that Beijing University doesn't have the resources to do the genetic analyses of the blood samples, some 4200 of which are locked in a well-guarded safe at Beijing University. University officials are seeking additional support from China's Natural Science Foundation, but scientists have not sought state permission for international help in analyzing the blood samples. "Currently it's too sensitive a topic," says Zeng. As for the suit, none of the cases has reached a judge, although two courts held hearings last fall to gather evidence.

Outside scientists believe that the suit raises a larger issue, namely, China's right to equal status in any international collaboration. "We don't have to find out the original motives of the project organizers," says Yang Huanming, director of the Human Genome Center of The Institute of Genetics with the Chinese Academy of Sciences, who helped draft the recent regulations on exportation of human genetic materials. What's critical, he says, is that "the project must be carried out on the basis of mutual benefit and equality."

–ZHANG DAN AND XIONG LEI

Zhang Dan and Xiong Lei write for *China Features* in Beijing.

SCIENCE CAREERS

MIT Issues Mea Culpa On Sex Bias

The Massachusetts Institute of Technology (MIT) is winning widespread praise for publicly admitting that it has sinned—if only inadvertently—against women scientists. A report from an MIT faculty committee posted on the university's Web site this week concludes that MIT's School of Science has provided a better work environment for male faculty members than for women. Officials say they have taken steps to rectify inequalities among the School of Science faculty, and the university administration is considering how to generalize its new insights campuswide.

> "This problem is the same at all [elite] schools." But "these other universities ... are just in denial."
>
> —Nancy Hopkins

In the summer of 1994, molecular biologist Nancy Hopkins and two other tenured women science faculty members polled their colleagues (the faculty had 15 tenured women and 194 tenured men) and found what they suspected was true: Compared to their male peers, the women were getting less money, office space, and access to research resources and positions carrying greater responsibility. They took their grievances to science dean Robert Birgeneau, who promptly set up a nine-faculty-member committee to explore the issues further.

The committee went on to document numerous instances of gender bias in a series of internal reports withheld from the public. A summary of its final report, completed 2 years ago, was put online this week (web.mit.edu/fnl/women/women.html) as an "educational" process for the whole university, says Birgeneau. Cleansed of telling detail, the report offers only vague observations and conclusions. For example, it states that while junior women faculty feel "well supported" in their departments, "exclusion and invisibility proved to be the common experience of most tenured women faculty." Discrimination in this "post–Civil Rights era" doesn't take obvious forms, the report notes, but "consists of a pattern of powerful but unrecognized assumptions and attitudes" that have concrete penalties such as lower salaries for women as well as "subtle differences in ... treatment." According to Hopkins, "it took a lot of work to put together a case that you couldn't deny."

University officials have swiftly endorsed the report. In an accompanying statement, MIT President Charles M. Vest said, "I have always believed that contemporary gender discrimination within universities is part reality and part perception ... but I now understand that reality is by far the greater part of the balance." Birgeneau, whom the committee praised for his support, told *Science* that all the inequities related to matters such as salaries and lab space have been rectified in the past few years. In addition, he says, school officials are putting more energy into recruiting women science faculty, who have edged up from 22 of 274 positions in 1994 to 31 of 265 this year.

Birgeneau says he hopes other schools will learn from the MIT experience. Hopkins is dubious. "This problem is the same at all schools that are elite," she contends. But "these other universities ... are just in denial."

MIT still has plenty of work to do, Birgeneau says. For example, he says, there are still no women heading departments or labs in the School of Science. In addition, he says, MIT needs to "figure out how to generalize this from women to underrepresented minorities, where we have made no progress whatsoever."

–CONSTANCE HOLDEN

IMMUNIZATION

UN to End Children's Vaccine Initiative

The Children's Vaccine Initiative (CVI)—an alliance of United Nations agencies, private foundations, and industry set up in 1990 to improve vaccination programs for the poorest children in the world—is being disbanded after eight troubled years. No announcement about its future has yet been made, but *Science* has learned that it will be replaced later this year with a new structure for promoting cooperation between public and private sector groups in the international vaccine community. The details have not yet been worked out. Roy Widdus, who heads the CVI secretariat in Geneva, told *Science*: "I can confirm that the CVI is to be dismantled."

