edited by ELLEN COOPER

Budget Battles: Where Does R&D Stand?

At the AAAS Science and Technology Policy Colloquium on 29 April, AAAS presented its analysis of the president's budget for research for FY 1999. The proposed plan calls for a 2.2 percent increase for research and development (R&D) funding over 1998 levels. In a recent interview, Albert H. Teich, director of the AAAS Science and Policy Directorate, explained his cautious optimism regarding the proposed increases.

Q: In light of the recent attention given to R&D funding by the president and Congress, where do things stand?

Al Teich: I'm guardedly optimistic. The attention is nice but it hasn't given us any spending money yet. It's certainly a plus to have the president and congressional leaders saying good things about R&D and proposing increases. But there are many hurdles that we'll have to overcome before we get to the point of celebration.

Q: What are some of those hurdles?

Teich: The president's increases are connected to the tobacco settlement, which looks increasingly doubtful. If that money doesn't come through, we have to ask where the money for the increases is going to come from.

Q: Does the scientific community support the tobacco settlement?

Teich: The settlement is really beyond the scope of the scientific community. I think most scientists probably would support it apart from or independent of its connection to research funding. But I don't think it's part of science policy per se, and it's not a subject on which the community can claim special expertise. Even if it should pass, how will the government ensure that some of that money goes to research? The Senate wants to put that money toward Medicare; the House toward Social Security. Finally, it's not at all clear, given the relatively short time left between now and the end of the congressional session, that they will work out this complex issue in time to use the money to fund appropriations for research.

Q: The scientific community is backing Senate Bill 1305, which calls for doubling R&D funding over the next 7 years. Is this bill likely to pass?

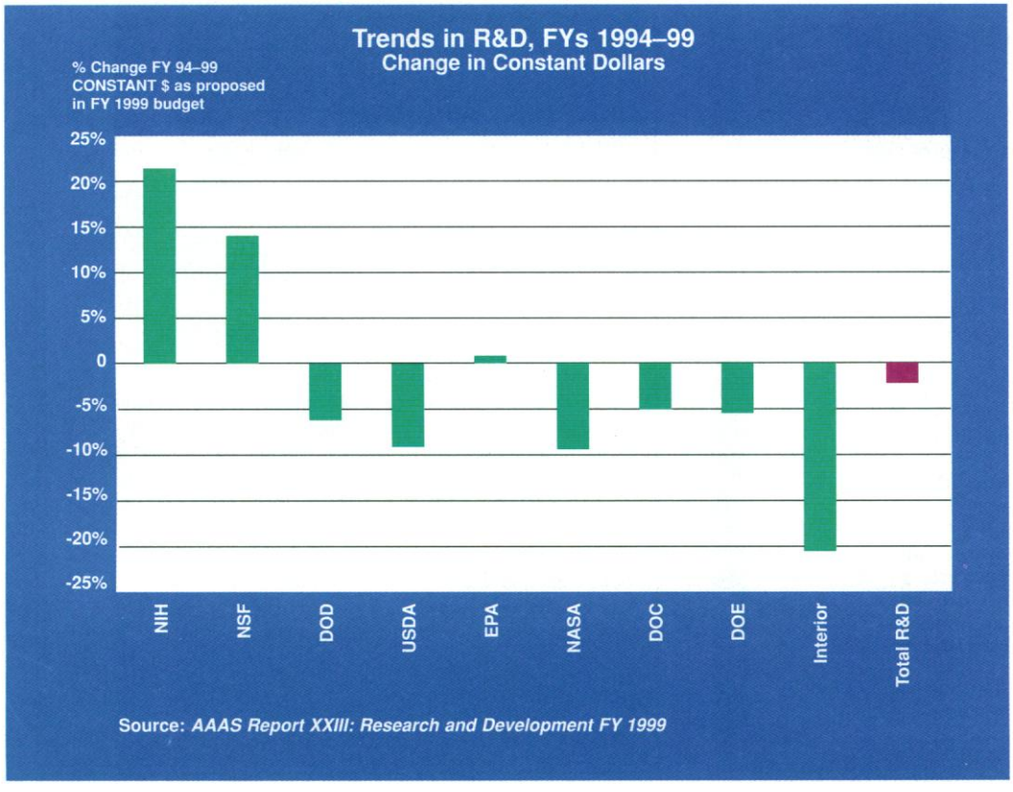
Teich: It may pass the Senate, but its chances in the House are not very good. Even if it does pass, it would simply be a statement of intent. In other words, it would authorize increases in the future but would not require those increases to be allocated. So, it has its limits. In one sense, its a good tool for mobilizing the science community and gaining a place at the table. But it doesn't guarantee increases.

