and other academic fusion work. But with all fusion funding now coming out of a single bureaucratic pot, some researchers worry that paying up to 60% of ITER's overall cost could squeeze out other research.

"It would really be a shame if Japan does not maintain its current position at the forefront of a broad range of approaches to fusion," says Atsuo Iiyoshi, former director-general of NIFS and now president of the private Chubu University in Nagoya. He notes that NIFS's Large Helical Device has been closing the technological gap with tokamaks, and that Osaka University's Institute of Laser Engineering is making steady progress in using lasers to crush fuel pellets to the point of igniting fusion. These and other university-based research facilities, he says, could define the characteristics of a power-producing reactor.

Adding to concerns, Iiyoshi notes, was the government's decision to eliminate a Monbusho advisory council that had staunchly supported university-based fusion research. "We're in a transition period, and it's hard for researchers to see where decisions are being made," he says.

Where the discussion will lead is not clear. Shuichi Takamura, a Nagoya University electrical engineer and a key organizer of last week's meeting, says research leaders hope to issue some sort of report. "We're still discussing what the next step should be," he says. Iiyoshi suggests that any decision on ITER be delayed for half a year or so to allow the Japanese government to work out a comprehensive strategy for fusion research.

But with the government still firmly backing ITER, further delays are unlikely. Miyamoto predicts that the situation "will be resolved within a couple of months." That means Japan's fusion science community must act quickly if it wants its voice to be heard. **–DENNIS NORMILE**

2002 SPENDING

First Bush Budget May Put Science on Diet

The Bush Administration's first budget request to Congress may leave many scientists feeling a little flat. White House officials will release a preliminary spending proposal next week for the 2002 budget year that is expected to boost biomedical and military science but hold down new spending at the National Science Foundation (NSF), NASA, and the Department of Energy (DOE). Rumors about the plan, which White House officials were still assembling as *Science* went to press, have alarmed some science groups and members of Congress, who were expecting spending hikes for nonbiomedical science as well.

CREDIT: (TOP) M. PELLEGRINI *ET AL.*

"It looks like the budget's starting point is not going to mean boom times for science," says David Goldston, staff director for House Science Committee chair Sherwood Boehlert (R–NY). "The way [the proposal] is unfolding raises concern," adds Senate aide Cheh Kim, who works for the appropriations subcommittee that oversees the budgets of NSF and NASA. That panel is led by Senators Kit Bond (R–MO) and Barbara Mikulski (D–MD), who last year launched a campaign to help others catch up to recent increases in biomedical research spending by doubling NSF's budget, now $4.4 billion, by 2006. The 2002 budget covers the fiscal year that begins on 1 October.

The NSF doubling effort, however, is expected to get little support in the plan that will be released on 28 February. Knowledgeable sources say that the White House whittled down NSF's initial double-digit request to 1%, which the agency then countered with an appeal for a boost of 6% to 7%. The final request will probably fall below the predicted inflationary rate of 3% to 4%, sources predict.

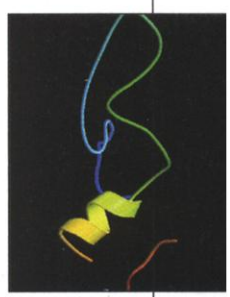
At the same time, NSF director Rita Colwell seems to have salvaged at least a chunk of her plan for a fivefold increase over 5 years in mathematics research. Sources say that the mathematics division may garner up to one-third of the agency's total projected increase for research. "The budget is a disaster for NSF as a whole, but she stood up for mathematics," says one NSF official.

NSF is also expected to benefit from a slice of the president's education initiative. Although most of the media's attention has focused on proposals for testing and accountability for elementary and secondary schools, NSF officials and members of Congress have also lobbied hard for a component that would involve higher education, in particular teacher training, as well as programs to strengthen the country's technological workforce.

Other nonbiomedical science agencies also face stagnant spending. NASA's $14 billion budget will reportedly barely keep pace with inflation. DOE's $3.2 billion Office of Science could get squeezed by an even smaller overall agency increase, as officials channel funds to other Bush Administration priorities, such as weapons technology and improving security at national laboratories. Department of Interior officials are also said to be mulling significant cuts in science programs—such as those run by the U.S. Geolog-

ScienceScope

Going 3D A French biotech start-up plans to launch an international consortium aimed at revealing the three-dimensional crystal structures of 100 cell membrane proteins, many of which could be promising drug targets. The 3-year, $9.3 million project, led by Bio-Xtal in Roubaix, France, will include a bevy of drug companies and four academic labs in France, Germany, and the Netherlands.



Several "structural genomics" efforts are already attempting to automate the atomic mapping of proteins, but this is the first to focus on membrane proteins. The targets will be "G protein–coupled receptors," which help cells sense everything from hormones to energy signals. The receptors are notoriously difficult to study, however, because removing them from the membrane destroys their normal 3D shape. In April, the consortium plans to begin searching for new ways to express, crystallize, and image the proteins. Funding will come from private firms and—if all goes as planned—the European Union.

Structural biologist Aled Edwards of the University of Toronto says the effort is "an excellent idea"—but is certain to be slow.

Bowing Out Biologist Hubert Markl last week said he will not seek a second term as president of Germany's most prestigious basic-science research organization, the Max Planck Society. Markl—a respected administrator who has led the society since 1996 and had been invited by the society's governors to seek a second term—reportedly cited his age (63) in declining to run for another 6-year term. A new president will be selected later this year and will take office in June 2002.

Cottage Industry Hoping to build new bridges between academia and industry, the European Union will help some aspiring postdocs work for 2 years in industrial research labs outside their homeland.

European scientists have excelled at basic research but have done a poor job of reaping profits from innovations, says Sabine Herlitschka of the Austrian Bureau for International Research and Technology Transfer. To bridge the gap, over the next 2 years the Fellows for Industry initiative plans to place a total of 140 postdocs in companies with fewer than 250 employees. Their stipends will be paid by another European fund, and Herlitschka promises the companies will get "access to cutting-edge scientists."

ical Survey—to finance a Bush campaign promise to spruce up national parks.

Other research funders—from the Environmental Protection Agency to the National Oceanic and Atmospheric Administration—are also expected to fare poorly. The belt-tightening is a result of a presidential promise to deliver a $1.6 trillion tax cut, plus increased spending on education and the military, while keeping a lid on spending. Administration officials say they want to boost discretionary spending (which does not include required spending on social welfare programs) by 4% to about $663 billion. But nearly two-thirds of the planned $26 billion increase would go to education and defense, leaving little money for other programs.

One winner in the initial budget battle, however, appears to be the National Institutes of Health (NIH). Bush is expected to follow through on a campaign promise to keep biomedical research spending on a path to double by 2004; doing that would technically require a 15% increase this year ($3.4 billion) for NIH. Defense science also may jump, with Bush promising to increase the Pentagon's R&D budget by 6%. How much of that increase would go to basic research, however, remains unclear.

If the details seem unpredictable right now, so does Congress's reaction. Key lawmakers—including Senator Pete Domenici (R–NM), leader of the Senate Budget Committee that will formulate Congress's initial spending blueprint—have already complained about its penury. Boehlert and Representative Vern Ehlers (R–MI), another science committee leader, also raised concerns about the slim pickings for science during a 14 February meeting with White House Budget Director Mitch Daniels. "He was fully aware of the issue," says one congressional aide.

Still, some science leaders worry that the grim budget outlook is another sign that the new Administration is not taking science seriously. Exhibit A, they say, is the absence of a science adviser. "Concrete gets poured fast on budgets," so it is critical that researchers have a voice inside the White House, noted Jack Gibbons, who served as Bill Clinton's first science adviser, at a meeting last week of the National Academy of Sciences' public policy committee. D. Allan Bromley, who held the job in the first Bush Administration, agreed. "All of us hoped and believed there would be [an adviser] by now," he said. But for the moment "there is no evidence that we will see anything for a few more months." A source familiar with the search agreed that a selection "was not imminent" but said that "making quality appointments takes time."

