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Main agencies hang on to funds in skimpy US science budget

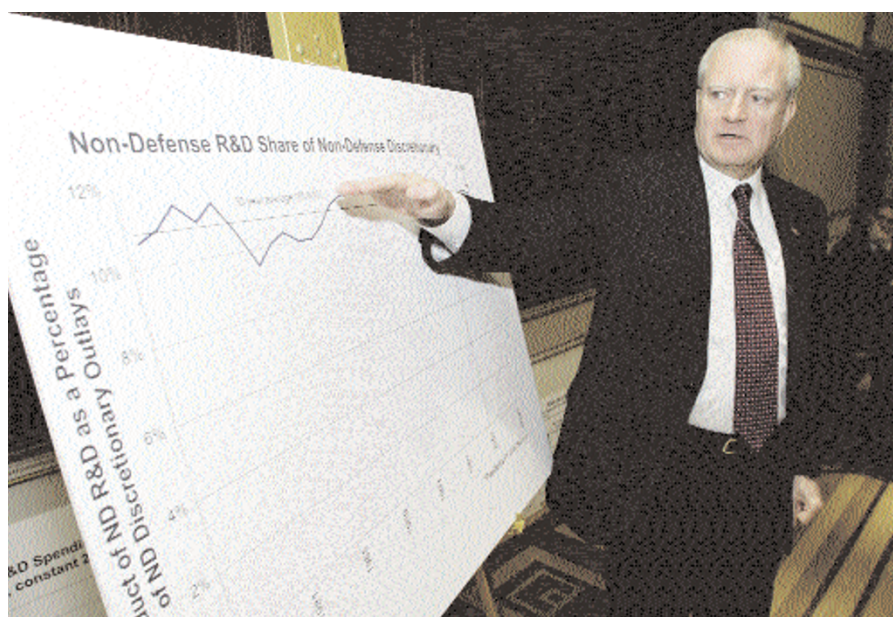
Geoff Brumfiel, Washington

US research funding looks set to take a hit this year as the government struggles to contain a swelling budget deficit while covering the rising cost of the Iraq war.

On 7 February, President George W. Bush laid out his US\$2.57-trillion plan for federal government spending in the 2006 fiscal year, which begins on 1 October. The proposed budget would cut "federal spending in science and technology" by 1.4% next year, to \$60.8 billion. This is the best measure for expenditure on innovative research and development, as defined by the US National Academies.

"The budget is not flat, but it's pretty close," said John Marburger, the president's science adviser, at a press conference in Washington. "There are some difficult cuts that will present challenges to science agencies and programmes." The budget has to be approved by Congress before it can become law.

The largest and most prestigious scientific agencies managed to hold their own in the budget proposal, however. Under the proposal, funding at the National Institutes of Health (NIH), for example, will rise very slightly to \$28.8 billion. But that modest increase is a far cry from the 15% hikes it enjoyed for several years until 2003 (see



Picture this: John Marburger, Bush's science adviser, presents the US president's budget for 2006.

'Disappointment in slow-down for biomedical funding', below). NASA, meanwhile, will see its budget grow by 2.4% to around \$16.5 billion. Much of that increase will be absorbed by preparations for future manned missions to the Moon and Mars (see 'Science squeezed by NASA focus on exploration', overleaf).

And the National Science Foundation (NSF), which supports most non-biomedical research at US universities and which some anticipated would face the first budget cut in its history, seems to have received a reprieve. Under Bush's request, its 2006 budget will grow by 2.4%, to \$5.6 billion. ▶

Disappointment in slow-down for biomedical funding

The engine that drives US biomedical research may finally be running out of gas.

The National Institutes of Health (NIH) was held to a 0.7% budget increase in the 2006 proposal that President George W. Bush sent to Congress earlier this week. The biomedical agency will see its budget climb by \$196 million, to \$28.8 billion, if Congress approves the request.