Q: You discuss authorization and allocation. Is this something that is well-understood by the public?

Teich: The most important and least understood part of the legislative process is the appropriations process because that's where the money is actually allocated. There are two types of committees that deal with R&D funding—the authorizing committees which make the recommendations for how the money should be spent and the appropriations committees that dole out the specific dollar amounts to each program. Most of us in the science community prefer to work with the authorizing committees because that's where the substantive expertise resides. These authorizing committees have members and staff who have a pretty good grasp of science. But the places where the money is actually being allocated are within the appropriations committees and subcommittees.

Q: What's your biggest concern about the increases that have been proposed in the president's budget?

Teich: I have two concerns. One, as I already mentioned, is where the money is going to come from. The other is the lack of balance among the various fields of science. Congress for the last several years has virtually exempted the biomedical area (the National Institutes of Health) from cuts in funding. At the same time, there have been significant reductions in other areas like physical sciences and engineering. Biomedical research is no doubt extremely valuable, but it's not the only area that's important. Science is an integrated activity and we need advances in the physical sciences—engineering, computers, mathematics—to allow medical science to progress. We also need those areas to support industrial development to ensure our competitiveness and to solve environmental problems.



Q: What message should the scientific community carry when talking to their policy-makers who are faced with a choice of supporting Social Security and Medicare, or with supporting science?

Teich: It's not an either-or decision. Certainly Social Security and Medicare are important. But if we want the economy to grow in the future and provide a growing source of revenue for the government, we need to advance technology. In order to do that, we need to invest in basic science now. Basic science gives us the knowledge base for continuing technological advances. Those advances will help us by building our industrial strength, by allowing us to respond to global change issues while maintaining our quality of life and economic growth, and by generating medical advances that can ultimately reduce the need for medical care and allow people to age more successfully. And that means that Medicare and Social Security expenses might be lower than they would be otherwise.

Q: At the recent AAAS Science and Technology Policy Colloquium, Franklin Raines, director of the Office of Management and Budget, presented the audience with five challenges for the scientific community. How would you answer his first challenge: How large a scientific enterprise does our nation need?

Teich: That kind of question doesn't really have an answer. It used to be that we could judge how big a scientific enterprise we needed by comparing ourselves to the Soviet Union. We can't do that anymore. In any case, today the federal government provides only a small part of the nation's overall research funding, currently about 30 percent. So what the government does is not going to determine the overall size of the scientific enterprise anyway. How much the government invests does define the cutting edge, and that's important. Now, if you look at the portion of R&D spending that is under federal control, it's important to remember that it's mostly mission-oriented. This means that the size of the scientific enterprise we need depends on the priority of the mission it serves. Defense R&D has been shrinking because that mission has been declining in importance. Health and biomedical research have been growing because the country thinks that improving health is a particularly important national priority. And finally, funding for research that is not mission-oriented, where the goal is advancing knowledge (such as the National Science Foundation or the high-energy physics program at the Department of Energy), comprises only a very small part of the total budget. These areas are vital to science and relatively inexpensive compared to the size of the government. They cost a few billion dollars, out of a $1.7 trillion budget. So, I don't think that we're at a point where we need to think about limits.

Q: What do you see is important in terms of short-term allocations versus long-term goals?