–DAVID MALAKOFF AND JEFFREY MERVIS

EUROPEAN SCIENCE

Max Planck Takes an E-Publishing Plunge

In the evolution from the Gutenberg era to the so-called Ginsparg era of electronic publishing, European researchers have mostly watched from the sidelines. But big changes are afoot. Germany's Max Planck Society, which runs the country's flagship network of 80 research institutes, is about to launch a publicly accessible electronic publishing center that will enable its scientists to post published papers—and findings before they are peer-reviewed. The center will also develop new tools for information dissemination and electronic management, and negotiate on behalf of all the institutes to cut deals for cheaper access to electronic journals.

For years, the United States had a virtual lock on e-publishing. In 1991, Los Alamos National Laboratory's Paul Ginsparg shook up scientific communication with the world's first preprint server, where physicists post articles before they are peer reviewed. More recently, Harold Varmus, former director of the U.S. National Institutes of Health, created a stir among biologists by backing the launch of "PubMed Central," originally conceived as both a free Internet archive of published papers and a preprint journal, although the latter idea is now on indefinite hold (*Science*, 14 July 2000, p. 223). Now European researchers are beginning to carve out territory in cyberspace (see table). The Max Planck's new Center for Information Management (CIM), which is just now getting under way, is one of the most comprehensive of these efforts.

Previously, individual Max Planck institutes have dipped their toes in the e-publishing waters. In 1997, for example, the Institute for Gravitational Research in Potsdam began publishing a peer-reviewed Web journal of review articles in its field. Contributors pledge to keep their articles updated, hence the journal's name: *Living Reviews* (www.livingreviews.org). "But the society [as an entity] has not been present" in the e-publishing arena, says Jürgen Renn, co-director of the Institute for the History of Science in Berlin.

CIM's roots can be traced to a pilot project in which the Max Planck Society in 1999 negotiated access to 1200 electronic journals and tallied usage and approval among its 3000 scientists. With a positive response to this initial foray into the e-world, Renn and his colleagues asked Rick Luce—director of Los Alamos's digital library initiative, Library Without Walls (lib-www.lanl.gov/lww/welcome.html)—to help organize a more ambitious effort: the CIM. A six-person team, primarily computer scientists, will staff the $1.5-million-a-year operation, which will be based at the Institute of Plasma Physics in Garching.

CIM plans to create an archive of publications by Max Planck authors. But perhaps the most exciting of CIM's projects will be to post preprints of articles from all Max Planck scientists on a server freely accessible to the public before they are submitted to traditional journals for peer review. The society does not know when the preprint operation will be up and running.

Some Max Planck researchers are skeptical that the society will be nimble enough to keep pace with the rapidly evolving world of Web publishing. Others caution that the CIM must take care—particularly with its preprint server—to label the sources of the material it distributes electronically. "It will be important to differentiate between peer-reviewed papers and what amounts to private communication that a scientist may post," says Peter Fromherz of the Institute

EUROPE, ELECTRONICALLY

Institution	Project	Web site
League of European Research Libraries (LIBER)	Pan-European digital journals	www.SUB.Uni-goettingen.de/liber-wg
European Mathematical Society and FIZ Karlsruhe	Free access to 40 e-journals; Electronic Library of Mathematics	www.emis.de
Max Planck Society Center for Information Management	Preprint server for Max Planck researchers, discount subscriptions	www.mpg.de/it/cim/cime.html
Danish National Library Authority	Access to 6000 journals via library network	www.deflink.dk/english/def.ihtml
CNRS Center for Direct Scientific Communication	Preprint server for natural sciences and humanities	under construction
U.K. Electronic Libraries Programme	Hybrid libraries with digital archives	www.ukoln.ac.uk/services/elib