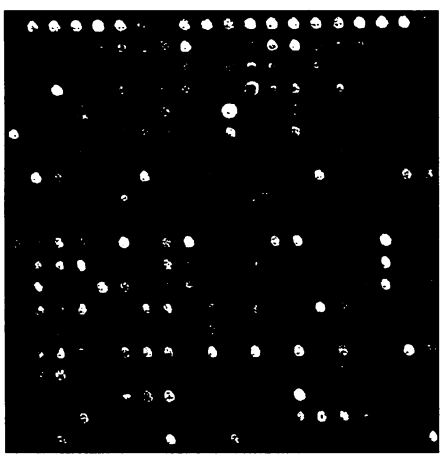
labs. But right now there is no standard format for transferring microarray data between scientists and no rules for how a microarray experiment should be described in a publication. In 1999 a group of bioinformaticists and biologists met in Cambridge, U.K., and formed five working groups to tackle the problem. Last month, at the third such meeting,* two of those groups announced that they are close to submitting recommendations on defining what data should be recorded and the format for transferring and archiving them. "It now has a momentum of its own," says Alvis Brazma of the European Bioinformatics Institute, who convened the first meeting and has seen attendance more than triple, to 300 participants.

The Minimal Information About a Microarray Experiment (MIAME) working group presented a final draft of a document that defines how to describe not only the gene expression data, but also the sample and experimental conditions under which the data were collected. The working group hopes to submit the MIAME document for publication in the next 2 to 3 months in what Brazma calls "MIAME version 1.0."

A second challenge involves creating a tagged-text computer format for transferring and archiving microarray data. One proposal comes from a working group led by Paul Spellman of the University of California, Berkeley. Two biotech firms have also individually crafted proposals for a software standard: microarray developer Rosetta Inpharmatics Inc. of Kirkland, Washington, and NetGenics Inc., a bioinformatics software company in Cleveland, Ohio. The three have agreed to submit a revised consensus proposal to a software standards organization by 18 June. "People are putting aside their egos" in the quest for a single standard, says Doug Bassett, senior director of biosoftware products and services for Rosetta.



Seeing spots. Standards would help scientists share and interpret microarray data.

CREDITS: (TOP TO BOTTOM) BEPPOSAX; NIH

It will then be up to journal editors to enforce the standards. Brazma hopes that eventually authors will be required to deposit data in a public database—but not until it's clear to everyone that the standards capture the right information and don't present a burden to researchers submitting the data, he and others say. Establishing standards is "something everyone realizes needs to happen," says Mike Cherry of Stanford University, who organized this year's meeting. "There'll be a lot of complaints if it's not done well." **–R. JOHN DAVENPORT**

* The Third International Meeting on Microarray Data Standards, Annotations, Ontologies, and Databases, 29–31 March, Stanford University, Palo Alto, California (www.mged.org).

STEM CELLS

NIH Pulls Plug on Ethics Review

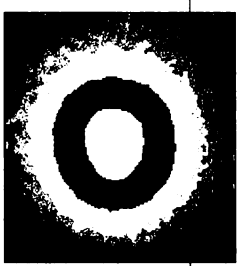
Advocates for research with human embryonic stem (ES) cells are worried by the latest twist in the cells' political story. Last week the National Institutes of Health cancelled its planned meeting of the panel that is supposed to determine whether a given stem cell line complies with NIH's ethical guidelines (*Science*, 6 April, p. 27). Because the NIH can't fund projects until their cell lines have been approved by the panel, the cancellation delays indefinitely federal funding of human ES cell research.

ES cells have the potential to develop into any cell type in the body, and many scientists would like to discover how to use them to treat intractable diseases such as diabetes or Parkinson's. However, the work is controversial because the cells are derived from week-old human embryos. Although a clause in the law that funds NIH prevents the agency from funding research that would harm or destroy an embryo, a lawyer at the Department of Health and Human Services (HHS) ruled in 1999 that because ES cells—which can grow ad infinitum in culture—are not themselves embryos, the NIH could fund work with cells that were derived by privately funded researchers or researchers overseas. The Bush Administration is reviewing that ruling.

