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NIH officials who would inherit the program are confused about the proposal. "The program has been very productive and accomplished many things, and it has in place the mechanisms to evaluate vaccines in underdeveloped countries," says Edmond Tramont, director of the Division of AIDS at the National Institute of Allergy and Infectious Diseases (NIAID). "The world cannot afford to let that collapse. The question is how to save it." (Tramont, who started the military's AIDS research program in 1985, took the NIH job last week in a move unrelated to the proposed shift of the program.)

NIAID director Anthony Fauci met with the current head of the program, Colonel Deborah Birx, to discuss the implications of the proposal. "It was unclear even to her what they were considering," says Fauci. "My experience with the Army's efforts in HIV/AIDS is that they have been and still are an important player in this whole scene. I think this is an important part of their mission."

Burke of Johns Hopkins, who regularly had to defend the military's AIDS research program from superiors who questioned its worth, says President George W. Bush's new Administration needs to be educated about the program's value. Indeed, Army Secretary White endorsed the proposal to eliminate it less than a month after he started his job on 31 May.

The education process began in earnest this week. On 17 July, as *Science* went to press, DOD was planning to hold a high-level meeting to air criticisms and support of the proposal. A final decision is expected by the end of the month. –JON COHEN

ASTRONOMY

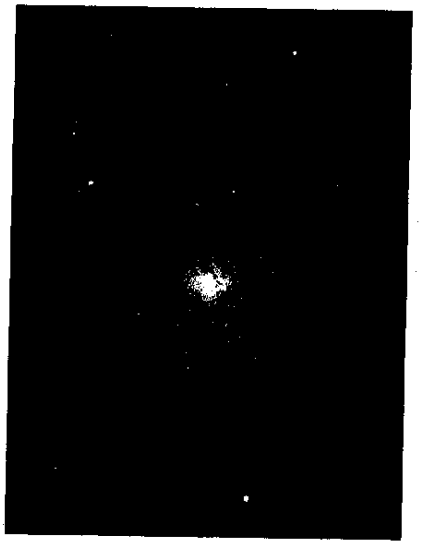
Nearby Galaxy Breaks The Black Hole Chain

An invisible star has not been seen, and astronomers are taking notice.

According to a report published online this week by *Science* (www.sciencexpress.org), the center of a nearby spiral galaxy, M33, seems to have no black hole—unlike all of its larger, more bulging brothers. The finding may help scientists puzzle out the so-far-murky sequence of events by which galaxies assemble themselves.

Elsewhere in our celestial neighborhood, black holes rule. In the center of our own Milky Way galaxy, for example, squats a hungry black hole as massive as several million suns. Although the supermassive black hole itself is invisible to telescopes, astronomers have figured out its position and mass by measuring the velocity of stars wheeling wildly around the monster.

And our galaxy is not the only one that has a black heart. Nearby Andromeda has a 50-million-solar-mass black hole at its center; indeed, astronomers have begun to believe that a supermassive black hole lies at the center of every bulging galaxy. "So far, in every [bulging] galaxy where people have looked, they find a supermassive black hole," says Laura Ferrarese, an astronomer at Rutgers University in New Brunswick, New Jersey, and a co-author of the report.



Missing. Nearby galaxy M33 has no supermassive black hole at its center.

In general, the bigger the galaxy's bulge, the bigger the black hole at its center. However, nobody really knows how these black holes formed, or how they are connected with the bulges. Do the black holes help form the galactic bulges, or vice versa? Or do they form at the same time? And what about flat galaxies that lack bulges—do they harbor black holes as well?

To help clear up at least the last of those questions, Ferrarese and two colleagues pointed the Hubble Space Telescope at nearby M33, a small spiral galaxy about 2.5 million light-years away that doesn't have a bulge. With Hubble's Space Telescope Imaging Spectrograph, the team measured the light spectra from stars near the galaxy's center. By looking at how much the spectral lines are redshifted or blueshifted, the astronomers figured out how quickly the stars at the core of the galaxy were moving.

Sure enough, the stars very close to the center of the galaxy weren't moving much faster than those farther out, as one would expect if a supermassive black hole squatted in the center of the galaxy. If there is a black hole at all, it must be puny compared to its supermassive cousins. "How big a black hole can you hide in there?" asks Ferrarese. "About 3000 solar masses."

"In part, it answers the question of whether black holes are absent in bulgeless galaxies," says Luis Ho, an astronomer at the Observatories of the Carnegie Institution of Washington in Pasadena, California. "It's nice. Now there's one datum, though we'd like to get a lot more." According to Ho, the lack of an apparent black hole at the center of M33 implies that the supermassive black holes in the centers of galaxies form "during or after bulge formation."

Astronomer Karl Gebhardt of the University of Texas, Austin, whose team has analyzed the same Hubble data and come to the same conclusion about M33, agrees. "The process that forms the bulge might form the black hole," he says. If so, careful analysis of galaxies with different-sized bulges will give astronomers snapshots of supermassive black holes at different points in their evolution. That information may enable scientists to figure out how supermassive black holes form, and why there's no invisible star at the center of M33. –CHARLES SEIFE

CREDIT: DAVID MALIN/AAC/RGO

CLINICAL RESEARCH

Procedures Faulted in Fatal Asthma Trial

BALTIMORE, MARYLAND—Eight weeks ago, a young lab technician at Johns Hopkins University in Baltimore died after participating in a clinical study of asthma. The university delayed initial disclosure of the death of the volunteer—Ellen Roche, a 24-year-old employee of the Hopkins Asthma and Allergy Center, which ran the study (*Science*, 22 June, p. 2226)—but this week it made public a 32-page internal report on the case and answered a barrage of questions from the press.

