

comycin interferes with nisin's ability to make these holes, presumably because it competes with the peptide in binding to Lipid II. Conversely, when the researchers fused the bacterial membranes to artificial membranes loaded with extra Lipid II, nisin's pore-forming power was bolstered.

Apparently, says Breukink, Lipid II is a special key that nisin uses to punch its deadly holes—a key that other antimicrobial peptides lack. He does not yet know exactly how Lipid II helps nisin form pores. But he is sure that the peptide attaches to a different part of the lipid than vancomycin does, which may explain why bacteria have become resistant to vancomycin but not to nisin.

Now that researchers know that Lipid II is such an Achilles' heel for bacteria, they can try to devise a whole range of compounds that exploit it. The low doses needed would reduce the risk of side effects, Ganz says, and could help make the drugs economically feasible. And by tinkering a little with the nisin gene, researchers could easily produce many slightly different derivatives, for instance if resistance arises. "This holds the promise of giving access to huge numbers of antibiotics through relatively simple means," says Hansen.

But many hurdles will have to be overcome. For one, nisin can only kill *Streptococcus*, *Staphylococcus*, and other so-called gram-positive bacteria. Another problem is that peptides have a short lifetime in the body and a higher risk of triggering allergic reactions than conventional antibiotics have. Still, the new study may help motivate the pharmaceutical industry to overcome such obstacles, says Hansen: "They just have never recognized the potential of these antimicrobial peptides." —MARTIN ENSERINK

## SPACE

## Europe Lofts X-ray Observatory

To the relief and delight of engineers and x-ray astronomers, Europe's new space workhorse, the Ariane 5 launcher, deposited a \$640 million x-ray observatory into orbit on 10 December. If all goes well, the European Space Agency's X-ray Multi-Mirror Mission (XMM) will capture images of very distant sources of fluctuating x-rays, such as those produced by black holes or supernova explosions.

Onlookers at the Kourou, French Guiana, spaceport had their hearts in their throats as the Ariane 5 rocket lifted off. They remembered the fireworks caused by the first Ariane 5, which exploded in June 1996 while carrying a squadron of four space probes. The launch proceeded smoothly, however, and XMM was gradually brought into its fi-

nal, elongated, 48-hour orbit that will keep it largely out of Earth's radiation belts, reports Giovanni Bignami, science director of the Italian Space Agency, who witnessed the launch. "The solar panels have also opened with no problem," he says.

The 10-meter-long spacecraft carries a set of three x-ray telescopes that together contain 58 mirrors with a total surface area of 120 square meters. These mirrors focus the x-rays onto charge-coupled device (CCD) cameras that capture images of the observed objects and also measure the wavelength of the x-rays. Two telescopes are also connected to diffraction gratings that spread out the x-rays according to wavelength so that researchers can study



**Heart of gold.** An engineer puts together XMM's many-mirrored scope.

x-ray spectra with a much higher precision than that from the CCDs. XMM's scopes have lower resolution than those of Chandra, the x-ray observatory launched by NASA in July, but they excel at sensitivity—they are 5 to 15 times more sensitive depending on the wavelength and can pick up fainter or more fleeting signals. Bignami, who was the principal investigator for the prime focus CCD cameras until 1998, expects that because of its elongated orbit and better shielding procedures, the CCDs will not suffer the same radiation damage that has slightly impaired some of Chandra's detectors. The CCDs can be closed off with an aluminum shield whenever XMM enters the radiation belts near Earth or during a solar flare.

Like Chandra and Astro-E—a Japanese observatory that will be launched to look at shorter wavelength x-rays in January (*Science*, 30 July, p. 652)—XMM will focus its attention on x-ray producers such as hot gases, supernova remnants, jets of material squirting out of exploding stars, and massive black holes at the centers of galaxies. Astronomers are anxiously anticipating XMM x-ray data from enigmatic black holes. Because their x-ray outputs can fluctuate rapidly, XMM's sensitivity will be an advantage

## ScienceScope

**Cell Division** The American Society for Cell Biology (ASCB)—a small but aggressive group whose members include such scientific leaders as molecular biologists Harold Varmus and Bruce Alberts—has decided to strike out on its own. The ASCB board voted last week to split from the 67,000-member umbrella group known as the Federation of American Societies for Experimental Biology (FASEB) in 2001.

The 9000-member ASCB can use its "limited resources more effectively" if staffers don't have to spend time coordinating with FASEB's policy review process, says ASCB president Randy Shekman. The society will continue to work with FASEB, he notes, but will focus on its own key interests. For example, FASEB took no position this year on federal funding of human stem cell research, while ASCB lobbied intensively in favor of government backing for the controversial studies. FASEB issued no comment on the ASCB's departure.

**Tanning Salon** Warning: Building the space station could be hazardous to your health. That's the message from a National Research Council panel, which last week urged NASA to find a way to warn spacewalking construction crews of impending solar storms (right). Flares and coronal mass ejections from the sun can unleash massive streams of charged particles, which could pack enough energy to harm astronauts working outside the relative protection of the space shuttle or station modules. The risk of injury is rising, as the sun will reach the peak of activity in its 11-year cycle in 2001.

