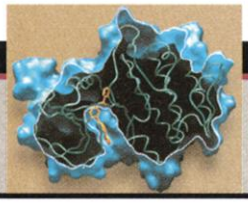
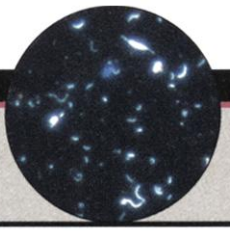


1857
How a cancer drug works

LEAD STORY 1860
A fix for Louisiana's ailing wetlands



1869
Energetic marine bacteria

tacks from both the scientists and Hooper prompted a call to order from the session chairman Neal Nathanson, who last month retired from the top AIDS job at the National Institutes of Health. "I insist on some civility or we'll simply close the meeting right now," said Nathanson.

Several other scientists challenged the OPV theory with data rather than rhetoric. Bette Korber, an evolutionary geneticist at the Los Alamos National Laboratory in New Mexico, added details to a recent paper she published in *Science* (9 June, p. 1789) that dated the origin of the main type of HIV now in humans to between 1915 and 1941. Korber's computer modeling of different HIV strains has now answered a question raised by those data: If the HIV epidemic began in the first half of the century, why did it take until the 1980s to surface? She concludes that the virus appears to have spread extremely slowly at first, gaining momentum only after infecting thousands of people. In two separate presentations using independent techniques, Anne-Mieke Vandamme of Belgium's Rega Institute and Paul Sharp of the University of Nottingham came up with timelines similar to Korber's.

Hooper has hypothesized that chimpanzees from a colony in eastern Congo, on which Koprowski tested his polio vaccine, may also have been the main source of kidneys used to make the vaccine. But Beatrice Hahn of the University of Alabama, Birmingham, has shown that all five of the SIVcpz strains found to date that closely resemble the HIVs in humans come from chimps in western Africa; the only other SIVcpz discovered so far, which she believes came from the region where Koprowski had his chimp colony, is very different. Hahn has since found no evidence of SIVcpz in urine and fecal samples from 24 wild chimps in Uganda and 28 others in Côte d'Ivoire—two regions outside the range of west African chimps. And she reported finding SIVcpz antibodies in urine samples from a chimp in an eastern African country—which Hahn said would be "irresponsible" to name at this point—that appears to resemble the odd sixth sample. "Every piece of evidence we currently have would support the cut hunter theory," said Hahn. "That alone blows OPV out of the water."

But supporters of Hooper's theory remained unconvinced. Brian Martin, a social scientist from Australia's University of Wollongong, argued that if people scrutinized the natural transfer theory as closely as they have examined Hooper's scenario, it would prove to be just as unsatisfying. "There is one thing I will predict as a social scientist," said Martin. "Whatever happens at this conference, this controversy will continue."

–JON COHEN

CREDIT: S. MARTONE/AP

NATIONAL SECURITY

Relief, Rebukes Follow Agreement on Lee

What began as an explosive case of alleged nuclear espionage petered out in an Albuquerque, New Mexico, courtroom this week. Once last-minute legal wrangling is complete, physicist Wen Ho Lee is expected to be freed after 9 months in jail. The ignominious collapse of the government's case and Lee's release have embarrassed federal prosecutors. However, the news was a relief to Asian-American researchers and others who say Lee's status as a suspect had heightened racial tensions at the national labs.

Lee acknowledged in the draft agreement that he had mishandled classified government data while working at the Department of Energy's (DOE's) Los Alamos National Laboratory in New Mexico. But that single felony count is a far cry from the 59-count indictment brought last December, when government officials warned darkly that Lee had given secrets about the design of sophisticated nuclear weapons systems to China. The charges sparked an outcry from Asian Americans, who complained that Lee was singled out due to his ethnicity. His solitary confinement, the use of shackles during his jail term, and limitations on his family visits outraged both Asian Americans and many scientific organizations (*Science*, 8 September, p. 1669).

End of the road. Los Alamos neighbors prepare to welcome home Wen Ho Lee.

The government's case suffered a final blow last month during a bail hearing when an FBI agent admitted that he had been wrong to assert that Lee's behavior was deceptive. The two sides then moved to reach a plea agreement, which was to be finalized 13 September in Albuquerque's Federal District Court.