Meanwhile, the Human Pluripotent Stem Cell Review Group was to meet on 25 April to review at least one cell line, derived with private funds by Australian researchers Martin Pera and Alan Trounson and their colleagues. However, NIH said last week that the meeting had been cancelled. "The [HHS] department told us inasmuch as they're conducting a review, it was premature for the review group to meet to assess compliance" with the guidelines, said NIH spokesperson Anne Thomas.

ScienceScope

Life Sentence X-ray astronomers are cheering a decision to give BeppoSAX, an Italian-Dutch x-ray satellite, a new lease on life. The Italian space agency ASI last week extended operation of the spacecraft, which was due to die at the end of the month, to 1 May 2002. The reprieve is "just marvelous," says astronomer Stan Woosley of the University of California, Santa Cruz.



BeppoSAX, launched 5 years ago, hit the headlines in 1997 when its wide-field x-ray cameras enabled astronomers to pin down gamma ray bursts (right), the most violent explosions in the universe (*Science*, 23 May 1997, p. 1194). Keeping it alive gives astronomers access to two gamma ray trackers, as NASA launched its HETE-2 orbiter last year.

BeppoSAX is down to just one working navigational gyroscope, but even if it fails officials expect the craft to remain operable due to an upcoming software fix. And if BeppoSAX stays healthy, its mission could be prolonged even further.

How Big? Would a larger, longer grant improve the quality of YOUR research? Principal investigators and their institutions will be able to take a swing at that softball question this year as part of a survey designed to improve grants management at the National Science Foundation (NSF). The survey is intended to help the government "determine the 'right' grant size for the various types of research [NSF] funds," according to the president's recent 2002 budget request to Congress.

NSF officials hope it also will lead to double-digit budget increases in 2003 and beyond. NSF director Rita Colwell has already calculated that National Institutes of Health–sized awards would require a doubled budget, but White House officials have complained that such calculations are based on anecdotal rather than hard evidence.

The community stands ready to pitch in. At last week's NSF budget briefing, Alan Kraut, executive director of the American Psychological Society, asked Colwell: "What can we do to help you convince [the White House]?"

Contributors: Jocelyn Kaiser, Wayne Kondro, Michael Balter, Govert Schilling, Jeffrey Mervis

That worries stem cell advocates. "I'm traditionally an optimist, but I don't take this as a very good sign," says Tim Leshan of the American Society for Cell Biology, which has been lobbying in favor of the research.

Meanwhile, Senators Arlen Specter (R–PA) and Tom Harkin (D–IA) introduced a bill on 5 April that would authorize NIH to fund derivation of and research on human ES cells. Two antiabortion senators are cosponsors, Senator Strom Thurmond (R–SC) and Senator Gordon Smith (R–OR).

–GRETCHEN VOGEL

JAPAN

Women Academics Propose Steps to Equity

TOKYO—The campaign has begun. On 30 March, 35 Japanese women scientists met here to draw up a list of obstacles they face in obtaining grants and plot a lobbying effort to create a better working environment. But initial reaction suggests that some of those barriers—while they pale in comparison to more serious forms of discrimination—are rooted in the country's culture or its economic woes.

"Women scientists [in Japan] face a mountain of troubles," says Mariko Kato, an astrophysicist at Keio University's Hiyoshi campus in Yokohama and one of the conference organizers. "We have to start with those problems that have easily identifiable solutions."

As is true elsewhere, women hold a disproportionately small share of senior faculty positions in Japan's universities (*Science*, 2 February, p. 817). Although participants suspect that discrimination and harassment play a major role in keeping them from achieving equity, they also point to a slew of seemingly innocuous policies that, in practice, put them at a disadvantage in competing for grants.

One such policy is the automatic termination of grant funding if the recipient goes on leave for more than 6 months. It clashes with the rule allowing women at national universities, and some private universities, a full year of leave after childbirth. The policy forces women returning from maternity leave to reassemble their labs and restart their research careers, say symposium participants, who also complained about a rule that restricts most grants for new investigators to those age 37 or younger. With more women wanting to resume their research careers after starting a family, they say, a ceiling based on years in the field rather than age would be more equitable.