Researchers, however, do not yet have a good grasp on predicting solar storms. So the panel, chaired by Boston University physicist George Siscoe, urged NASA and other agencies to use satellites, such as the existing Solar and Heliospheric Observatory (SOHO) and spacecraft slated to begin monitoring the sun next year, to anchor an early warning system that would tell astronauts when to stay indoors. NASA solar research chief George Withbroe, who requested the report, says he is confident the new space-based sentinels—which will provide more detailed data than SOHO alone—will soon give Earth-bound researchers a better grip on predicting solar events.





## NEWS OF THE WEEK

preparation for the planned April 2001 launch, says project manager George Pace of JPL. "We had confidence that the design was going to work [before the polar lander was lost]," he says. "What does it take to return it to flight status? That is a little hard to say. We don't know what the failure was."

To save weight and money, mission de-



**Red alert.** NASA's 2001 Mars mission and other flights could be revised in the wake of this month's failure.

signers did not include a transmitter to send back flight data during the lander's entry into the atmosphere, its descent via parachute, and its rocket-assisted landing. Investigators will study all possible failure points, repeating the steps taken by its designers and by outside experts after the September loss of the Mars Climate Orbiter.

Goldin appears reluctant to abandon NASA's plans for 2001, saying, "If there's any possibility that we could go back and land, maybe a little different way, we're going to do it." The existing hardware also could be salvaged for a different mission. One option, says Weiler, is to turn the lander spacecraft into an orbiting telecommunications satellite with high-resolution cameras that could scout out safe landing sites for later missions and provide a stronger link between landers and Earth. Although some science would have to be postponed, he says, such an arrangement would boost the chances of success for later spacecraft.

The additional navigational tools reflect NASA's view that martian geography may have contributed to the lander's failure. The craft was headed toward a poorly understood terrain in the south polar region. Although images returned from orbit by the Mars Global Surveyor showed the targeted landing site to be relatively smooth, "we don't have a lot of experience yet in interpreting [those] images," says 2001 project scientist Stephen Saunders of JPL. "Mars

looks like a completely different planet at a resolution of a few meters versus the tens of meters" available before Mars Global Surveyor, he says, and it could still harbor lethal hazards too small for Surveyor to see.

Project scientists are currently eyeing two large zones as potential landing sites for the 2001 mission. "It could be we should put more emphasis now on the smoother area" just north of the equator near Sinus Meridiani, says Saunders. The region may be a dried, mineral-laden lake bed.

So far, criticism of NASA and the Mars effort in Washington has been muted. Recent media polls show that a majority of the American public supports continued planetary research, and President Bill Clinton assured reporters on 8 December that he firmly backs Goldin's approach of "faster, cheaper, better" missions. For the moment, members of Congress seem willing to withhold judgment until

the panel has had its say.

—ANDREW LAWLER AND RICHARD KERR

### SCIENTIFIC MISCONDUCT

## Researcher Rebuked for 20-Year-Old Misdeed

The Max Planck Society, Germany's premier research organization, announced on Monday that its president will issue a formal censure to neuroscientist Peter Seeburg, director of the Max Planck Institute for Medical Research in Heidelberg, for publishing data in a 1979 paper that Seeburg has said were false.

Seeburg's censure is the latest chapter in a drawn-out scientific melodrama involving a court battle between the University of California (UC) and biotech pioneer Genentech of South San Francisco over patent rights to engineered human growth hormone (*Science*, 11 June, p. 1752). Seeburg, a co-inventor on a UC patent at the center of the dispute, testified last April that shortly after he moved to Genentech in 1978, he took DNA samples that he had helped prepare while working at UC San Francisco. He also said he and Genentech colleagues falsified technical data in a *Nature* paper to cover up the origin of the samples. Prompted by this testimony, Max Planck president Hubert Markl earlier this year ordered a scientific misconduct investigation.

Only after Genentech agreed to pay UC

## ScienceScope

**Data Grab** Hoping to pry open the Clinton Administration's narrow interpretation of a new law that gives the public access to raw research data, the U.S. Chamber of Commerce last week set the stage for a legal challenge by requesting data used to support several Environmental Protection Agency (EPA) regulations and policies.

Universities breathed a sigh of relief earlier this fall when the White House Office of Management and Budget limited the public's reach to published results used in crafting a rule or unpublished data cited in a regulation, and said only data collected under grants made after 6 November were open to scrutiny (*Science*, 8 October, p. 209). But such restrictions are "improper," according to chamber vice president William Kovacs. His group has asked for raw data from several older studies used by EPA, including a 1993 Harvard University air pollution analysis that prompted the campaign to force researchers to share their data. Kovacs expects EPA to deny the requests within a couple of months. If so, the chamber will sue the government.

**Try, Try Again** French research minister Claude Allègre (below) hasn't given up his idea to reform the CNRS, France's mammoth basic science agency. Allègre laid low much of this year after his first reform plan raised a ruckus (*Science*, 18 December 1998, p. 2162). But Allègre rebounded earlier this month, asking CNRS officials to come up with a more palatable scheme for overhauling the 12,000-researcher agency.

The new plan—dubbed "reform light" by the French daily *Le Monde*—will "blend" previously suggested reforms, such as forging closer ties between the CNRS and universities, with recommendations from the Cohen-Le Déaut report, prepared by two parliamentary deputies for Prime Minister Lionel Jospin (*Science*, 30 July, p. 647), says Vincent Courtillot, the science ministry's research director. But the retooled proposals—which should be ready by February—are already drawing preemptory fire from researchers' unions. Unhappy about a stagnant research budget for 2000, they are planning demonstrations for January.



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