Secretary of Energy Bill Richardson, who took intense political heat during the controversy even though Lee's actions occurred before his appointment in 1998, said on 11 September that he remains concerned about the whereabouts of tapes Lee made containing nuclear weapons data. "The plea bargain enables us to get that information," he said. And in Congress, the deal eased pressure on New Mexico lawmakers, who for months have struggled to defend the Los Alamos lab against harsh attacks.

"This is a good plea arrangement," said Senator Pete Domenici (R–NM), a powerful lab ally. But the case "uncovered systemic and deep-rooted [security] problems at our labs and within the entire DOE management structure." Domenici is a strong backer of the new National Nuclear Security Administration, a semiautonomous agency within DOE formed in response to a range of concerns about security at the department's weapons facilities.

Relief was also evident among Asian-American scientists. "We finally have come to something sensible," says Bryan Kashiwa, a Los Alamos fluid dynamics researcher, about the plea agreement. "It's the best deal he could get," added Cheuk-Yin Wong, a veteran physicist at Oak Ridge National Laboratory in Tennessee. But Wong warned that DOE must revise its security procedures to avoid future debacles at its network of national labs. Although Wong thinks Lee should be punished for mishandling the data, he says, "we still have a long way to go to eliminate injustice."

That view is widely shared by other Asian Americans. "This is the end of a nightmare for the Lee family," says Henry Tang, chair of the Committee of 100, a group of influential Asian Americans. "But we feel the issue of ethnic profiling at the national labs should clearly be investigated. As Americans—not Asian Americans—we are very concerned that what appears to be a procedural violation at a national lab could land you in prison for life."

Such criticism prompted Richardson in

January to name an Asian-American ombudsman, Jeremy Wu, to handle diversity issues for the department. DOE also released a report on racial profiling that found widespread concern among Asian Americans about "insensitive and offensive" accusations of spying aimed at ethnic Asians, whether foreign or U.S. nationals.

Meanwhile, Domenici said that he would like to see the government drop its investigation of the loss and recovery of two computer disks at Los Alamos holding classified weapons information (*Science*, 23 June, p. 2109). In a fiery statement during a debate over DOE's funding bill, Domenici challenged the FBI, saying, "If you can't prove there is spying or espionage, you ought to get off their backs." The FBI hasn't responded.

–ANDREW LAWLER

With reporting by David Malakoff.

PLANETARY SCIENCE

'Spiders' Channel Mars Polar Ice Cap

REYKJAVIK, ICELAND—Scientists studying the latest high-resolution photos of the martian south polar ice cap think they may have found additional clues to its ebb and flow. These hints of the planet's bizarre atmosphere come from a new class of dramatic-looking terrain features whose dark, multilimbed, vaguely radial designs have earned them the moniker "black spiders," and another group of dusky, spreading features called "dark fans."

At a recent gathering of Mars researchers,* Hugh H. Kieffer, a planetary scientist at the U.S. Geological Survey in Flagstaff, Arizona, proposed that the spiders might be subsurface gas channels, visible through an unusually transparent section of the martian ice. Within the legs, he suggested, blow hurricane-speed jets of carbon dioxide generated as the spring sun vaporizes the CO_2 ice deposited at the poles each winter. The jets may carry dust, he added, which spreads in fanlike shapes over the ice.

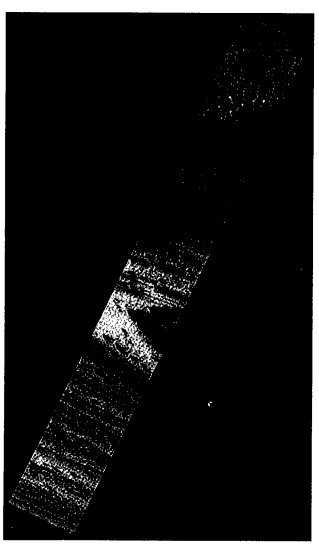
Steve Clifford, a planetary scientist at the Lunar and Planetary Institute in Houston, Texas, is excited by Kieffer's proposal, which he calls the first attempt to explain these features. Other scientists say the black spiders and the planet's other strange CO_2 features are critical to understanding the martian atmosphere, one-third of which is deposited each winter as CO_2 frost at the martian poles. Kieffer admits that his ideas are speculative but that the urge to interpret what he and others are seeing is irresistible. "I can make a wonderfully consistent story—which may or may not be what's going on," he says.