Teich: We need to remember that the budget battles are fought 1 year at a time. There is very little that anyone can do in a given year that can tie future administrations and congresses to particular spending patterns. So while it's important to look at long-term projections, what really counts are year-to-year appropriations. I'm not saying that we should ignore long-term projections. They're important, but not because they predict or determine the future. Rather, they tell us where things would be going if they continued on the same path and give us a chance to adjust our course of action. For example, 3 years ago, Congress passed a budget resolution that projected a 33 percent cut in research spending over the next 7 years. This woke up the scientific community and helped change the course of events. So, keeping an eye on those long-term projections and goals is important. But it's also important to remember that the projections almost never come true.

AAAS Board Offers Congress a Vision for S&T

In a 5 May report to U.S. House Science Committee Vice Chairman Vernon J. Ehlers (R–MI), the AAAS Board of Directors called for the federal government to maintain U.S. preeminence in all major areas of scientific research and education; foster linkages among science, technology, and societal goals; and cultivate scientific and technological literacy. The report—the Association's contribution to the House's National Science Policy Study—identified five key areas deserving special attention as Congress develops a long-range science and technology policy for the new millennium:

- reaffirming the partnership between the federal government and the nation's research and educational institutions;
- enhancing education for scientists and engineers while raising the scientific and technological literacy of all citizens;
- planning for rapid advances in science and technology and their impacts on society;
- managing and making use of the international character of science and technology; and
- facilitating collaborations among disciplines, institutions, and sectors.

The Board decided to prepare a report for the study following a meeting with Ehlers in October 1997. A draft was posted on the AAAS Web site for comment in March. The final AAAS report is available on the AAAS Web site at http://www.aaas.org/spp/fedsci.

Science Journalism Awards Bolstered

The Whitaker Foundation, a private nonprofit organization supporting biomedical research and education, announced it will continue to fund the AAAS Science Journalism Awards through 2001.

The foundation has funded the competition since 1995. Since the program's inception in 1945, more than 300 individuals have been honored for their significant achievements in the field of science reporting in the categories of newspapers, television, and radio.

"The foundation recognizes that most Americans learn about science and engineering primarily from the news media," said Miles J. Gibbons Jr., president of the Whitaker Foundation. "By setting high standards, the AAAS awards help inspire reporters to do their best. And from that, we all benefit."

The awards are highly coveted among the science journalism community. The roster of award winners include Pulitzer Prize winners such as Deborah Blum (previously of the *Sacramento Bee*) and the *New York Times*' Natalie Angier and John Noble Wilford, as well as Emmy-winning television producer Jon Palfreman.

The awards bring important recognition to science writers. The 1997 winner in the small newspaper category, Jenni Laidman, previously of the *Bay City Times*, said the award helped propel her career as a science writer and attracted "fresh interest from newspapers that had looked past me before" in her own job search. Laidman wrote a four-part series documenting the threat of vanishing species in the Great Lakes for the *Bay City Times*. Laidman was recently hired by the *Toledo Blade*.

Independent screening and judging committees comprised of scientists and science journalists select the winning entries.

Reviewers Sought for Science Journalism Awards

Scientists are needed to review entries in this year's AAAS Science Journalism Awards program, sponsored by the Whitaker Foundation. The reviewers screen radio and television reports for scientific accuracy. If you would like to volunteer, and can be in the Washington, D.C., area sometime in August, contact Ellen Cooper at the AAAS News and Information Office (202-326-6431 or e-mail ecooper@aaas.org).

The winners are honored during the AAAS annual meeting at the annual banquet of the National Association of Science Writers. The winning entries are published each year and used as teaching tools in science writing programs at universities and colleges throughout the country.

Headquartered in Rosslyn, Virginia, the Whitaker Foundation promotes the use of engineering to solve medical problems. It currently supports nearly 422 research projects, 142 graduate fellows, and 80 education and internship programs at colleges and universities in the United States and Canada. The foundation was established in 1975 upon the death of U. A. Whitaker, founder of AMP Incorporated, the world's largest manufacturer of electrical connectors and connecting devices.

Report of the 1998 Council Meeting

Mildred Dresselhaus, AAAS president, gave highlights of the AAAS Board's actions over the past year. She reported that the Board's December 1996 retreat led to the creation of the policy forum on science and society that appeared in the 19 December 1997 issue of *Science* (Association Affairs, p. 2066). An online conversation on the AAAS Web site invited members to respond.

