

intentioned people in Russia, North Korea, and Iraq. French officials were outraged to be included in such company.

The *Post* story reported that the assessment came from the Central Intelligence Agency's Weapons Intelligence, Nonproliferation and Arms Control Center, which had "high but not very high" confidence in its information about France. One high-level source confirmed to *Science* that the story accurately reflected the content of the intelligence reports. (And 2 months earlier, U.S. Health and Human Services Secretary Tommy Thompson, in a little-noted 4 September *Post* story, said, "We can speculate" that France has the virus.) But several experts questioned the accuracy of the reports themselves. D. A. Henderson, who headed WHO's smallpox eradication program and now advises the U.S. Department of Health and Human Services on bioterrorism, says, for example, "I know of no information that would indicate to me that it was being retained [by France]." He adds: "It is not impossible that someone provided information about 'smallpox,' not realizing that 'smallpox vaccine' is quite another virus. This has happened before."

The *Post* story itself noted that some Administration officials were alarmed that France had been included in the list. As the story said, France holds a key United Nations Security Council seat and "is the linchpin of U.S. diplomatic efforts to establish a legal basis for war with Iraq." (France did end up joining other members in approving a U.N. Security resolution that forces Iraq to disarm or face "serious consequences.")

Apart from the alleged French connection, the leaked information could influence intense discussions now raging in the Administration about how widely the U.S. government should distribute smallpox vaccines, which can produce severe side effects. "It's designed to increase the level of anxiety and to influence the opinion of people who are conservative [about mass vaccinations]," complains Kenneth Shine, former president of the Institute of Medicine and now head of the newly formed RAND Center for Domestic and International Health Security in Arlington, Virginia.

One wing of the Bush Administration has pushed to make the vaccine available to anyone who wants it, whereas another has urged the more cautious approach of vaccinating only health care workers and other "first-line responders" in the case of a bioattack with the virus. Insiders expected a final decision several

weeks ago, but indecision has prevailed as the White House continues to wrestle with the possibility that mass smallpox vaccination could do more harm than an actual bioattack with this vanquished killer.

—JON COHEN

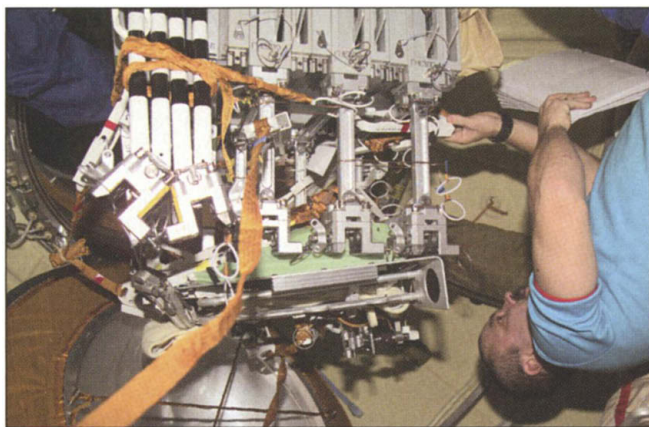
## SPACE STATION

### Report Boosts Work In Physical Sciences

Physical scientists are striking back. A panel convened by the National Research Council (NRC) argues that areas such as fundamental physics and materials science deserve a prominent place on the international space station alongside experiments in the life sciences. That message is somewhat at odds with tentative NASA plans to revamp research on the orbiting laboratory.

The panel's report, requested by NASA 2 years ago and submitted last week, promises to ratchet up the competition among different disciplines scrambling for limited time, space, and funding on the station. NRC moved up the report's release in the hope of influencing NASA's 2004 budget request, now under review by the White House. "This gives me ammunition to try and grow the program," says Eugene Trinh, who heads the agency's physical sciences division. Other physical scientists say the NRC study could help rescue their discipline from second-class status.

The 15-member panel rated fundamental physics, low-temperature, and precision clock experiments among the most important areas to pursue and those likely to have the highest impact; the collection of thermophysical data on liquids in microgravity was ranked near the bottom. Panel members—a majority of whom do not receive NASA funding—say they were impressed by a dramatic increase recently in the quality of both the investigators and the results from recent space experiments. "It is clear this research is contributing to a broader field, although most people don't



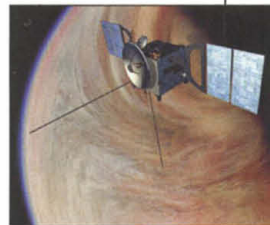
**Physical evidence.** A Russian cosmonaut adjusts instruments to study external particles that might threaten the space station.

## ScienceScope

**Venus Rising** Europe's mission to Venus is back on track. The European Space Agency (ESA) last week gave Venus Express the go-ahead for a 2005 launch after managers swallowed an \$8.5 million shortfall in Italy's contribution.

Last May, budget and scheduling problems prompted David Southwood, ESA's director of science, to cancel the \$160 million probe of the veiled planet's atmosphere, magnetic field, and geology. But officials resurrected it a month later after an outcry from scientists—and despite doubts that the Italian Space Agency could meet its financial commitment (*Science*, 19 July, p. 317).

ESA has now decided to cover the deficit, leaving Italy to chip in spare parts for instruments it has built. The deal smoothes the way for Venus Express to become the sole space mission to Earth's neighboring planet until 2009, when Japan plans to launch its Planet C probe.