During the spring, solar heating vaporizes up to 10 kilograms of CO_2 per square meter per day, the equivalent of 1 cm of ice thickness. Kieffer proposes that black spiders, tens to hundreds of meters across, develop in regions where this vaporization happens not from the top down, but from the bottom up. The spider's legs collect gas from the transparent areas, conducting it beneath the surface to weak points, where it fountains free in roaring jets. Dust carried with the gas may then land atop the ice in spreading dark fans hundreds of meters in length. Although black spiders and dark fans have not yet been seen in tandem, Kieffer's theory suggests that they are linked, with the fans extending downwind from the vents of spiders that, for whatever reason, are not well enough defined to show up in satellite photos.

Kieffer's hypothesis requires the ice to be transparent, so that warm sunlight can penetrate deep enough for the resulting CO_2 gas to have trouble breaking through to the surface. This would be no problem with pure CO_2 ice, which is so clear that 75% of sunlight will penetrate at least a half-meter deep. But the CO_2 ice that condenses out of the martian atmosphere isn't pure. Instead, a heavy peppering of dust makes it opaque.

Kieffer also has proposed a mechanism by which spring sunlight can purge dust from the ice. Sun-warmed dust motes, he says, should easily become hot enough to evaporate adjacent CO_2. Near the surface, the vapor pressure may be enough to crack the ice, ejecting the dust in a puff of gas. Otherwise, gravity will cause the dust particles to tunnel ever deeper until they hit bottom, like a slow-falling rain. Because the martian polar atmosphere is predominantly CO_2 and cools each winter to the freezing point of CO_2, the microscopic tunnels are continuously reclosed with freshly deposited ice. The result is an increasingly transparent, self-sealing layer of CO_2 ice.

Meanwhile, enough sunlight reaches the dark sur-



CREDIT: MSS/NASA

Dark fans. Features that speckle the martian southern ice cap may be dusty fallout from CO_2 geysers.

* The Second International Conference on Mars Polar Science and Exploration, 21–25 August, Reykjavik, Iceland.

ScienceScope

At Long Last The research community's long push to raise science's profile at the State Department appears to have paid off. Secretary of State Madeleine Albright is set to appoint retired high-tech executive Norman Neureiter, 68, as the department's science adviser as early as this week, sources told *Science* as it went to press.

Two years ago, a National Academy of Sciences panel told Albright that the State Department needed to do more to involve technical talent in U.S. diplomacy (*Science*, 3 March, p. 1580). Officials agreed to create the position of science adviser, but the job search faltered over the past year.

Neither Neureiter nor State Department officials would confirm the choice. But Washington insiders say he is a good fit, with experience as a program officer for the National Science Foundation, a foreign service science attaché, and an executive at Texas Instruments. Since retiring 2 years ago, he has worked as a Dallas-based consultant and pro bono adviser to an array of groups involved in science, education, and foreign policy.

Gender Gap Energy Secretary Bill Richardson has thrown in the towel on his search for a female director of Argonne National Laboratory in Illinois, clearing the way for this week's appointment of nuclear physicist Hermann Grunder. But he's stepping up efforts to attract more women into science and senior DOE management jobs.

Last week at DOE headquarters, Richardson staged a gala "Women in Science" forum to tout the department's progress in the past 2 years and to announce several initiatives to keep the ball rolling. Surrounded by female senior R&D managers from around the country, Richardson noted that 80% of the department's $17.4 billion budget is "managed by women," including new Office of Science chief Mildred Dresselhaus. (DOE's top four slots, however, are held by men—Richardson, deputy director T. J. Glauthier, and undersecretaries Ernie Moniz and John Gordon.)

He also touted efforts to diversify leadership at DOE's labs. "We got the first one," he said, referring to Lura Powell's appointment earlier this year as head of Pacific Northwest National Laboratory in Washington state, "and I still think it's critically important to have more women as lab directors. But we couldn't make it happen" at Argonne. Grunder, the longtime director of the Thomas Jefferson National Accelerator Facility in Newport News, Virginia, assumes his new post on 1 November.