The seven-member inquiry, chaired by cardiologist Lewis Becker, criticized some aspects of the study but found no major flaws. "We will never know the exact cause of her death," said Edward Miller, the CEO of Johns Hopkins Medicine and dean of the medical

faculty. But, he added: "We accept full institutional responsibility" for the tragedy.

The inquiry concluded that the fatal reaction was probably triggered by a chemical used in the trial, hexamethonium bromide. Roche was the third volunteer to inhale this chemical; the first developed a short-lived dry cough, and the second reported no problems. Roche responded differently. The alveolar sacs of her lungs, which transfer oxygen into the blood, were irreversibly damaged. She slowly asphyxiated between 4 May, when she inhaled hexamethonium, and 2 June, when she suffered multiple organ failure.

Full responsibility. Johns Hopkins medical dean Edward Miller announced institutional changes at a press conference.

Hexamethonium blocks certain autonomic system nerves, including those controlling the airways. It was used as part of a simulated asthma episode in volunteers who were given a drug that induces asthma-like effects. More than 3 decades ago, doctors prescribed a pill form of hexamethonium to treat hypertension; that approved use ended when manufacturers withdrew the drug in the 1970s. (Its main side effect was to decrease blood pressure too much.) Clinical researchers a decade ago also gave an inhalable form of hexamethonium—similar to the one used at Hopkins—to 20 volunteers in two independent studies. They reported no ill effects. But, the Hopkins review found, the Food and Drug Administration (FDA) has never approved hexamethonium for any use by inhalation.

The report also notes that, to shorten the procedure, hexamethonium was delivered to Roche's lungs by a more powerful spray mechanism than was used for the first two volunteers. This might have resulted in a higher concentration, the report says, although "the pharmacokinetics of inhaled hexamethonium are not known, and any possible increase in lung tissue concentration in [Roche] cannot actually be verified."

Given the lack of experience with the drug, the panel examined whether the lead researcher, Alkis Togias, and the university's human safety group, the Institutional Review Board (IRB), had researched the hazards adequately. The panel found that Togias's literature review was "standard," although it failed to turn up reports of lung toxicity from 1953 to 1970 among seriously ill patients who had taken hexamethonium intravenously. But the panel faulted the IRB for lack of rigor, concluding that there was not adequate evidence for it to conclude "that inhaled hexamethonium was safe for use in research subjects."

Becker's group also noted problems in the consent form. It didn't state that inhaled hexamethonium had never been approved by the FDA or that volunteers could risk death. The panel found no evidence that Roche or other volunteers had been coerced into participating, but it disclosed that eight of the nine volunteers for the trial were employed by the Hopkins Asthma Center. When asked if employees were expected to volunteer as part of their work, Becker responded firmly that they were not. The aim of the research, Becker's panel said, was "important," and the scientific rationale was "solid."

Miller announced that Hopkins intends to add a third IRB to the two it already maintains—this one to conduct random checks of clinical trials. Plans are also under way for a stem-to-stern review of clinical operations. And all trials directed by Togias, as well as 16 others employing chemicals not approved by FDA for clinical use, have been suspended pending review. "We will have to raise the bar [for clinical research] even higher," Miller said. The next step, he added, will be to ask a panel of experts headed by Samuel Hellman, dean emeritus of the University of Chicago School of Medicine, to take an independent look. That report will go to the university's trustees "by late summer."

—ELIOT MARSHALL

ASTRONOMY

Wet Stellar System Like Ours Found

A solar system is dying, and in its last gasps astronomers 5 light-years away can see signs that a billion comets are blazing into oblivion at once. The discovery of huge amounts of water streaming away from an aging, swollen red giant star in the constellation Leo shows that our own planetary system is not alone in harboring a key ingredient of life as we know it, researchers reported in last week's issue of *Nature*.

Scientists operating the Submillimeter Wave Astronomy Satellite (SWAS) in low-Earth orbit had no intention of getting into

ScienceScope

Brain Drain? A noted U.S. fertility researcher is relocating to England in a move that some researchers say underscores the uncertainty created by the current debate over government funding of research involving embryonic stem cells (see p. 413). University of California, San Francisco (UCSF), researcher Roger Pedersen said this week that he has accepted a job at the University of Cambridge. Pedersen, who has been working with human embryonic stem cells for several years with support from Geron Corp., will maintain ties to his laboratory at UCSF, but the lab will not move with him. "I was faced with an irresistible career opportunity and the possibility of carrying out my research ... with public support," Pedersen said in a statement.

UCSF also announced last week that Pedersen's work has been temporarily suspended until it can be moved to an off-campus building that houses no federally funded research. On 12 July, the National Institutes of Health issued a bulletin clarifying U.S. policy that derivation of embryonic stem cells, which NIH is not allowed to fund, cannot take place in a building that uses federal funds for maintenance or administration. A UCSF spokesperson said Pedersen's lab will resume its work in a new location on or before 1 August.

NSF Names Education Head Judith Ramaley, a biologist and former college president, has been named head of the National Science Foundation's (NSF's) $800 million education directorate. Her appointment last week ended 2 years of uncertainty over the direction of the foundation's second-largest—and fastest growing—segment. On 1 August, Ramaley will replace interim chief Judith Sunley, who will become a senior adviser to NSF director Rita Colwell.

Ramaley, 60, studied fertility and biological rhythms. Her administrative experience includes an acclaimed 6-year stint as president of Portland State University in Oregon and a rocky 4-year tenure as president of the University of Vermont in Burlington, which ended on 30 June. Her Vermont stay was clouded by a hazing scandal involving the men's hockey team.

Ramaley says she is looking ahead to "this marvelous opportunity to view education and training from a national perspective." Former NSF official Anne Petersen, vice president of the W. K. Kellogg Foundation in Battle Creek, Michigan, calls her "a bold, visionary academic leader, a person of action."

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