That meagre increase does not come close to keeping pace with the 3.2% increase in biomedical costs that the government predicts for next year. So biomedical scientists funded by the NIH will increasingly feel the pinch.

Elias Zerhouni, the NIH director, tried to put a brave face on the situation at a press briefing on 7 February, pointing out that other domestic

programmes are being dramatically cut or even eliminated. "In relative terms," he said, "we're happy to have an increase. But it will now require tough choices to be made."

One of those tough choices includes the decision to fund 400 fewer postdocs than are being funded in 2005, although those who do get NIH support will be given slightly better salaries and more generous healthcare benefits. The NIH will manage to fund an extra 250 new and competing investigator-initiated grants, but as old grants expire the total number that the agency provides will fall by 400, to less than 39,000.

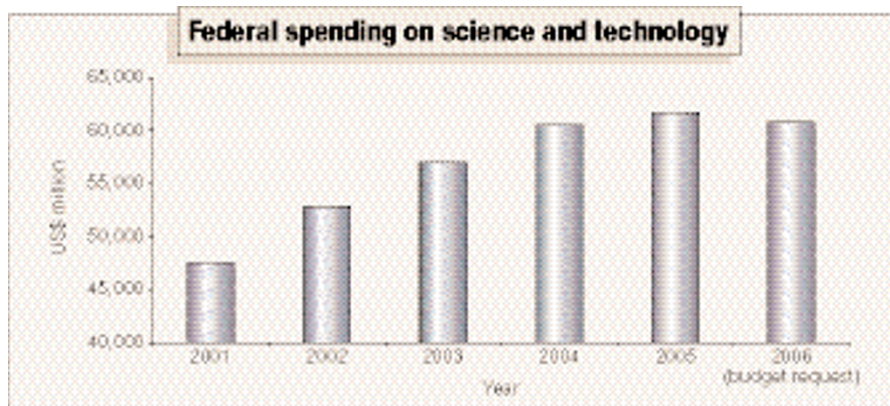
At the briefing, Bush's new health secretary, Michael Leavitt, defended the 2006 proposal,

pointing out that the NIH budget doubled over the five years from 1999 to 2003. "We have planted. It's now time for us to harvest the fruit," he said.

But research advocates expressed disappointment, saying that this budget will force the NIH to neglect the tremendous research opportunities generated by the doubling. David Moore, a lobbyist at the Association of American Medical Colleges, says: "It's going to be increasingly competitive for scientists to get even top-quality research funded" by the NIH.

"That's a pretty sobering message — particularly for young people considering careers in science," Moore adds.

Meredith Wadman



However, NSF grantees can expect tough times next year, close observers of the agency say. For example, \$43 million of the agency's \$132-million increase will be needed to operate icebreakers that clear the way to the NSF's polar research stations — an undertaking that until this year was paid for by the Coast Guard. This "isn't new research, it's a service that you need to have", says one critic of the administration. Another \$76 million of the increase is for major facilities, including EarthScope — a global network of seismic and other geophysical instruments — and IceCube, a neutrino observatory planned for the Antarctic.

In order to find money for additional research grants, the NSF intends to make deep cuts in programmes that support science education in US schools. The proposal reduces education funding by 12.4% to \$737 million. "Put the cuts together over the past two years, and the education budget is down by about 22%. They are clearly reducing the NSF's role" in school education, says Joel

Widder, a former agency official who works for a lobbying firm, Lewis-Burke Associates, based in Washington DC.

But in a budget that is fairly flat for science and technology overall, the modest gains at the NSF, NIH and NASA are offset by cuts elsewhere. The Department of Energy's office of science, for example, which funds most US physics facilities and research, will be cut by 4% to \$3.5 billion. Energy department laboratories will probably feel the brunt of this in their operating budgets. "We've known for some time that this would be a grim budget and now it's confirmed," says Tom Ludlam, a physicist at Brookhaven National Laboratory in New York state.