**At the Speed of IT** The National Academies are sometimes accused of being so slow that their reports are out-of-date by the time they appear. Last week, the authors of a new study on information technology (IT) admitted that, in their case, the critics are right. The admission served to make their point about how universities must do a better job of keeping up with the rapid pace of IT changes and to launch an effort to foster discussions about ways to do so.

"This report is probably the least important thing we're doing," confesses James Duderstadt, chair of an effort begun nearly 3 years ago to assess how high-speed computing and communications are changing academia, from teaching introductory courses to managing the books. The report, *IT and the Future of the Research University*, was launched at the height of the economic boom, when IT prophets were forecasting the demise of traditional learning.

Although that hasn't happened, the report warns institutions that "procrastination and inaction are dangerous courses" of action. Instead, says Duderstadt, president emeritus of the University of Michigan, the academies' Government-University-Industry Research Roundtable will begin "an ongoing dialogue" to help universities "protect their capacity to produce the talent and knowledge this nation needs."



**Fine with them.** Human reproductive cloning advocates (left to right) Panos Zavos, Avi Ben Abraham, and Brigitte Boisselier won't be slowed by any U.N. resolutions this year.

several countries, including the United Kingdom, Singapore, and the Netherlands. Indeed, Scottish researcher Ian Wilmut, one of the creators of Dolly the cloned sheep, has said he plans to proceed with human cloning experiments with the goal of producing ES cell lines (*Science*, 4 October, p. 37).

The United States has no national legislation governing cloning, and several privately funded U.S. groups are proceeding with research cloning experiments. A similar disagreement in the U.S. Senate earlier this year foiled efforts to pass either a ban on reproductive cloning or a ban on all human cloning research (*Science*, 21 June, p. 2117). However, that situation might change now that Republicans have regained control of the Senate (see p. 1313).

—GRETCHEN VOGEL

## TROPICAL DISEASE

### Misspelled Gene Tames Malaria

Malaria kills about a million people each year. But even in countries where the disease takes a heavy toll, the risk is not the same for everyone: Some people have a remarkable ability to suppress the malaria parasite's debilitating effects. Now, researchers have tied that resistance to a subtle variation in a single gene that can cut by nearly 90% the risk that an infection will become life-threatening.

The gene mutation causes people to ratchet up production of nitric oxide (NO), a gas that plays a role in a diverse range of physiological processes. Previous studies with rodents had found that NO can protect against malaria and a variety of other diseases, says microbiologist Ferric Fang of the University of Washington, Seattle. But the new study provides some of the best evidence to date that NO plays an important role in disease protection in humans, says Fang, who calls the study a "significant contribution."

The study was led by hematologist Brice

Weinberg of the Veterans Affairs and Duke University Medical Centers in Durham, North Carolina. Weinberg's team sampled DNA from 185 Tanzanian children—47 of whom had been infected by the malaria parasite but remained healthy, and 138 who were sick with the disease. The researchers looked for mutations in and around the gene that encodes inducible nitric oxide synthase (*NOS2*), the enzyme that makes NO. They found that a single mutation in which a cytosine replaces a thymine in the *NOS2* gene's promoter region—its DNA on-switch—turned up more often in the healthy children. Children with the mutation had higher than normal NO levels in their blood and urine, suggesting that the gas could be protecting them.

The team then analyzed DNA samples and clinical data from a 5-year study of 1106 children in Kenya run by the Centers for Disease Control and Prevention. They again found that the mutation in the *NOS2* promoter had a protective effect. "Overall, the mutation lowered the risk of severe malaria by 88% in Tanzania and 75% in Kenya," says molecular geneticist Maurine Hobbs of the University of Utah in Salt Lake City, a co-author of the study, which appears in the 9 November issue of *The Lancet*.

This isn't the first mutation thought to protect against malaria, but "this study is one of the most compelling because they have demonstrated a connection between genetics, NO production, and clinical status," says clinical immunologist Brian Greenwood of the London School of Hygiene & Tropical Medicine in the United Kingdom. "The story told by this study is very appealing and logical."

Exactly how NO protects is still unclear, however. Researchers have hypothesized



**Unlucky.** A chance twist in the genetic code can protect against malaria.

## ScienceScope

**Finally Wellcome** The United Kingdom's premier genomics lab is set to grow. After 5 years of intense negotiations, local authorities have approved a plan by the Wellcome Trust to add 27,000 square meters of academic and commercial space to its Genome Campus in Hinxton, near Cambridge. The trust's initial plan for a larger expansion was rejected in 1997.

The Genome Campus is already home to the Sanger Institute, a prominent player in the Human Genome Project. Next week, workers will break ground on an additional 10,000 square meters of labs, along with mouse and computing facilities. Future additions will include an Innovation Centre for start-up companies and additional space for firms growing as a result of progress in related fields. The project is expected to be finished by 2007, at a cost of \$150 million.



**All Together Now** Look for the Bush Administration to kick off a math and science education initiative next month with a high-profile gathering at the Smithsonian Institution.

The initiative, part of the "No Child Left Behind" presidential campaign, is intended to meld the myriad federal and private-sector efforts aimed at improving student achievement, teacher preparation, and community involvement in math and science at the elementary and secondary school levels. "We're going to start off with what we know works in math because, frankly, we know so little about how children learn science," says Susan Sclafani, counselor to Education Secretary Rodney Paige.

Sclafani's office will spearhead the effort, which she hopes will attract professional societies and high-tech companies as well as other federal agencies funding research on teaching and learning. If so, the initiative has a ways to go. "It's news to me," says one federal official about next month's get-together, echoing the comments of an executive at one association long involved in the subject. "But it sounds like a good idea."

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