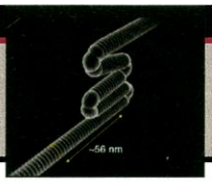
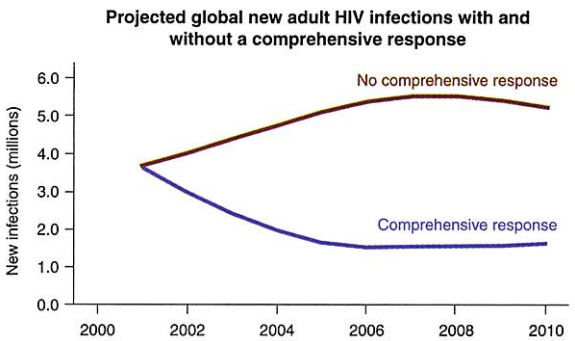






explained, HIV weaves its genes into "memory" cells that allow the body to mount a strong immune response years after infection or successful vaccination. Although these memory cells live only 6 months or so, they occasionally divide. Each time, they pass on their genes—including the passenger HIV. The virus thus can persist without ever replicating. And if it does not copy itself, anti-HIV drugs cannot attack it. "No amount of antiretroviral therapy will ever eliminate this reservoir," said Siliciano, making the disease "intrinsically incurable with antiretroviral therapy alone."




**Human savings.** A major global initiative could prevent more than 3 million new infections a year by 2010.

More discouraging new data came from three different labs about a phenomenon known as superinfection. Researchers have long taken heart in the observation that people infected with HIV seem able to fend off an infection from a second strain of the virus. This resistance to superinfection suggested that although the immune system cannot clear HIV, it can mount enough "cross-reactive" immunity to thwart new strains, an ability that might hold clues to new vaccine strategies. Several cases of superinfection reported at the meeting have dimmed those hopes.

One case analyzed closely by Bruce Walker of Massachusetts General Hospital in Boston sends an especially discouraging message. Walker described a patient who became superinfected despite having very high levels of anti-HIV killer cells, a key immune actor that many current vaccines aim to elicit. And the second virus came from the same family as the first, which should have made it even easier for killer cells to recognize. "It's terrible news," says Brigitte Autran, an immunologist from Hôpital Pitie-Salpetrière in Paris.

Andreas Meyerhans, a virologist at the University of Homburg in Germany, focused on another disturbing phenomenon: "rampant recombination." HIV-infected people carry many variants of the virus, either as a result of mutations or superinfection. It's long been known that different HIVs can exchange genetic material, giving rise to recombinant variants. But the frequency of recombination, which plays a key role in viral evolution and HIV's ability to dodge drugs or vaccines, has remained a mystery.

By isolating individual HIV-infected cells, Meyerhans and co-workers found evidence of at least two different variants—and as many as eight—a staggering 75% of the time. "It's a really interesting and beautiful study," said Walker. The finding, published in this week's issue of *Nature*, might help solve a long-standing puzzle: why multidrug resistance variants surface so quickly. It also raises serious questions about phylogeny trees that attempt to date the origin of HIV, all of which intentionally discard suspected recombinants to make the data interpretable.

On a brighter note, Ann Sheehy, a postdoctoral student at the University of Pennsylvania in Philadelphia, created much buzz with a discovery about HIV's least understood gene, *vif* (for virion infectivity factor). The Vif protein is believed to suppress an antiviral factor in human cells. Sheehy, working in the lab of virologist Michael Malim (now at King's College London, U.K.), found this long-sought factor, a protein called CEM15. Malim imagines that a drug might derail Vif by binding to CEM15 without affecting the cellular protein's function. "I think it's one of the most important contributions of the last few years," said Mario Stevenson, a prominent virologist at the University of Massachusetts, Worcester.

**Power politics.** By the time the meeting drew to a close, 10 former or current prime ministers and presidents had shared their views, including former U.S. President Bill Clinton, former South African President Nelson Mandela, Rwandan President Paul Kagame, and Mozambican President Pascoal Mocumbi. "No one can sit on the sidelines," said Clinton, who spoke along with Mandela at the closing ceremony.