The Department of Defense, another major supporter of the physical sciences, is facing proposed cuts in its support of basic and applied research of 14% to \$5.5 billion. "This is not a happy situation," reflects Michael Lubell, head of public affairs for the American Physical Society. ■

Additional reporting by Emma Marris and Jessica Ebert.

Science squeezed by NASA focus on exploration

President George W. Bush's Moon-Mars programme marches onwards in his 2006 budget request for NASA: the proposal includes sharp funding increases for a new Crew Exploration Vehicle and robotic lunar missions to pave the way for future human travel in space.

But Bush's request on behalf of the agency for \$16.45 billion is just 2.4% more than its 2005 budget — half the level of increase that the White House promised a year ago. And that means something at NASA has to give.

One prominent casualty is the Jupiter Icy Moons Orbiter (JIMO), which was deemed too expensive and risky for the first use of nuclear propulsion (see *Nature* 433, 342; 2005). NASA will now mount a less ambitious nuclear mission, and defer the Jupiter probe indefinitely. "We'd like to be able to do JIMO one day," says Craig Steidle, who heads NASA's Office of Exploration Systems.

The agency's newly merged Earth science and space science offices will see their budget drop by 1% to just under \$5.5 billion in 2006, if

Congress accepts the proposal. The increase of 2% to \$1.9 billion for Solar System exploration and increases for the robotic Mars and Moon missions (\$858 million, up 17% from last year) mean that other projects will be squeezed. For example, a New Frontiers mission to the outer Solar System is likely to slip, as is the launch of the Kepler probe, which will search for planets around other stars and was planned to launch in October 2007. Spending on advanced technologies such as aerocapture and solar electric propulsion will also be deferred.

Astronomy missions feeling the pinch include the Space Interferometry Mission, whose launch will be put back two years to 2012. A Joint Dark Energy Mission with the Department of Energy misses another chance for a new budget start. And although the James Webb Space Telescope remains on track for a 2011 launch, NASA is — for now — sticking with its decision to drop the Hubble telescope in the ocean when its batteries fail in 2008. **Tony Reichhardt**

US budget in brief

Bioterror still top priority...

Efforts to counter bioterrorism remain a priority in this year's proposal, even as budgets tighten for other health programmes.

John Marburger, the president's science adviser, said that more than \$700 million would be spent over several years rebuilding biodefence research facilities at Fort Detrick, Maryland.

At the Centers for Disease Control and Prevention — which is taking an overall cut of 6% — funding for bioterrorism preparations will be boosted by \$56 million. The Food and Drug Administration will spend an extra \$30 million on preventing food contamination with bioterror agents. And the National Institutes of Health will inject \$97 million into developing countermeasures to nuclear and chemical threats.

...but no new nukes

The Department of Energy will ask for just \$4 million to fund research into an earth-penetrating nuclear weapon — a retreat from last year, when Congress rejected its request for \$28 million for the project.

The change suggests that the administration is giving some ground to critics of the 'bunker-buster' device. The money would be used only for "analysis" of the new weapon, not for its development, say department officials.

Rock solid

Extra money for earthquake monitoring and for the troubled Landsat Earth-viewing satellite are among the few upturns in an otherwise flat \$933-million request for the US Geological Survey.

Appropriations shake-up

As Congress starts to review the budget request, it is contemplating major reform of the powerful committees that determine science-agency funding.

Capitol Hill is buzzing over a proposal by Jerry Lewis (Republican, California), chairman of the Appropriations Committee in the House of Representatives, to dissolve 3 of the 13 appropriations subcommittees in the House and the Senate that carve up the budget between them. Among the subcommittees that might be axed are those dealing with funding for NASA, the National Science Foundation and the Environmental Protection Agency.

If this happens, these agencies will come under the jurisdiction of other subcommittees — possibly those dealing with energy and water, where they would compete directly with the Department of Energy for funds. The Republican leadership in Congress is expected to decide whether to pursue the reform by the end of next week.