oppose. "White males are at a disadvantage in groups and departments with strong affirmative action programs," said one respondent. Declared another: "I object to the depth of discrimination carried out in the name of affirmative action."

Some comments came from women who felt hurt by the very programs designed to help them. One recalled, "I've been told by a major university: 'We have a position for you as a woman.' This discriminates against qualified men and degrades my science reputation as secondary to my gender." Another argued, "Hiring quotas harm their intended beneficiaries, whose competence is more open to question." A third respondent wanted to be judged on her own merit: "Many females, myself included, would not want an appointment in which some perceived minority status was instrumental in the decision."

Burbidge says she was motivated by much the same feeling in 1971, when she rocked the astronomy community by refusing an award given only to women. "If my strong feeling is against any kind of discrimination," she says, "I have to stretch that to include discrimination for women too."

Indeed, Burbidge and other women who have risen to the top of their field are eager to put the issue in perspective. Most of them experience little discrimination themselves, and a few think the problem for all women has been overstated. Margaret Geller of the Center for Astrophysics at Harvard, an expert in the large-scale structure of the universe, thinks it deserves little attention compared to the funding crisis besetting all scientists.

Others accept the existence of subtle discrimination, but exhort their younger peers not to be daunted. "If it's what you want to do," Burbidge says, "when you meet with discrimination you will find some way around it." Sidney Wolff goes even further. "I think by focusing on all the trouble, we may be discouraging young women." She says she has been dismayed to find that many women undergraduates are being scared away from astronomy by the stories of harassment and discrimination they hear.

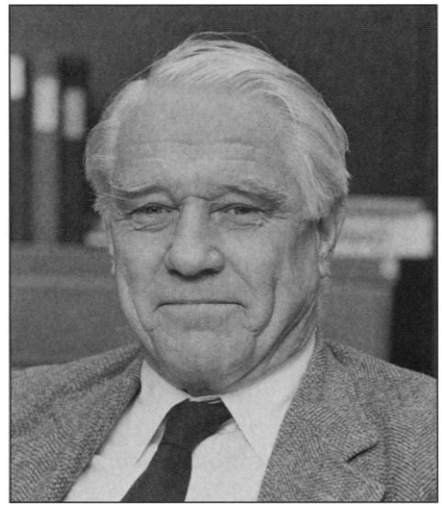
Astronomer Michelle Kaufman of Ohio State University, who spoke candidly about her conviction that sexual discrimination had held her back in a low-paying job, said she was recently caught completely off-guard when a reporter asked her how she could still encourage young women to enter astronomy in the face of such obstacles. She had never questioned the rewards of a career in astronomy, she says. Vera Rubin summed up similar feelings. "Astronomy is great fun," she says. "The tragedy is that thousands of women are being denied a lot of fun." ■ FAYE FLAM

Scientists Get Mad at OSI

NIH's investigative agency is coming under fire in two celebrated cases involving Robert Gallo and David Baltimore

Richards Panel: Out of the Loop?

The office charged with investigating scientific misconduct within the Public Health Service has finally completed its long-awaited draft report on National Cancer Institute (NCI) researcher Robert C. Gallo and his former NCI colleague Mikulas Popovic. What does the report say? A lot of people would like to know, not least those under investigation. But one group that expected a first look is the panel of experts that the National Institutes of Health (NIH) convened to assure that the investigation was both fair and thorough. The panel had planned to meet last month with the Office of Scientific Integrity (OSI), which produced the report, but to the dismay and annoyance of panel members, that meeting was canceled at the last minute, adding the panel members' voices to the growing chorus of critics of the way NIH conducts its inquiries into scientific misconduct.



Frederic Richards

The OSI had originally intended to give its advisers, headed by Yale University biochemist Frederic M. Richards, first crack at the draft report. A meeting was set for 20 May at NIH headquarters where the panel members (a group drawn from names proposed by the National Academy of Sciences) would be able to critique the proposed version. The accused would be protected from premature leaks—a sore point with David Baltimore's colleague Theresa Imanishi-Kari—because no documents would emerge from NIH headquarters.

But Gallo's attorney, Joseph N. Onek, cried foul, pointing to OSI rules requiring that subjects of investigations be given a chance to review and respond to the case against them before others review it. NIH director Bernadine P. Healy agreed that Gallo and Popovic deserved a first look and, as first reported by journalist John Crewdson in the 17 June edition of the *Chicago Tribune*, she called off the 20 May meeting. In a fax to Richards, sent on 15 May, she also expressed concern that providing the panel with the report would increase the risk that it would be leaked to the news media.