Dresselhaus said that a visiting committee reviewed the activities of the Education and Human Resources Directorate and recommended more linkages with Project 2061. The committee also felt that the education programs had potential for some unique products and that more support and resources should be applied to their marketing. Dresselhaus noted that the Kinetic City Super Crew children's radio program had been honored with a Peabody Award and that the program was serving as the basis for a series of children's books being published in cooperation with McGraw-Hill. She also noted that the December 1997 Board meeting, which focused on a review of the AAAS programmatic activities, emphasized refocusing the activities of the International Directorate.

Dresselhaus said the Board encouraged the Science and Policy Directorate to continue its activities with regard to analyzing and reporting on the federal R&D budget and requested that the Board be updated regularly. She also reported that the Board met with D. James Baker, undersecretary of commerce for oceans and atmosphere and administrator of the National Oceanic and Atmospheric Administration, to discuss ideas for awards and fellowships in the area of sustainable development. The Board also met with U.S. Representative Vernon J. Ehlers (R–MI) to discuss the science policy study he was conducting on behalf of the House Science Committee. Dresselhaus noted that, subsequently, a Board subcommittee was formed to help prepare a formal response to Ehlers (see box on page 1461) and indicated that online input would be sought from the members.

She also reported that AAAS had been involved in two recent *amicus* briefs with the Board's approval. One supported efforts of the National Academy of Sciences to be exempt from the constraints of the Federal Advisory Committee Act. The other addressed issues of freedom of speech and restrictions placed by government export controls on university courses involving cryptographic software.

Dresselhaus noted that in response to concerns expressed at last year's council meeting, the Board had been reviewing the activities of the Program of Dialogue Between Science and Religion. The Board had also moved to establish a formal Board-appointed oversight committee for the program. As a part of this activity, the Board held discussions with Ian Wilmut of the Roslin Institute on the ethical and scientific implications of the cloning of Dolly.

Executive Officer Report

Richard Nicholson, AAAS executive officer, reviewed the financial performance of the Association. He noted that the move to the new headquarters building and the creation of a series of online products had led to uncertainty with regard to proposed 1997 expenses, while an apparent decline in membership renewals and concern about future advertising revenues had raised questions about prospects for revenue. As a result, the Board approved a break-even budget for calendar year 1997. Nicholson was pleased to report that the dire predictions had not proven true. In fact, the Association finished the year with its biggest surplus in 20 years and an all-time record for advertising revenues.

He also informed the council that the bond financing for the building had been renegotiated and a new 30-year fixed-rate bond had been issued at a total rate of 5.88 percent. This would better enable AAAS to plan for the future and ensure a low interest rate.

Report on Activities of the Committee on Sections

Mildred Dresselhaus reported that the group met in January and that several items were being brought forward for council consideration as a result of that meeting. She indicated that a series of questions had been developed for the section officers and that the committee was looking forward to the input from the sections. The group

Distinguished Lecture Series Marks AAAS Anniversary

Paleontologist Michael J. Novacek launched the first in a series of distinguished AAAS lectures on 12 May with a presentation on his expeditions to the Gobi Desert of Mongolia, where his travels marked the first return of a Western scientific team to the country in over 60 years. Novacek is senior vice president and provost of science as well as the curator of the American Museum of Natural History in New York, and has served on the AAAS Board of Directors since 1994.

Novacek's lecture commemorates the 150th anniversary of AAAS, which originated in Philadelphia in 1848. The series will continue at AAAS with a lecture by Federico Mayor, director general of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) on 25 June. On 18 September, AAAS will feature a lecture by Stephen Jay Gould, Alexander Agassiz professor of zoology at Harvard University's Museum of Comparative Zoology. Gould is president-elect of AAAS. For more information, call 202-326-6650.

was proposing changes to its terms of reference, which would increase the number of members on the committee (from 9 to 14) to better enable the committee to accomplish its work in a timely fashion. The Committee on Sections also recommended that the council form an ad hoc task force to review the current procedures and policies for the election of Fellows.