The vaccine industry will be sad to see the demise of the CVI, because it gave companies a strong voice with the UN agencies in policy and planning. But others seem to have few regrets. The alliance, observers say, was often hamstrung by turf battles between agencies such as the World Health Organization (WHO) and the UN Children's Fund (UNICEF). Epidemiologist D. A. Henderson of Johns Hopkins University in Baltimore, who headed efforts to eradicate smallpox, says, "I have been very disappointed to see infighting between WHO and UNICEF."

CVI is supported by a grant of $2.5 million per year, principally from WHO, UNICEF, and the World Bank. It was established in 1990 with the aim of reducing the number of children dying from preventable infectious diseases. Its remit was to set priorities for global vaccine development and delivery, promote collaboration between agencies, and find new sources of money.

Despite the high hopes for the initiative, it failed to raise significant amounts of new money or to coordinate the vaccine community fully, says Barry Bloom, dean of Harvard School of Public Health in Boston. Nevertheless, the CVI has had some successes, says Robert Breiman, head of the National Vaccine Program Office of the U.S. Centers for Disease Control and Prevention in Atlanta. "The areas where CVI has been most effective, for example, bringing industry to the table and taking a strategic view on the introduction of new vaccines, are not [easily] quantifiable."

For the past year, the global vaccine community has been discussing how to improve its record of immunizing the world's poorest children. Finally, at a meeting last week in Bellagio, Italy, senior officials from industry and the UN agencies recommended that each agency strengthen its own internal efforts to collaborate and that the CVI should become a scaled-down operation with a coordinating role but no responsibility for policy, fund-

raising, or setting priorities.

Industry is hoping CVI will be replaced by an independent body in which it would have equal status with the agencies. But WHO is not keen on this idea, says Jacques-François Martin, who headed the biologics committee of the International Federation of Pharmaceutical Manufacturers' Associations for 4 years: "The CVI brought industry back to the table. [Now] we feel very frustrated and excluded from the global process at a critical time." Bjorn Melgaard, director of the department for vaccines and other biologicals at WHO, says WHO—under its new head, Gro Harlem Brundtland, appointed last year—has every intention of establishing an equal partnership with the private sector. An announcement is expected in September or October. **–HELEN GAVAGHAN**

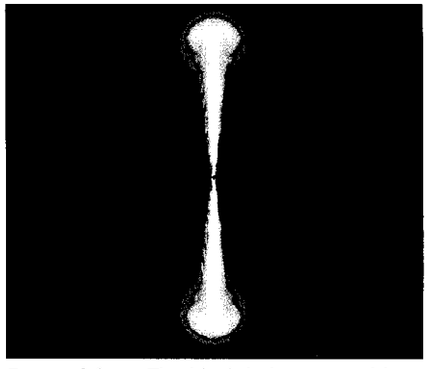
Helen Gavaghan is a writer in Hebden Bridge, U.K.

ASTROPHYSICS

Gamma Beams From a Collapsing Star

ATLANTA—Astrophysicists see a spark of consensus emerging on the origins of mysterious gamma ray bursts, the most powerful explosions in the cosmos today. The longest lived blasts, lasting 10 seconds or more, may arise when new black holes consume doomed stars far more massive than the sun and spit out intense beams of energy, according to work presented here this week at a meeting of the American Physical Society. But other bursts, lasting less than a second, remain unexplained.

If we floated above Earth's atmosphere with eyes that could spot gamma rays, we would see flares as bright as Venus pop off at least once per day across distances of billions of light-years. The most recent detection, on 23 January, pointed to a burst so distant that its brilliance as seen from Earth implied an explosive release equivalent to converting a mass greater than that of our sun into pure energy.



CREDIT: MACFADYEN AND WOOSLEY, UC SANTA CRUZ

Focused fury. The black hole spawned by a massive collapsing star, or "collapsar" (center), may propel fierce gamma ray–emitting jets. Highest energies (white and yellow) emerge in tightly focused beams.

However, studies in this week's *Science* and next week's *Nature* suggest that the burst's energy could have been much lower (see News story, p. 2003). It may have appeared deceptively bright because the object targeted us with a narrow searchlight blast of gamma rays. That jibes perfectly with a scenario championed by astrophysicist Stan Woosley of the University of California, Santa Cruz. His "collapsar" model, devised with graduate student Andrew MacFadyen, proposes an exotic chain of events that may churn out gamma ray beams while generating an outsized supernova explosion.

A massive star explodes as a supernova when it exhausts its nuclear fuel and collapses, and astrophysicists agree that the collapse of the most massive stars spawns black holes. The hole swallows gas from the slowly moving poles of the star. But if the rest of the star is spinning quickly enough, it careens in a disk around the black hole at close to the speed of light. Then, according to Woosley and MacFadyen's calculations, the hole gulps the disk within 10 to 20 ferocious seconds. The inner part of the disk heats to 20 billion degrees and shoots stupendously energetic jets of particles out of narrow channels at the star's poles. Twisted magnetic field lines may help the jets drill into space.

The jets probably collide with clumps of gas billions of kilometers from the star to create gamma rays. Particles within the jets may clash violently against one another to unleash gamma rays as well, Woosley notes. Astronomers would see only about one of every 100 such events in the universe—the ones that happen to point their bright beams at Earth.

This scheme builds on the "hypernova" hypothesis advanced a few years ago by theorist Bohdan Paczyński of Princeton University. "We think the collapsar is the engine that drives the hypernova," Woosley says, because a shock wave from the collapsar would obliterate the rest of the star in a titanic supernova. That concussion would stoke the visible "afterglow" that telescopes see at the burst site. A bizarre supernova last year, called 1998bw, coincided with a relatively nearby gamma ray burst, supporting the idea, Woosley notes (*Science*, 19 June 1998, p. 1836).

Another favored model for gamma ray bursts, merging neutron stars, may explain the blasts that shut off in less than a second. However, such collisions probably aren't energetic enough to account for events like that of 23 January, Woosley believes.

Astrophysicist Gerald Fishman of NASA's Marshall Space Flight Center in Huntsville, Alabama, says Woosley's model is the most credible yet: "There are no showstoppers. People haven't found any fatal flaws." **–ROBERT IRION**

Robert Irion is a science writer in Santa Cruz, CA.

ScienceScope

Hot Developments The federal government got mixed news this month about its efforts to safely stow the nation's nuclear waste. Department of Energy (DOE) officials were pleased on 22 March when a federal judge waved aside a final lawsuit aimed at blocking the first shipment of radioactive waste to its Waste Isolation Pilot Plant (WIPP), a series of excavated salt caverns near Carlsbad, New Mexico (*Science*, 12 March, p. 1626). After a 25-year struggle, WIPP expects this week to offload the first trucks filled with tainted clothing, tools, and nuclear weapons leftovers.

Another long-planned repository, however, faces more questions. On 3 March, a technical review board raised further doubts about the adequacy of plans for a repository under Yucca Mountain, Nevada (above), where Congress wants to stash the bulk of the nation's hottest stuff, such as commercial power plant wastes (*Science*, 12 March, p. 1627). The U.S. Nuclear Waste Technical Review Board asked DOE to reconsider current plans that allow waste to generate high temperatures in the vault. Instead, it wants the agency to ponder designs for keeping lower temperature waste caskets, which have less chance of boiling groundwater and geochemically altering surrounding rock.

Price War Librarians dedicated to driving down academic journal prices are going on the offensive. Next week, the 160-library Scholarly Publishing and Academic Resources Coalition (SPARC) will unveil a $500,000 program to launch five or so university-based electronic journals and Web resources in science, medicine, and technology. The Scientific Communities Initiative aims to give scientists cheaper access to information by creating alternatives to increasingly expensive for-profit journals (*Science*, 30 October 1998, p. 853). For-profit publishers have taken a dim view of such projects, saying it is unrealistic to expect academics to shoulder the burden of providing the services—from editing to proofreading—that they offer. SPARC, however, doesn't foresee any shortage of applicants for the roughly $100,000 grants. Interested groups have until 21 May to apply (www.arl.org/sparc).

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