This decision upset many members of the Richards panel. In a letter to Healy dated 21 May, a copy of which has been obtained by *Science*, Richards wrote that, "We are greatly concerned by your decision to provide a copy of the draft report of the OSI Investigation to Dr. Gallo *before* review by the panel. We believe that there is a high probability that all or parts of the draft report will rapidly be made public, and that any future work of the panel may therefore be compromised." Panel members who consulted with one another by telephone following the NIH decision to cancel the 20 May meeting were particularly concerned that if a draft report were leaked by the principals, people might get the impression that their group had blessed the report when in fact they had never seen it.

Healy argues that OSI's responsibilities to those under investigation outweigh any embarrassment the panel might feel. In an interview with *Science*, she said that, "If you have guidelines...then you have an obligation to honor them. The fact that somebody might leak the document isn't a good enough reason to deprive the scientist of the opportunity to review a report that is about that scientist."

At the same time, Healy says she is somewhat sympathetic to panel members who feel excluded from the OSI process because "they have a rather ambiguous role." The initial charge to the panel was to help OSI determine whether an "inquiry" into the work of Gallo and Popovic should be raised to the level of a formal investigation. Once that happened last October, the panel's role was no longer spelled out.

But the panel has never felt that OSI was truly happy having its advice. Indeed, some members of the panel believe OSI would not have upgraded their inquiry to a full-fledged investigation if left to its own devices. "They took the decision to upgrade the inquiry kicking and screaming," *Science* was told. The result, *Science* has learned, is that members of the Richards panel are divided in their feelings about OSI. Though annoyed with this latest twist, some believe OSI has always managed to do the right thing in the end—until now, at least—while others hold a considerably harsher view of the office.

The one area where there seems to be no argument is the goals of the investigation of Gallo and Popovic. It is intended to clear up questions relating to data presented in two scientific papers in 1984, as well as to determine whether the NCI scientists had been able to transmit a virus supplied them by Luc Montagnier of the Pasteur Institute in Paris into a permanently growing cell line, something they said in print they couldn't do.

Now that OSI's examination of these issues has apparently been completed, Richards has asked Healy to spell out what's left for the panel to do. "Once this information is in hand," Richards wrote, "the panel members will decide whether they can, in fact, be of any further use to NIH in bringing this matter to a final conclusion." A clear implication is that panel members have considered resigning.

In her reply to Richards, dated 5 June, Healy asks that the panel be available to review the report after Gallo and Popovic have seen it, and expresses the hope that "you will be willing to assist in the final stages of the assessment."

"NIH has to take action on this particular case," Healy told *Science*. "Any action, and also a review of the report, a review of any breaches of confidentiality, as well as the rebuttal to the report will be presented to the Richards committee should the Richards committee choose to stay in the loop. If the Richards committee doesn't want to play that role, that's their call."

And where exactly is the draft report now? Although completed, as *Science* went to press it remained in the cautious hands of OSI, which hadn't shown it to anyone. "We're just in the very preliminary stages in looking at the report," insists Carl Kupfer, acting deputy director of NIH for intramural affairs. But, he adds, it shouldn't be long until it goes to the principals. "It's on a very fast track," says Kupfer. ■ **JOSEPH PALCA**

Did Imanishi-Kari Get a Fair "Trial"?

The National Institutes of Health's Office of Scientific Integrity (OSI) must be reeling under the onslaught of bad publicity it has received in recent weeks. A group of 143 scientists, including some eminent immunologists, recently complained that OSI denied basic rights of due process to Thereza Imanishi-Kari, co-author with Nobel laureate David Baltimore of a disputed 1986 paper in *Cell*. In the same case, the OSI faces a flap over a scientific panel member who failed to disclose a potential conflict of interest. And all this comes as the agency has been forced to publish anew its rules for investigating scientific misconduct because a court declared that the previous set was drawn up illegally.

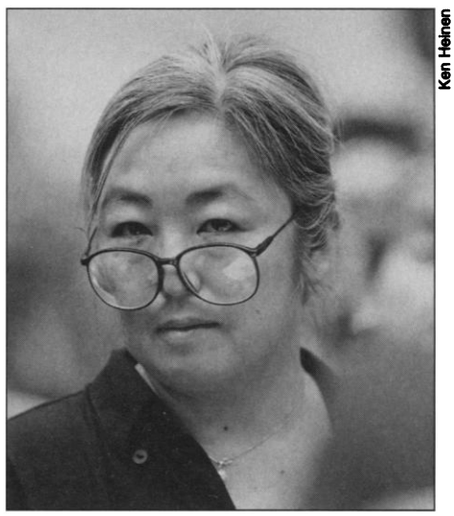
The letter-writing protest, organized by David Parker of the University of Massachusetts at Worcester and Joan Press of Brandeis University, attracted prominent cosigners such as Stanford immunologists Leonore and Leonard Herzenberg (who have conducted research similar to Imanishi-Kari's) and Imanishi-Kari's old mentor, Klaus Rajewsky of the University of Cologne. They complain that OSI did serious harm to Imanishi-Kari's right to defend herself by failing to give her an opportunity to confront witnesses and review evidence against her, and by withdrawing her funding before issuing a verdict (*Science*, 29 June 1990, p. 1598). The letter has been sent to NIH director Bernadine Healy and OSI director Jules Hallum.

The signers also object to what they see as a too-close connection between OSI and Congress, charging that OSI obtained its Secret Service forensic analysis from a congressional committee. Hallum and committee aides both dispute this contention, pointing out that OSI commissioned its own independent forensic analysis.

Hallum, who described the letter as "very helpful," declined to comment further. In the past, OSI officials have maintained that their procedures provide sufficient due process, especially since scientists can appeal the most severe OSI sanction—debarment from receiving federal grants—in an administrative court with full legal protections.

Those procedures, however, have operated under a legal cloud since last December, when a federal district judge in Wisconsin ruled that they were not drawn up in accordance with federal law (*Science*, 11 January, p. 152). At least two other researchers have since filed similar suits (*Science*, 1 March, p. 1011). To forestall more suits, the Office of Scientific Integrity Review (OSIR)—a kind of "superoffice" in the Public Health Service that reviews the findings of the OSI—has decided to publish the office's policies and procedures in the *Federal Register*. At the same time, the Department of Justice has filed an appeal on OSI's behalf, arguing that the procedures are not federal "rules" requiring a public notice and comment period. "In effect, we're complying with the decision while appealing it," says OSIR director Lyle Bivens. The procedures, published on 13 June, will be open for comment for 60 days.

But the OSI's problems aren't limited to procedures. Last week, *The New York Times* reported that OSI officials had asked University of Chicago immunologist Ursula Storb to resign from OSI's scientific panel in the Baltimore case. According to the *Times*, Storb neglected to tell OSI that she had



Ken Heinen

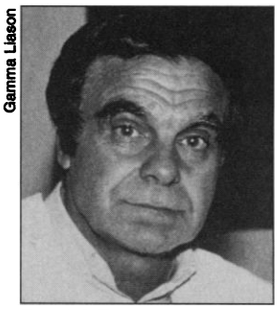
Thereza Imanishi-Kari

once written a letter of recommendation for Imanishi-Kari. Storb reportedly called the matter "ridiculous" and has refused to resign. Repeated attempts to contact her were unsuccessful. But some of her colleagues have risen to her defense. They explain that scientists are frequently called upon to evaluate candidates for hiring, promotion, and tenure at other universities, often doing so on the basis of little more than a curriculum vita and a list of publications. Storb reportedly contends that she wrote just such a letter for Imanishi-Kari, and that she had forgotten it by the time she joined the panel.

OSI's sensitivity in this matter is likely to be high, since the first NIH panel to investigate the Baltimore case had to be dismissed when two of its members revealed close ties to Baltimore. Whatever its response to this and its other recent challenges, it seems clear that the office is sailing into deeply troubled waters. ■ **DAVID P. HAMILTON**

French Ban Immunotherapy Treatment

Paris—France's Minister of Health, Bruno Durieux, ruled last Friday that trials of an AIDS vaccine immunotherapy treatment developed by Daniel Zagury, the controversial immunologist based at the Saint Antoine Hospital in Paris, must be discontinued. According to a report submitted to the ministry by Jean-Paul Lévy, director of the National Agency on AIDS Research (ANRS), at least one of Zagury's patients died as a result of infection from vaccinia virus used in the experimental treatment. And vaccinia infection may have contributed to the deaths of two other patients.



Gamma Liaison

Daniel Zagury

The vaccinia virus, which had been genetically engineered to express AIDS virus proteins in order to help boost immune defenses against AIDS, had not been properly inactivated, the report concludes. Although vaccinia is not normally dangerous, it has been known since the days of mass vaccination campaigns (for polio, for example) that it could prove fatal to people—such as AIDS patients—whose immune systems are impaired.

Questioned in Florence, Italy, where he is attending the VII International Conference on AIDS, Zagury told reporters that he has already discontinued all experimental treatments using vaccinia virus. But that may not remove him from the public spotlight—nor from further investigation. Durieux said that Lévy's report would be forwarded to the French Medical Association, the Conseil de l'Ordre des Medécins, which may investigate whether Zagury violated ethics rules.