Presentations to the Council

Dresselhaus reported on the activities surrounding issues of intellectual property and databases.

She noted that AAAS is working on these issues in close cooperation with affiliate organizations and would continue to monitor the federal government's actions.

Floyd Bloom, editor-in-chief of *Science*, briefed the council on the online features associated with the journal, *Science*'s Next Wave (the Internet site for young scientists), and *Science*NOW (the daily online news service).

Al Teich, director of the Directorate for Science and Policy Programs, briefed the council on the activities of the Research Competitiveness Program. The goal of this program is to provide assistance to the states involved with the Experimental Program to Stimulate Competitive Research (EPSCoR) in order to build their research capabilities.

The council also received a more detailed briefing on the Board's policy forum and the process that was used to develop it.

Council Actions

The following actions were taken by the council:

- Approved the termination of the affiliation of the American Medical Writers Association, the Society for Epidemiologic Research, and the World Population Society for noncompliance with AAAS Bylaw Article I, Section 3.
- Approved joint Board-Council resolution in support of U.S. ratification of the Comprehensive Test Ban Treaty (see box below)
- Approved formation of an ad hoc task force of section officers to review the Fellows procedures and policies.
- Approved changes to terms of reference for Committee on Sections in order to increase the membership of the committee from 9 to 14.

New Business

A resolution in support of the continued appointment of science and technology counselors to major U.S. embassies was brought forward under new business and the council voted to consider the resolution. It was approved by the council (see box at right). The Board was asked to further consider the issues of science and technology advice for the Department of State.

RESOLUTION ON SCIENCE AND TECHNOLOGY COUNSELORS AT U.S. EMBASSIES

Whereas:
Representation of scientific and technological affairs is essential to the conduct of U.S. foreign policy,

Whereas:
Science and Technology Counselors abroad can provide invaluable support for international cooperation in research, development and education, which are increasingly important to achieving U.S. interests in a global world, including economic competitiveness and national security, and

Whereas:
The U.S. Department of State has indicated its intention to eliminate or substantially reduce the staffing of American embassies with competent Science and Technology Counselors.

Be it therefore resolved that:
The American Association for the Advancement of Science supports the continued appointment and utilization of Science and Technology Counselors in major U.S. embassies.

Resolution approved by the AAAS Council on 15 February 1998

RESOLUTION ON COMPREHENSIVE TEST BAN TREATY

Whereas the American Association for the Advancement of Science has long been active in support of efforts to reduce the profound risk to human life and society that would result from the use of nuclear weapons, and

Whereas the end of the Cold War has brought unparalleled opportunities for reduction of the global threat of nuclear destruction and for strengthening constraints on nuclear proliferation, and

Whereas the goal of achieving international agreement on a total ban on all nuclear testing for all time was pursued through global negotiations over a period of nearly 40 years, and

Whereas these negotiations have produced the Comprehensive Test Ban Treaty (CTBT), which was overwhelmingly approved by the UN General Assembly in September, 1996, and has now been signed by a majority of the world's nations, including the U.S., and

Whereas a commitment to conclude the CTBT was an essential element in bringing nations to agree in 1995 to an indefinite and unconditional extension of the Treaty on the Non-Proliferation of Nuclear Weapons, and

Whereas the CTBT establishes a far-reaching verification regime which, when combined with our nation's own capacity to monitor nuclear explosions, provides the United States with the means to ensure that this treaty is effectively verifiable and in no way undermines the nation's nuclear deterrence capability, and

Whereas the CTBT contains a "supreme national interest" clause that would enable the U.S. to withdraw from the treaty regime with 6 months of notification should it be determined that additional nuclear testing is essential to ensure the safety or reliability of a nuclear weapon type critical to the nation's nuclear deterrent, and

Whereas the CTBT was submitted to the United States Senate on 22 September 1997 for its advice and consent to ratification,

Be it therefore resolved that the Board of Directors and the Council of the American Association for the Advancement of Science urges the United States Senate to give early and favorable consideration to the treaty and its advice and consent to ratification as soon as possible.

Joint Resolution of the AAAS Board of Directors and the AAAS Council approved on 15 February 1998