TOP-RANKED MISSIONS

Large

Solar Probe: A $650 million spacecraft that will come within 4.8 million kilometers of the sun

Medium

1. Magnetospheric Multiscale: Four satellites to measure phenomena associated with Earth's magnetosphere

2. Geospace Network: Four satellites to observe how Earth is affected by solar storms

3. Jupiter Polar Mission: Spacecraft to study Jupiter's magnetic fields

Small

1. Frequency Agile Solar Radio Telescope: Wide-band radio telescope for studying solar features

2. Relocatable Atmospheric Observatory: Mobile radar designed to study magnetosphere-ionosphere interactions

3. L1 Monitor: Solar-wind instrument stationed at the L1 libration point

the Jupiter Polar Mission, that would study the interplay between the sun, Jupiter, and Jupiter's moons.

"The Solar Probe, right now, is canceled, and we're telling them to change course," says panel member James Burch, vice president of the Southwest Research Institute's Instrumentation and Space Research Division in San Antonio, Texas. "The Jupiter Polar Mission is not in the program right now. [The changes] might mean that they have to reshuffle the order of their solar terrestrial probes."

As with a recently released study on planetary exploration (*Science*, 19 July, p. 317), the Lanzerotti panel grouped its ranked recommendations into large ($400 million–plus), medium ($250 million to $400 million), and small (less than $250 million) missions. Some of the experiments, such as the top-ranked Solar Probe, will study the sun directly. Others, such as the second-place Geospace Network, a group of satellites that will monitor Earth's environs, are intended to illuminate how Earth is influenced by the sun. The Solar Probe was the only large mission ranked, whereas nine missions each were included in the small and medium categories.

The panel's plan includes missions for which NASA does not yet have funding. But it will all "fit within the budget we think is going to be available," says Burch, from a current $400 million to $650 million in 2008 and beyond. The panel also concluded that the technical hurdles facing these missions require a new level of cooperation among five government agencies—NASA, the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration, and the departments of Defense and Energy—on basic research as well as operational programs. For example, it recommends that NASA continue research into advanced power, propulsion, and electronics for spacecraft while NSF improves the reliability of ground-based sensors and networks, some of which also operate in extreme environments.

"I think it will help maintain the vitality and health" of the field, says Michael Calabrese, a program manager at Goddard Space Flight Center in Greenbelt, Maryland, who notes that a NASA-sponsored panel is working on a 25-year road map that will supplement the 10-year scope of this report. "That way you get two looks at this," he says. In the meantime, the academy report gives NASA a way to lift missions out of the budgetary frying pan and into the solar fire.

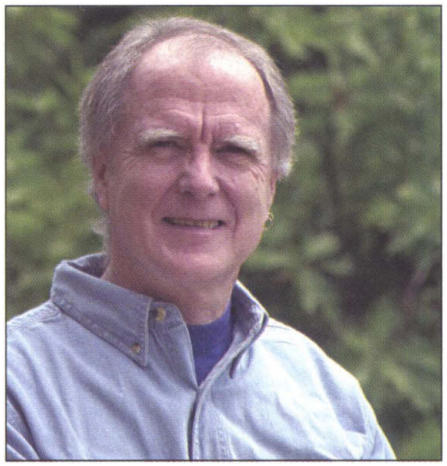
–ANDREW LAWLER AND CHARLES SEIFE

CREDITS: (TOP TO BOTTOM) SOURCE: NATIONAL RESEARCH COUNCIL; STEVE MCCAW/NIEHS

ENVIRONMENTAL SCIENCE

NIEHS Toxicologist Receives a 'Gag Order'

A toxic tiff at the National Institute of Environmental Health Sciences (NIEHS) seems to have escalated into a cause célèbre that has even caught the attention of a member of the House Committee on Government Reform. At the center of the dispute is James Huff, a 23-year veteran of NIEHS's carcinogen testing program and an outspoken critic of the chemical industry. Last month, after clashing with his supervisor, Huff received what he calls a "gag order," a proposed agreement forbidding him from criticizing NIEHS in public. The agreement



Promoted? Amid controversy, NIEHS's James Huff was offered a job in the director's office.

