Stipends for predoctoral and postdoctoral trainees would stay flat again, with no adjustments for inflation.

**A new program to encourage new investigators, launching this year, would expand in FY 2008.** Pathways to Independence, starting up with \$15 million this year and increasing to \$31 million in 2008, would provide up to 5 years of support for scientists just beginning their research careers. These awards, which combine research and training support, are designed to transition scientists from mentored research to independent research and would go partway to alleviating the great difficulty that new investigators have in winning their first full NIH grants. (The \$16 million increase for Pathways would make up most of the \$24 million increase in “Other Research” (see Table II-10).)

### **NIH PRIORITY AREAS**

NIH continues to expand funding for clinical research, high-risk basic research, new research tools, and multidisciplinary collaborative research in the **NIH Roadmap for Biomedical Research**. The total roadmap, after increasing from \$240 million to \$329 million within a declining total NIH budget in 2006, increased to \$483 million in the just-finalized 2007 appropriation, and would increase slightly in 2008 to \$486 million (see Table II-10). Congress, however, chose to appropriate all Roadmap 2007 money in OD instead of having all IC's contribute 1.2 percent of

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their budgets to a Common Fund. The FY 2008 budget proposes to have each IC contribute 1.3 percent of its budget to the Common Fund, with OD kicking in \$122 million. Thus, within a flat funding profile each IC should have 1.2 percent more in 2007 than in 2006 to fund its own activities, but would lose 1.3 percent in 2008.

Among the three large themes in the Roadmap, Research Teams of the Future, aimed at encouraging interdisciplinary research and high-risk basic research, appear to suffer a cut in funding to \$82 million in 2008, but only because Congress provided a last-minute \$40 million infusion of new funds in 2007 for a new Junior Pioneer Awards program to fund first-time or young investigators as a supplement to the NIH Director's Pioneer Awards, which are five-year awards to individual investigators to encourage high-risk basic research. Most of this part of the Roadmap would fund interdisciplinary research centers and interdisciplinary research training. The goal of Re-engineering the Clinical Research Enterprise, focused on enhancing clinical research training and clinical research networks, would decline 8.7 percent to \$166 million but within the total, awards for Clinical and Translational Science would increase dramatically from \$90 million to \$131 million. The New Pathways to Discovery theme would increase 15.2 percent to \$208 million for its diverse portfolio of programs, ranging from funding of molecular libraries to nanomedicine to computational biology, all centered on cutting-edge research to build biological databases and other research tools that could benefit all biomedical research. The big increases in 2008 would go nanomedicine development centers and the creation of the NIH Bioactive Small Molecule Library and Screening Centers. The 2008 request also proposes \$30 million for new Roadmap initiatives in new focus areas that have yet to be finalized.

Biodefense R&D continues to be a priority in the NIH portfolio, though its rapid growth days are over. NIH would devote \$1.7 billion for biodefense R&D in FY 2008, down from the previous 2 years. But biodefense research would continue to grow, as construction costs for biodefense facilities decline to zero in 2008 from \$25 million in 2007 and far more in previous years. This portfolio now includes not only the traditional biodefense research portfolio focused on bioterror threats but also chemical threats, including the development of medical countermeasures against chemical attacks, and nuclear / radiological threats, including the development of medical countermeasures against radiation exposure.

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HIV/AIDS research continues to be another focus area in the budget. The HIV/AIDS R&D portfolio would remain stable at \$2.9 billion for the fourth year in a row in 2008. The majority (\$1.5 billion) of this research would be funded by NIAID, the lead institute for AIDS research. Included in the FY 2008 budget is \$300 million to be transferred to the **Global Fund to Fight HIV/AIDS, Malaria, and Tuberculosis** – an international public-private partnership to provide grants for the prevention, treatment, and cure of these diseases, up from \$100 million a year for the last several years.

Among other research areas, an area small in funding but large in policy interest is embryonic stem cell research. Since President Bush's announcement in August 2001 that NIH would fund human embryonic stem cell research only on stem cell lines that were created before that date and approved by NIH, there has been ongoing controversy over how the policy might limit progress on stem cell research. A bill to greatly expand stem cell lines eligible for federal funding was vetoed by the President last summer. Congress is expected to try once again to lift the current restrictions later this year. In the meantime, NIH reports that its funding of human embryonic stem cell research using the pre-August 2001 approved stem cell lines is \$37 million this year. But total NIH-funded stem cell research has been growing and could reach \$641 million this year, mostly on non-human stem cells or on human non-embryonic cells.

### **R&D IN OTHER HHS AGENCIES**

Total R&D in the Department of Health and Human Services (HHS) would be \$29.3 billion in FY 2008, a 1.0 percent cut (see Table II-8). NIH dominates the HHS R&D portfolio, but the rest of HHS (excluding NIH) would fund a still-substantial \$1.3 billion in R&D in FY 2008, an increase of 3.1 percent because of increases for healthcare quality and children's research.

### **OUTLOOK FOR THE NIH BUDGET**

As physical sciences research continues to be a focus in the 2008 budget through the American Competitiveness Initiative, biomedical research continues to be in the same boat as other domestic programs in tight budgetary conditions. Four years of falling budgets are a sharp contrast

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from the 15 percent annual increases during the NIH doubling period of 1998 to 2003. As the 2008 budget goes to Congress, the biomedical research community can take some comfort in the fact that the new 110th Congress gave an unexpected \$600 million boost to NIH as it wrapped up the unfinished 2007 appropriations bills, an early show of support for the importance of biomedical research and a sharp contrast from the year before when a Congress trying to wrap up 2006 appropriations turned a flat request into a cut. The additional 2007 funding improves the funding picture somewhat for NIH IC's in 2007, and makes it more likely that the 2008 budget will also end up as an increase when Congress gets finished.