Joep Lange, a clinical investigator at the University of Amsterdam who is the new president of the International AIDS Society—the meeting's main organizer—praised the many political leaders for attending. "But let's face it: These are the exceptions," said Lange, who called for a militarylike operation to scale up access to treatment. "Bad government and lack of leadership has actually killed more people than anything else," he said. Six million people today living in poor countries need anti-HIV drugs, but fewer than 2% receive them. "We need to make a plan of action for a concerted global effort," he said. "And yet despite the rhetoric, including the rhetoric about moving beyond the rhetoric, we fail to act."

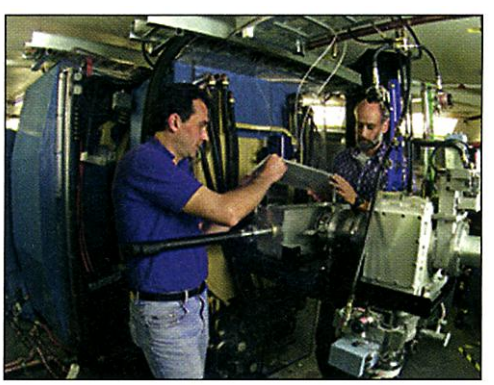
The next international AIDS conference will take place in Bangkok, Thailand, in 2004.

–JON COHEN

HEAVY-ION PHYSICS

## Heavy-Element Fizzle Laid to Falsified Data

In 1999, physicists at Lawrence Berkeley National Laboratory (LBNL) in California startled many of their colleagues with an announcement that they had discovered elements 118 and 116 by smashing lead nuclei and krypton nuclei together. Some heavy-ion experts, including Sigurd Hofmann of the Institute for Heavy Ion Research (GSI) in Darmstadt, Germany, thought this "fusion" method of generating superheavy elements was already at its limit, so Hofmann was pleasantly surprised by LBNL's achievement. The surprise, however, turned out to be justified: LBNL has concluded that the "discovery" of elements 118 and 116 was



**In happier times.** Victor Ninov (left) works on LBNL's element 118 experiment.

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based on falsified data.

"It's a conclusion that scientists are very reluctant to arrive at, but it is what happened in this case," says Pier Oddone, deputy director for research at LBNL. "Our conclusion was that the data had been fabricated." After an investigation, says Oddone, "the lab took action" and in May dismissed the individual thought to be responsible. Ron Kolb, a spokesperson at LBNL, declined to describe the alleged misconduct or to mention names, but he confirmed that Victor Ninov, who was in charge of the data analysis of the experiment, has been fired from the laboratory. And now, scientists in Germany say they have found falsified data in two other experiments that Ninov participated in: the 1994 and 1996 discoveries of elements 110 and 112.

The LBNL discovery began to fall apart last year. After GSI, LBNL, and other laboratories failed to replicate the experiment, an LBNL team reanalyzed the original data. Shockingly, the crucial evidence for the "discovery"—cascades of alpha particles that accompany the deterioration of a superheavy element—was nowhere to be seen (*Science*, 3 August 2001, p. 777). "They looked again at the old data, the magnetic tape, and they couldn't find the decay chain among the data," Hofmann says. "The conclusion was that it was produced artificially."

LBNL informally retracted the discovery last July. This week, all 15 authors of the original discovery paper except Ninov published a formal retraction of their claim in the 15 July *Physical Review Letters*. And, according to Hofmann, two experiments performed at GSI—for which Ninov was in charge of data analysis—also showed signs of scientific fraud. "When we reanalyzed our decay chain for element 112, we saw that the first decay chain was produced artificially," he says. "In the original data, only one alpha particle was measured. Four additional alphas were artificially added to this one." In the GSI experiment for element 110, the second of four decay chains also seems to be a fabrication, Hofmann says.