ScienceScope

Patent Protest Academics at the University of Cambridge, U.K., are protesting an administration plan to claim all intellectual property (IP) generated by campus researchers. Critics say the change will stifle innovation and stall the "Cambridge phenomenon": the dramatic growth of university-spawned high-tech companies.

Currently, Cambridge lays claim only to research findings generated using external funds, whereas staff members can independently patent and control IP produced with university grants. But the governing council last week proposed that the university gain control of all campus IP created after January 2003. Any patent profits would be shared among the inventor, the inventor's department, and the university.

The new policy would bring Cambridge into line with most U.K. universities, administrators say. And any connection between the university's hands-off approach to patenting and the commercial success of its spin-offs is "unprovable," they add.

Cambridge computer scientist Ross Anderson disagrees and is drumming up opposition to the plan. Regent House, the university's democratic decision-making body, could vote on the issue as soon as October.

Intramural Introspection National Institutes of Health director Elias Zerhouni is taking a look at NIH's intramural programs to make sure they hew to their official mission. Zerhouni, who's been at NIH 2 months now, told *Science* that the intramural program "plays a very important role" and that he "agrees" that its 10% share of NIH's total $23.5 billion budget is about right. However, he wants to be sure that each institute's intramural portfolio is "second to none" in quality and consists of "programs only the NIH [intramural program] can do."

Michael Gottesman, NIH's intramural research deputy director, has been gathering responses from the directors of NIH's 27 institutes and centers on what "unique things" their intramural programs do. Gottesman says the review is part of "an ongoing process" in which an outside board reviews each institute's intramural component. Zerhouni, he says, simply wants to "be certain" that the program "is used to support high-impact research and training activities which would be difficult to conduct elsewhere."

ment, says Simon Eidelman, a physicist at the Budker Institute. Although Eidelman thinks that the Brookhaven experiment is "extremely beautiful from the physics point of view," he says it's too early to tell whether there's a problem with the calculations, with experiments that feed into them, or with the Standard Model itself. "When and where all this will converge, I can't tell," he adds.

Eidelman might have to wait a while to find out: The muon collaboration has some more data yet to be processed that should bring the error bars down a bit, but the White House budget contains no funding to continue the Brookhaven experiments. Experiments that study the B meson, such as BaBar at the Stanford Linear Accelerator Center in California and Belle at KEK in Tsukuba, Japan, might help narrow down uncertainties in the theory. However, it will be at least half a decade before the Large Hadron Collider at CERN, the European particle physics laboratory near Geneva, shows for sure whether the Brookhaven result is the sign of new physics or just an interesting twist in the same old story.

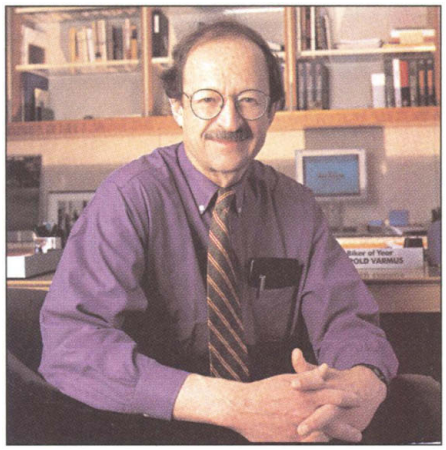
–CHARLES SEIFE

BIOMEDICAL RESEARCH

Panel Hears Ideas for Overhaul of NIH

Does the $23.5 billion U.S. National Institutes of Health need a major overhaul to trim its ever-growing fleet of 27 centers and institutes? Last week, an Institute of Medicine (IOM) panel that's begun investigating this question heard comments from current and former NIH directors. Two out of three said NIH would be better off if it were more centralized. But a former member of Congress who guided NIH funding injected a dose of reality, saying that "it is going to be a very daunting task" to overcome political pressures to maintain the status quo.

Congress asked for the study in a report accompanying a 2001 spending bill. Lawmakers wanted to find out "whether the current NIH structure and organization are optimally configured." The most prominent advocate of restructuring at that time was Harold Varmus, NIH director from 1993 through 1999. He spelled out his ideas in an article last year arguing that constantly adding new institutes, each with its own budget allocation, was becoming too cumbersome (*Science*, 9 March 2001, p. 1903). He called for reforming NIH into five institutes organized by disease group. In his plan, a sixth institute, "NIH Central," would house the NIH director and have much more power to shift funds among institutes than the director has now.



Nonproliferator. Harold Varmus thinks NIH needs fewer, not more, institutes.

Varmus explored his ideas with the IOM panel, which is chaired by former Princeton president Harold Shapiro and includes James Wyngaarden, another former NIH director (1982 to 1989). Varmus explained that, with 27 institute chiefs squeezed into a room, "it's very difficult to feel you're actually molding things." Administrators "got tired" of being pushed to do joint projects on zebrafish, mouse, and bioinformatics. "There is a serious misconnect between this checkerboard of institutes and how science is being done," Varmus said.

A leaner structure also received the support of Bernadine Healy, NIH director from 1991 to 1993, who suggested grouping NIH in four slightly different "clusters." Healy, however, thinks more institutes are fine; she even suggested two new ones for nutrition and rehabilitation. Current NIH director Elias Zerhouni didn't take a stand on restructuring. He asked the panel to think not only about "organizational change" but also "better management tools" to "optimize performance." He and others also suggested other questions, such as whether institute directors should have term limits.

Abolishing institutes is easier said than done. The same disease advocacy groups that have pushed to double NIH's budget over 5 years to $27.3 billion in 2003 also support their favorite institutes, and most institutes have congressional champions as well. Debra Lappin of the Arthritis Foundation reminded the group that "the American public owns the NIH." Redundancy, she suggested, could be a good thing, because consolidating could lead to "great orthodoxy" and "less competitiveness."

"Any attempt to eliminate individual institutes will meet probably very strong political resistance," former Illinois Representative John Porter told the group. However, he thought giving budget authority to a cluster director to move money around institutes within that cluster "is possible." This wasn't

ScienceScope

Science Cuts Coming? French Prime Minister Jean-Pierre Raffarin is considering major cuts to France's R&D budget, according to press reports last week. Finance ministry officials are thinking about cutting the $9 billion research account by 7.6% in 2003 to help the government make up for a slowing economy and deliver a promised tax cut, according to the daily *Libération*. But science minister Claudie Haigneré was reportedly campaigning against the idea, noting that the ruling party has also pledged to boost overall science spending to 3% of GDP by 2005. R&D spending currently accounts for 2.17% of GDP.

Anxious French researchers will know soon whether Haigneré's arguments fell on sympathetic ears: The budget proposal is due to be considered by the council of ministers on 18 September and then sent to Parliament for final approval.

Technically Sound Test Ban There are no major technical hurdles to verifying a global nuclear test ban treaty, a National Academy of Sciences panel concluded last week. The 11-member panel, led by Harvard University security expert John Holdren, concluded that monitoring technologies make it nearly impossible for cheaters to hide tests of even the smallest weapons, down to 1 kiloton. The findings undermine claims made by opponents of the 1996 Comprehensive Test Ban Treaty (CTBT), signed but never ratified by the United States.

Crater from 1962 blast.

The report, requested 2 years ago by Clinton Administration officials, arrives as nations prepare to gather in New York City next month to discuss ways to move ahead with the stalled CTBT, which can't take effect until it is ratified by the 44 states judged capable of building nuclear weapons. So far, 13 of those nations have refused. The Senate tabled the treaty in 1999 after a bitter debate, and the Bush Administration has no plans to revive the issue.

The report isn't likely to break the stalemate, observers say. But panelist Paul Richards, a seismology expert at Columbia University's Lamont-Doherty Earth Observatory in Palisades, New York, predicts that the treaty "will become politically salient again. And when it does, this report will be out there, ready to inform policy-makers."

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CREDITS: (TOP TO BOTTOM) NIH; U.S. DEPARTMENT OF ENERGY