An even bigger problem may be a rise in the number of part-time and nonpermanent university faculty and staff positions at private nonprofit institutes, a trend fueled by the sagging economy. "No one ever expected that so many researchers would be stuck in temporary positions," said Michiyo Nakane, a science historian now working as a part-time lecturer at Rikkyo University in Tokyo. Although the squeeze on tenured positions applies to both men and women, men are more likely to be appointed to permanent posts when they are offered.

Another source of irritation for women and confusion for reviewers is a rule requiring grant applicants to use the name entered in Japan's family registry. By law, married couples must register under one name, and most choose the husband's name. Although many women still use their family name on the job, some faculty members have been pressured by their superiors to use their registered name.

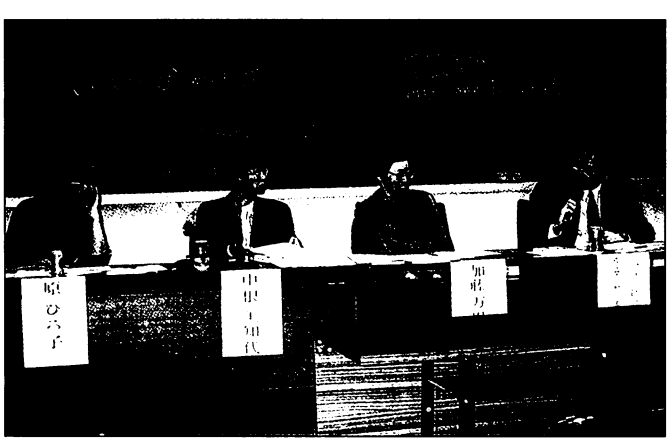
Gamely defending the government's current policies was Kenji Sakuma, director of planning in the Scientific Research Aid Division of the Ministry of Education, Science, Technology, Sports, and Culture (Monbukagakusho), which is the primary source of grants for researchers. Sakuma brought good news on some issues, including the fact that grant applicants will soon be able to choose which name they prefer to use. He also said that the ministry would like to find a way to make grants compatible with childcare duties. But those rays of light were more than overshadowed by his defense of the status quo on other topics.

Grants need to be terminated if researchers are on leave for extended periods, he explained. "The intent of research grants is to support world-class, leading-edge research," said Sakuma, adding that a hot idea can grow cold if put on hold for a year. And extending grants to nonpermanent employees, who are typically on 1-year contracts and often lack laboratory space, "would be very difficult."

The symposium participants took heart from what they see as a growing awareness of the issue. Hiroko Hara, a cultural anthropologist at the University of the Air in Chiba, noted that the Association of National Universities and the Science Council of Japan, the country's largest grouping of researchers, have recently issued statements in support of more women professors and researchers. "There is a lot of power behind these requests," she said.

Some noted that the meeting itself was a sign of progress. "A decade ago we were just trying to get women into research. Now we're getting to the point of addressing specific problems [that hold women back]," said Mitsuko Asakura, a professor of labor law at Tokyo Metropolitan University. Participants hope that, over time, such incremental changes in the grants process may ultimately achieve their goal of parity.

–DENNIS NORMILE



Under fire. The government's Kenji Sakuma, right, discusses gender issues with faculty members (from left) Hiroko Hara, Michiyo Nakane, and Mariko Kato.

CREDIT: D. NORMILE

WORKFORCE DIVERSITY

NSF Makes the BEST Of a Good Idea

Every PI should have it so easy. On 8 January, John Yochelson submitted a proposal to the National Science Foundation (NSF) to create a $10 million, industry-led organization to promote diversity in the U.S. scientific workforce. Barely 6 weeks later, Yochelson learned that eight federal agencies had agreed to give him $2.3 million, an award that was officially announced earlier this month at the national innovation summit of the Council on Competitiveness, a Washington, D.C.–based nonprofit. Its speedy success is testament to two government officials who decided not to let yet another federal report on the problem gather dust.

Yochelson heads the council, which will serve as midwife for a new entity called Building Engineering and Scientific Talent. BEST hopes to become a national clearinghouse on diversity in science and engineering, studying what works and publicizing its findings. The council has also pledged to raise an additional $7 million or more from corporations and foundations to get BEST off the ground.

The council's proposal dovetailed with a recommendation of the Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology,