dermined the IRB's independence and authority in a manner that transcends this study." "In OHRP's experience," Carome wrote, correcting such problems "would necessarily include changes in leadership."

Boren, a former U.S. senator who has led the university since 1994, took the hint. He suspended another 70 university-sponsored trials, disbanded the Tulsa IRB, sent new letters to patients in the vaccine trial disclosing the real reason the study was halted, and appointed a six-member team to devise a scheme for approving and monitoring trials.

At a 21 July press conference, Boren announced that the four men most closely associated with the trial would be leaving the university: He had moved to terminate McGee; dean Brooks and director of research Edward Wortham had resigned; and Plunket had retired. (None of the four responded to interview requests by *Science*.) Boren also outlined an eight-point plan for overseeing clinical research at the university (see box) that closely follows rules, included in a bill introduced in Congress by Representative Diana DeGette (D–CO), that are considered likely to pass. "We have no choice but to demonstrate we're making a fresh start," Boren said. "The system failed because information about potential criticisms and irregularities did not make its way up the chain of command."

Some University of Oklahoma researchers worry that the new requirements are an "overreaction to an isolated incident," as one biochemist who has worked at the Tulsa center puts it. Minnesota's Kahn predicts that "we're going to see more of these kinds of requirements," although he questions whether "more levels of sign-off will protect human subjects." What's needed, he says, is greater attention to how researchers recruit and inform subjects "in the real world."

Meanwhile, researchers and patients who have worked with McGee, a former missionary to Nigeria who came to the Tulsa campus in 1989, say they are stunned by the developments. "He's the last person I know who would ever want to hurt a patient," says Joseph Price III, a biomedical researcher at Oklahoma State University in Tulsa who helped McGee design animal tests for the experimental vaccine. And three patients in McGee's trial have hired a lawyer—not to sue the embattled physician, but to help them petition FDA to release vaccine stocks that they believe will keep them alive.

–DAVID MALAKOFF

CREDIT: NASA

NASA LIFE SCIENCES

An Improvement In Vital Signs

Life scientists hoping to conduct research in space finally have some good news. Last week a hefty Russian module with living and working quarters for astronauts docked with the pieces of the international space station already in orbit, a critical step in creating a full-time orbiting laboratory. Meanwhile, NASA bureaucrats put the finishing touches on a realignment of the agency's struggling biology effort that should bolster fundamental research and allow scientists to make better use of the facility, scheduled to be completed in 2005. The two events raise the hopes of U.S. academic space life scientists that their discipline is at last on the ascent at NASA (*Science*, 12 May, p. 938).

Coming together. The linkup of two Russian modules brings the space station closer to its goal of being an orbiting laboratory.

On 25 July Russian controllers at a mission control center outside Moscow guided the 20-ton Zvezda module into the U.S.-funded and Russian-built Zarya module. The maneuver formed a single spacecraft the length of an 11-story building. Although researchers must wait for the U.S. laboratory to arrive in late January, Vice President Al Gore praised the docking as a sign of the station's pending payoff for scientists, and NASA officials savored the opportunity to move beyond short, sporadic experiments on the space shuttle to more substantive projects. "We finally see the carrot at the end of that stick," says Julie Swain, deputy chief of NASA's life and microgravity sciences office, referring to the long and painful process of getting the station into orbit.

While engineers are putting the station through its paces, NASA managers are overhauling Swain's office in a way that will raise the profile of biological research. The new organization, due to be announced this week, will divide the current life sciences division into biomedical activity and fundamental biological research. The former, which will be run by NASA's Johnson Space Center in Houston, will focus on such human health problems as excessive bone loss from long-duration space travel. The latter, led by NASA's Ames Research Center in Mountain View, California, will include more fundamental research in such areas as cell biology. The two pieces, plus work in microgravity and other fields, will make up an office of fundamental space research.

The new arrangement reflects a shift in emphasis from a program centered on keeping astronauts healthy to one that will foster the exploration of fundamental biological processes. "This change is really necessary and long overdue," says Esther Chang, a genetics researcher at Georgetown University and a member of NASA's life and microgravity sciences advisory panel. "It has been very difficult to keep these two areas together and give each the attention it deserves." NASA now spends $57 million on biomedical research and countermeasures, not including health research and other related areas, and $39 million on fundamental biology.

Whether the new arrangement will translate into a bigger budget won't be clear until next year. "All of the professional societies involved have endorsed significantly increased funding for biological programs," says Norman Lewis, a biologist at Washington State University in Pullman and a former president of the American Society for Gravitational Space Biology. He would like to see a greater investment in Earth-based experiments to complement space-based missions, a view endorsed by agency officials.

NASA officials are looking for a prominent researcher with significant manage-

ment experience to head the new office. Arnauld Nicogossian, the longtime head of the life and microgravity office, was to remain head until his replacement was named, but in mid-July he was relieved of that duty. (Nicogossian is now the chief health and safety officer for NASA.) NASA Chief Scientist Kathie Olsen, a biologist who was instrumental in the reorganization, has been named acting chief while a search is begun for a permanent boss. But sources say she will not apply for the job. Swain, trained as a physician, is said to be a candidate.

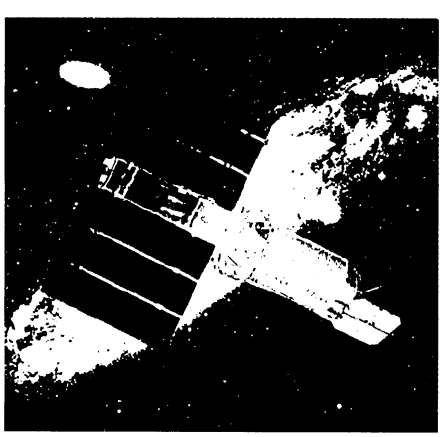
As for what kind of research will be done once the station is complete, Swain says that "we're not even sure what questions we will be answering in terrestrial laboratories. But I think we're going to have a dynamite research program to help find some fundamental answers." **–ANDREW LAWLER**

X-RAY ASTRONOMY

Solar Storm Knocks Out Japanese Satellite

TOKYO—Japan's x-ray astronomy program was dealt a new blow last month when a solar geomagnetic storm left an orbiting x-ray telescope spinning out of control. Scientists are dubious about their chances of saving the 7-year-old Advanced Satellite for Cosmology and Astrophysics (ASCA), whose replacement—the ASTRO-E x-ray satellite—was lost shortly after launch in February. "We haven't given up," says Hajime Inoue, head of space astrophysics research at Japan's Institute of Space and Astronautical Science (ISAS) in Sagamihara, outside Tokyo. "But we don't have a great amount of hope."

ISAS scientists believe a solar storm on 14 July expanded Earth's atmosphere to the point that it increased atmospheric drag on the satellite, which was orbiting at an altitude of about 440 kilometers. The drag disturbed the angular momentum of the satellite, which sent it spinning out of control. The next day it went into a safe mode, spinning in such a way that its solar panels are not facing the sun. Inoue says the best chance for regaining control of the satellite will come in a month or so, when ASCA moves into a better position for generating solar power.



CREDITS: (LEFT TO RIGHT) ISAS AND NASA-GODDARD; A. KING/AP

Premature ending. Solar storm increased atmospheric drag on ASCA, sending the spacecraft spinning out of control.

Developed jointly with NASA's Goddard Space Flight Center and several American and Japanese universities, ASCA had been a key component of ISAS's relatively small but carefully targeted space program. Its observations have generated more than 700 papers, Inoue notes proudly. One major finding was the detection of iron in the x-ray emissions from accretion disks, the swirls of gas and dust that orbit black holes. These iron emissions bore telltale evidence of the enormous gravitational pull of the black hole, something expected but never before observed. "ASCA had already been a very big success," Inoue says.

ASCA would have lasted only another year before falling into Earth's atmosphere. And a replacement for the lost ASTRO-E is still 4 to 5 years away. In the meantime, Japan's x-ray astronomers are trying to borrow time on other instruments. "There is a big gap in our [observational] program," Inoue says. **–DENNIS NORMILE**

BIOTECHNOLOGY

USDA to Commercialize 'Terminator' Technology

For the past year, the U.S. Department of Agriculture (USDA) has been juggling a political hot potato: whether to pursue commercialization of a controversial biotech discovery that can render seeds sterile. A diverse group of opponents, including some scientific groups and companies, have disavowed this so-called "terminator" technology as an unconscionable threat to poor farmers. But last week USDA officials announced they will move ahead with the technology because of its scientific promise—albeit with conditions negotiated with its industry partner to guard against it being used in harmful ways. Antibiotech activists adamantly oppose the decision, which runs counter to the intentions even of biotech giant Monsanto.

At issue is what is formally called a "technology protection system," developed by USDA and Delta & Pine Land Co. (DPL) of Scott, Mississippi, which are co-inventors on related patents. The intended application is to protect a company's investment in developing genetically engineered plants by preventing farmers from using their seeds for the next year's planting. This is done by adding three genes to a plant. If the seeds from the modified plants are treated with an antibiotic, the plants that grow from those seeds will pro-

ScienceScope

Costly Conference An animal genetics conference has sparked the costliest police action in Minnesota history. Police spent nearly $1 million providing security for the recent International Society for Animal Genetics conference in Minneapolis, state officials said last week.

Animal-rights protesters had threatened to shut down the 5-day meeting of 650 scientists, which ended 26 July. But disruptions proved minimal as riot-ready police generally outnumbered protesters, who mustered just 100 people for their biggest march against biotechnology and animal experimentation. Still, "the experience was tense," said one attending scientist.

Some local politicians aren't sure the money was well spent. "The fact that [police spent $770,000] to control a couple of hundred protesters seems crazy to me," city councilman Jim Niland told the Minneapolis *Star-Tribune*. Officials plan to finish a protest postmortem this fall.

Switchback AIDS researchers in Italy are celebrating a government decision to rescind a 36% cut in extramural funding for HIV research. The change of heart leaves intact last year's grants budget of about $10 million, which mostly comes from the Istituto Superiore di Sanità (ISS) in Rome.

Last week's reversal came less than a month after *Science* reported—on the eve of the international AIDS meeting in Durban, South Africa—that authorities planned to gut the program (*Science*, 7 July, p. 28). "No sooner was the ink dry on the pages of *Science*," commented the Italian weekly magazine *L'Espresso* in its 3 August issue, than "as if by magic [health] minister Umberto Veronesi put everything back in place."

But Stefano Vella, director of the ISS's clinical research program and president of the International AIDS Society—which organized the Durban meeting—laments that the restored funds will come from within the agency's own budget rather than from additional government spending. "This is not a permanent solution, because it causes continuous conflict within the institute" between AIDS researchers and other scientists, Vella says. "It is a war among the poor for research money."