Even if no further official action is taken in France, however, there could be repercussions of this news in the United States and Britain. A preliminary account of Zagury's work was published in the British journal *Lancet* last July. Robert Gallo and Bernard Moss of the National Institutes of Health were among the paper's authors. In the paper, Zagury claimed that the health of 14 volunteers who received the treatment improved relative to a control group. No mention was made in that paper of three deaths that had occurred among people ill with AIDS who were not part of the original study design but had been added to the trial on compassionate grounds. Nor were Zagury's American collaborators informed of those deaths.

In his report, French AIDS chief Lévy does not address this issue but does question the value of the published work, pointing out that patient groups were not correctly randomized, trial and control groups were not matched, the size of groups was too small, and criteria for including patients too imprecise. In conclusion," he writes, "results obtained up to now must be considered as preliminary and of a limited significance."

The report also questions the general validity of the immunotherapy approach, whether using vaccinia or not. Although the methods are similar, immunotherapy—which seeks to strengthen immune defenses in people carrying a virus—has scored none of the past successes of vaccination intended to protect against infection. Lévy writes: "To my knowledge, it has never been possible to demonstrate the protection by active immunotherapy of animals infected with a lentivirus or other retrovirus."

But Lévy does not suggest a ban on AIDS immunotherapy research, other than that using vaccinia. Instead he has made a proposal, accepted by Durieux, that any planned trials should be submitted to evaluation by independent committees of scientists. Had such a committee existed, it would likely have pointed out the possible problems with inactivation of the vaccinia virus, he says.

Lévy also calls for a review of the notion of "compassionate treatment," saying that such treatment should rely only on drugs or techniques with demonstrated efficacy. The compassionate cases added to Zagury's protocol were AIDS patients with very low white-blood cell counts, but the treatment they received was experimental vaccine.

One other venue where the Zagury issue will be taken up is Zaire. There, over a 5-year period, Zagury has treated other people on compassionate grounds, including children. The results have never been published in a scientific journal, and it is not known whether any patients died. Durieux said that the French report will now be forwarded to Zairian authorities.

■ ALEXANDER DOROZYNSKI

Alexander Dorozynski is a free-lance science writer based in Paris.

Steps Toward a Cooler Greenhouse

A reluctant Bush Administration has gotten another nudge toward action on greenhouse warming from a committee of the National Academies of Science and Engineering and the Institute of Medicine. In April the committee had urged the Administration and Congress to begin cutting emissions of greenhouse gases immediately (*Science*, 12 April, p. 204). The risk of delay is great, the committee said, and the cost of "insurance" against disastrous climate warming is "cheap."

Now the committee's panel on mitigation has issued a 500-page report* describing just how cheap that hedge against a climate calamity could be. Echoing an Office of Technology Assessment report released last February, the panel found that "it would not be unreasonable to expect that a roughly 25% reduction in U.S. greenhouse gas emissions...might be achieved at a cost of less than $10 per ton of carbon dioxide" or its equivalent in other greenhouse gases. In more familiar terms, that considerable reduction in greenhouse emissions would cost about $4.75 for each barrel of oil burned or $0.11 per gallon of gasoline. The most cost-effective measures for reducing emissions, the report says, are increasing the energy efficiency of residential and commercial buildings and activities, vehicles, and industrial processes that use electricity.

The panel's reminder comes as delegates gather in Geneva for the second meeting of the UN-sponsored Intergovernmental Negotiating Committee for a Framework Convention on Climate Change. At the first meeting, in February (*Science*, 22 February, p. 868), it became obvious that, despite a shift in the U.S. stance toward greenhouse mitigation, the Bush Administration was still unwilling even to contemplate a commitment to controlling carbon dioxide emissions, the central problem of greenhouse warming. Instead, the Administration said that the United States would stabilize—not reduce—its greenhouse emissions by the year 2000, largely by relying on the reductions in chlorofluorocarbon emissions already promised for the protection of stratospheric ozone.

The mitigation panel's report, in contrast, focuses on low- and no-cost options that could reduce emissions of carbon dioxide and other greenhouse gases, albeit with the help of market manipulation that is distasteful to the Administration. As they sit down in Geneva, U.S. negotiators will probably be reminded often of the glaring gap between the Administration's stance and the expert advice it is getting. ■ RICHARD A. KERR

**Policy Implications of Greenhouse Warming—Mitigation Panel,* National Academy Press, 1991.