Medical research scores big in US stimulus bill

Congress votes to give generous boosts to other agencies too.

The National Institutes of Health (NIH) could call him Saint Specter. Cancer survivor Arlen Specter of Pennsylvania was one of three moderate Republican senators whose votes were crucial in pushing a \$787-billion economic stimulus package through the US Congress. In the Senate, Specter had introduced an amendment to triple the NIH's share of the spending, calling it "scandalous" that the country doesn't spend more on medical research. His proposed \$10 billion of extra spending for the NIH over two years made it through to the final version of the bill agreed by both houses of Congress on 13 February.

That spending on biosciences did well compared with other science spending is not a great surprise. "Generally, the NIH gets all the big funding because people think they're going to save lives that way," says Vernon Ehlers, a physicist and member of the House of Representatives (Republican, Michigan). "Members of Congress feel a vote for the NIH is a vote for good health." What has been a surprise to many is the sheer amount of beneficence. Although there was plenty of money for physical sciences, too, in the bill, the sums were nothing like so spectacular.

The stimulus package, which is one-third tax cuts and two-thirds spending, contains

some \$21.5 billion for scientific research and development across all agencies, according to an analysis by the American Association for the Advancement of Science. In relative terms, the National Science Foundation (NSF) did even better than the NIH, as its \$3-billion award is almost half its annual budget (see 'The stimulus bill: who got what'). The Department of Energy, while receiving a relatively modest \$1.6 billion for its research-oriented Office of Science, will get a huge sum agency-wide — about \$40 billion for a variety of energy and energy-efficiency projects.

"The stimulus package is a singular event in the history of science funding," says John Marburger, former presidential science adviser and head of the Office of Science and Technology Policy under George W. Bush.

President Barack Obama was expected to sign the bill into law shortly after *Nature* went to press. After that, agencies have 60 days to present spending plans to the White House, and then cheques are meant to be cashed quickly: most spending must be completed by 30 September 2010.

The bill is meant to get government money into the faltering economy speedily. The speed with which it was put together meant that individual members of Congress, such as Specter,

Senator Arlen Specter's efforts got the National Institutes of Health \$10 billion in extra money.

S. WALSH/AP

were able to wield huge influence. A version of the bill that circulated as it was being finalized was covered in strike-throughs and hand-scrawled marginalia that exemplified how quickly hundreds of millions of dollars in science funding could appear, or disappear, at the stroke of a pen. Marburger, for one, questions whether the Obama administration, which is still naming the heads of key science agencies (see story below), was able to exert as much control over the legislation as it wanted.

What began as a bill that was supposed to be limited to scientific infrastructure ended up supporting mostly research and grants, notes Michael Lubell, director of public

John Holdren: adviser on science, fish and wine

John Holdren, US President Barack Obama's choice as chief science adviser, faced a single criticism during his otherwise gentle Senate confirmation hearing on 12 February: over the years he had warned of disasters that have yet to materialize.

Given Holdren's qualifications as a physicist and engineer with nearly four decades of work on energy, climate and nuclear proliferation behind him, it was about all the critics had to go on. The job fell to Louisiana Republican David Vitter, who peppered Holdren with gloomy assessments dating back to 1971 about overpopulation, an unspecified

eco-catastrophe, thermonuclear war and global warming.

Calmly pointing out that he was 26 in 1971, Holdren said one of the things he has learned since is that predicting the future is "difficult". And although he said he no longer thinks it useful to focus on population, he didn't yield any ground on global warming: "I think it is important to call attention to the dangers that society faces," he told Vitter.

The Senate is expected to confirm Holdren's nomination soon, along with that of Jane Lubchenco, a marine biologist from Oregon State University who will head the National Oceanic and Atmospheric

Administration (for coverage of their confirmation hearings, see <http://tinyurl.com/dyljpt>).

As chief of the Office of Science and Technology Policy (OSTP), Holdren will lead a staff of about 60 that provides technical advice on daily decisions, budgets and the full range of federal policy. In many ways, friends and colleagues say, he has been training for this position his entire career.

"John is enormously focused and incredibly persuasive," says Henry Lee, who until recently co-taught a course with him on energy technology, policy and economics at Harvard's Kennedy School of

Government. "I think in a matter of months he will be a major intellectual driver in this administration."

Holdren has a history of getting things done. Beginning in 1973, he built the University of California Berkeley's fledgling Energy and Resources Group, the first interdisciplinary graduate programme on the campus, into a major initiative that continues to produce leading research on everything from state and local air pollution regulations to international energy and climate policy. "It is one of the only interdisciplinary energy centres that has not only persisted since

affairs for the American Physical Society in Washington DC. Many hope that such broad cash infusions mark the start of sustained future investments in basic science funding in a way that one-off spending on infrastructure would not. "What was put in the stimulus is what was supposed to be in appropriations from last year," says Ehlers, referring to the attempts to boost physical sciences through the America COMPETES Act. "I hope it's part of a sustained effort," he adds.

Congress has not yet passed final spending bills for fiscal year 2009, although it is expected to work on an omnibus spending bill in the week beginning 23 February. Around then, the Obama administration is expected to release its first sketch of what it wants in its 2010 budget.

then, but literally grown into a major hub of action on energy and climate and sustainability," says Dan Kammen, who studied there and assumed Holdren's position after he left for Harvard.

In 1996, Holdren came to the Kennedy School to head the Belfer Center's Science, Technology and Public Policy Program; he expanded its focus on energy and climate policy while bolstering research into nuclear non-proliferation issues. Centre director Graham Allison says that Holdren was an ideal candidate for the job, but he is only half joking when he says it was Holdren's love of fishing that made the deal possible. While still at Berkeley, Holdren had bought a home near Woods Hole, Massachusetts, with

easy access to top-notch saltwater fly-fishing. Allison discovered he was looking to make a move, contacted him and eventually sweetened the Harvard deal by offering to take Holdren and his wife Cheryl on a fishing trip in the Caribbean (paid for by Allison).

Friends say Holdren deploys the tools of science in his life as a whole. His fishing database, where he keeps track of key variables such as time, location, tide and water temperature, along with records of which fish are biting on what, is legendary. Holdren has also developed an algorithm for comparing wine ratings to price lists, and he sends a list of the best-buys to friends each Christmas. "But you have to act on it quickly, because sometimes it moves local

markets," Allison says.

Holdren typically took the bus from Woods Hole — where he was director of the Woods Hole Research Center — to Cambridge for work each Tuesday and stayed the night with Dan Schrag, a geochemist in Harvard's earth and planetary sciences department. Holdren would then attend the department's regular Wednesday breakfast meeting, a freewheeling session for professors, postdocs and guests, taking the bus back on Wednesday night.

Last week's breakfast began with Holdren's appointment before shifting to the economic crisis, science as economic stimulus (see story above) and how a severe recession might affect universities. Schrag says it might be a while

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THE STIMULUS BILL: WHO GOT WHAT

National Institutes of Health

Stimulus: \$10 billion
2008 budget: \$29.6 billion
Highlights: \$7.4 billion will go to the institutes and centres. \$800 million will remain in the director's office, of which half may be used for initiatives under the Road Map for Medical Research, which focuses on cross-disciplinary, highly innovative and translational research. \$1.3 billion will be spent on construction, repairs and shared instrumentation at non-federal research facilities. \$500 million will fund high-priority repair, construction and improvement projects on the agency's campus in Bethesda, Maryland.

National Science Foundation

Stimulus: \$3 billion
2008 budget: \$6.1 billion
Highlights: \$2.5 billion will go towards external research

grants, including \$300 million for instrumentation. A separate allowance of \$400 million will go to construction of major facilities.

Department of Energy

Stimulus: About \$40 billion
2008 budget: \$23.9 billion
Highlights: Includes \$11 billion for the electric grid, \$5 billion for weatherproofing homes, \$3.4 billion for fossil energy R&D and \$2 billion for battery research. The Office of Science, which funds basic research, receives \$1.6 billion. A separate \$400 million will kick-start the Advanced Research Projects Agency-Energy.

NASA

Stimulus: \$1 billion
2008 budget: \$17.2 billion
Highlights: \$400 million is for science, to accelerate Earth science climate-research missions and increase

supercomputing capabilities. Another \$400 million could be spent on rocket development to shrink a 'gap' in human spaceflight capability caused by retirement of the space shuttle.

National Oceanic and Atmospheric Administration

Stimulus: \$830 million
2008 budget: \$3.9 billion
Highlights: Directs \$170 million to fill critical gaps in climate modelling and to establish climate data records.

National Institute of Standards and Technology

Stimulus: \$580 million
2008 budget: \$737 million
Highlights: \$360 million would go to construction and renovation of facilities, with \$180 million for funding competitive external applications for research science buildings.

Here's a look at some of the big winners in the stimulus bill.

National Institutes of Health: \$7.4 billion divided among the agency's scientific institutes and centres will fund grants from a backlog of 14,000 investigator-initiated 'R01' grants already reviewed and categorized as "highly meritorious". It will also fund new R01 applications for projects that could reasonably make progress in two years. The agency will add

supplemental funding to existing grants and fund new "challenge grants" aimed at thorny problems.

"We are confident that we can spend the funds that Congress has allocated both responsibly and quickly," says Raynard Kington, acting NIH director.

Advocates of biomedical research, who have lobbied fruitlessly for substantial NIH increases in recent years, were ecstatic. But they ►

before anybody knows just how effective Holdren is in his new position, but it bodes well that he has already secured four deputies (the last administration cut the number down to two), restored the OSTP's place on the security council and negotiated workspace in the Eisenhower Executive Office Building next door to the White House.

"I've gotten e-mails from John saying, 'Can you get me a list of X in the next two hours?'. That's a good sign," he says, as presidential advisers need to influence decisions in the White House on the order of days or even hours. "The question is whether he and his deputies will be in that inner circle that is making decisions in the West Wing." ■

Jeff Tollefson