"I couldn't understand it; I still cannot understand it," says Hofmann. "We had good data. There was no reason to produce artificial ones—and [the culprit] would be sooner or later discovered." Luckily for the GSI team, the good data were enough to prove the existence of elements 110 and 112. But elements 116 and 118 vanished along with the spurious data, leaving the scientists at LBNL stunned and embarrassed. "It is a shock. The reaction is astonishment and anger," says Oddone.

—CHARLES SEIFE

MIDDLE EAST

## Archaeologists Keep Joint Project Rolling

**ÇATALHÖYÜK, TURKEY**—Barely 100 kilometers separate the University of Haifa from the Palestinian Association for Cultural Exchange (PACE) in the West Bank town of Ramallah. But military rules prevent travel between the two cities. So this month, a group of Israeli and Palestinian archaeologists and educators from the two institutes, working together on a U.S.-funded project to explore and protect their shared history, journeyed all the way to south-central Turkey to seek common ground.

To be sure, no peace has flowed from a 1998 agreement between then–Israeli Prime Minister Benjamin Netanyahu, Palestinian Authority Chairman Yasser Arafat, and U.S. President Bill Clinton, negotiated at Wye River, Maryland. But the agreement did result in a $10 million fund, provided by the U.S. Department of State, for cooperative Israeli-Palestinian projects. Last fall, $400,000 from that fund was awarded to a joint project to conserve and promote archaeological sites that are key to the region's complex history. Unable to meet on their home territories, 13 representatives of the project teams met at the Neolithic site of Çatalhöyük from 29 June to 3 July to get the ball rolling. "We are working together to preserve the cultural heritage of the region," says archaeologist Adel Yahya, director of PACE.

The visit was in part prompted by the group's desire to learn the latest results from 9500-year-old Çatalhöyük, which has been under excavation by a British-American team since 1993 (*Science*, 14 December 2001, p. 2278). But the dig's conference room also provided a neutral place for the group's initial meeting.

The Palestinians made it to Çatalhöyük only after a series of adventures that included slipping out of Ramallah during the Israeli-imposed curfew, holing up briefly in Jericho,

**Bridging the gap.** Çatalhöyük archaeologists learn about Israeli-Palestinian heritage project.

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## ScienceScope

**Science and Security** The proposed U.S. Department of Homeland Security (DHS) ran a gauntlet of 11 House committees last week, with lawmakers recommending several tweaks in the department's research agenda (*Science*, 5 July, p. 27). In general, the changes are intended either to shelter existing programs or give science a higher profile within the new department.

The House commerce committee, for example, proposed keeping $2 billion for bioterrorism research at the National Institutes of Health and Centers for Disease Control and Prevention, which would work jointly with the new department on setting priorities. The House Science Committee suggested an undersecretary for science and technology and a research think tank, in line with a recent National Academy of Sciences report. The Armed Services Committee gave the department authority to set up a research center at one of the Department of Energy's nuclear weapons labs, with Lawrence Livermore National Laboratory in California the presumed favorite, although a Senate energy panel discussing the labs' role in homeland defense last week heard Senator Pete Domenici (R–NM) criticize the lab's track record on other projects.

House leaders hope that Congress will present the president with a bill by the first anniversary of the terrorist attacks. But that means reaching agreement with the Democrat-controlled Senate, which is working on its own blueprint. Still, as one biomedical lobbyist says, "it's useful that [the commerce committee] took note of our concern."

**Bright Future** Science is a major winner in a 3-year funding plan released by the U.K.'s Labour government this week. The budget of the government's Office of Science and Technology will increase by 10% per year, from a current $3.1 billion to $4.6 billion by fiscal year 2005–06. "These increases in funding are a clear signal that the government is prepared to put its money where its mouth is when it comes to science," says Robert May, president of the Royal Society. Decisions on how the funds will be divided among the six grant-awarding research councils and the central government labs will be made in October.

The biennial plan also contains money to improve science teaching in schools and universities and to bolster university research labs. Graduate students will also benefit from the largess, with annual stipends set to nearly double to $19,000.