with parkinsonism might be because the disease does not manifest itself until 70% to 80% of brain dopamine has been depleted.

Andy Parrott, head of the Recreational Drugs Research Group at the University of East London, calls the findings "very worrying." He points out that some ecstasy takers—even "novice" users—have motor symptoms such as tremors and twitches, "which may be best explained in these dopaminergic terms," because dopamine-dependent neurons are one of the major lines of communication in the motor system.

Other researchers are continuing to withhold judgment about the perils of MDMA, pointing to methodological difficulties in this kind of research and evidence that the damage might be only temporary. Cognitive neuroscientist Jon Cole of the University of Liverpool, for example, is skeptical about the Parkinson's risk. So far, he says, "there is only a single case report of parkinsonism related to the use of ecstasy. The sheer number of ecstasy users indicates that there would be millions of these patients presenting for treatment." Nonetheless, he says the study might call for a major revision of the existing view of MDMA: "The entire human literature ... relies on the notion that MDMA is a selective serotonergic neurotoxin."

The Johns Hopkins finding is thus unlikely to put an end to the ongoing debate over MDMA. Criminalized in the United States in 1985, MDMA is still a subject of intense controversy, because some psychologists believe it can be a useful adjunct to psychotherapy—helping people open up emotionally, especially those suffering from posttraumatic stress disorder. Indeed, trials are ongoing in Israel and Spain, and the U.S. Food and Drug Administration approved a new one last November to be conducted in North Carolina. –CONSTANCE HOLDEN

U.S. SCIENCE POLICY

NSF Fights Changes in Oversight Bill

Two Senate committees have approved a bill supporting a 5-year doubling of the National Science Foundation's (NSF's) budget, one of the highest priorities of NSF Director Rita Colwell and lobbyists for the scientific community. But the legislation also contains some bitter pills—involving science and math education, major research equipment, and NSF's relation with its oversight board—that Colwell hopes to avoid swallowing.

Lobbyists see this month's votes, which set NSF policies but don't provide any money, as a sign of the growing strength of their doubling campaign. "It's symbolic, but at least it puts both panels on record in favor of doubling," says Samuel Rankin, head of the Coalition for National Science Funding. The reauthorization bill, S. 2817, is a variation on one (H.R. 4664) passed in June by the full House, and the two versions must now be reconciled. The NSF spending bill goes through a different set of committees, which will miss a 1 October deadline to complete their work.

HOW TO DOUBLE THE NSF BUDGET

Current budget is $4.8 billion

Year	House plan	Senate plan
2003	$5.5b	$5.5b
2004	$6.3b	$6.4b
2005	$7.3b	$7.4b
2006	–	$8.5b
2007	–	$9.8b

SOURCE: (TOP) H.R. 4664, S. 2817

Double or nothing? Congress has endorsed bills that would double NSF's budget in 5 years, but its spending panels have yet to weigh in.

At the same time, those lobbyists are quite unhappy with provisions that would merge a Department of Education program that gives states money to improve science and math education with a new NSF program that awards grants through a national competition to achieve the same end (*Science*, 11 January, p. 265). The hybrid, proposed by senators who felt that NSF was more likely to run a high-quality program involving university scientists, would allow NSF to continue its national competition for 3 years before converting to a block grant program in 2006.

The compromise leaves both sides unhappy. The lobbyists fear that local jurisdictions could be left out in the cold if NSF makes grants on a competitive basis. "Moving the program to NSF effectively reduces vital resources and programs at a time when local education agencies need them the most," a coalition of professional societies wrote to Senator Ron Wyden (D–OR), chair of the science subcommittee of the Senate Commerce, Science, and Transportation Committee, shortly before a vote last week by the full committee. And NSF doesn't like being tied to a predetermined formula. The use of block grants, Colwell wrote Wyden the day before the vote, "is inconsistent with the Foundation's exemplary merit review process and conflicts with competitive processes that promote excellence." House members are also unhappy with the Senate language, which had been drafted and approved a week earlier by another Senate panel with jurisdiction over NSF's education programs, and they hope to remove it before the bill moves forward in the Senate.

On another contentious issue, the Senate panels and the House have adopted identical language requiring NSF to rank the impor-

ScienceScope

Blue Laser Blues A Japanese engineer out to gain more respect—and cash—for Japanese inventors suffered a setback last week when the Tokyo District Court ruled against his attempt to reclaim patent rights to a groundbreaking discovery.

Shuji Nakamura was working for Nichia Corp. in 1997 when he developed a blue light–emitting diode and later a blue semiconductor laser (*Science*, 21 March 1997, p. 1734). The devices have extremely promising commercial applications, with current annual sales topping $400 million. Now a professor of materials science at the University of California, Santa Barbara, Nakamura sought to reclaim the rights to a key manufacturing process, for which the company paid him $170. He also asked for $16 million in compensation.

On 19 September the court sided with Nichia, noting that Nakamura had used the company's facilities and staff for the research. It delayed a decision on the compensation issue. Nakamura, who hoped his suit would boost the status of Japan's corporate researchers, plans to appeal once the ruling becomes final.

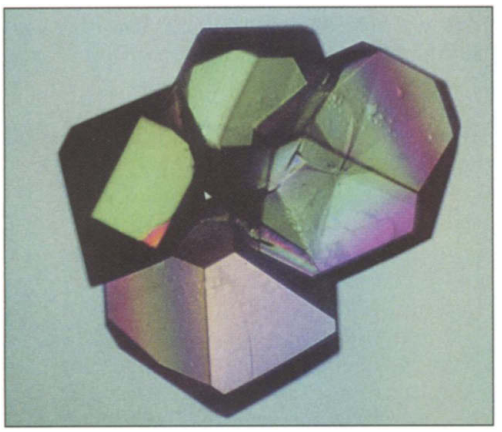
Britain Shifts Space Cash Imagine this: The U.S. government suddenly decides that scientists need a more direct hand in running space missions and moves NASA's space science budget to the National Science Foundation. Although an unlikely scenario in the United States, the British government has decided to do something similar.

Following a review of the British National Space Centre (BNSC), the government announced this week that the agency's science budget will now be managed by the Particle Physics and Astronomy Research Council (PPARC). And its Earth-observing research funding will go to the Natural Environment Research Council. Most of the money—about $78 million annually—will still go straight into the coffers of the European Space Agency, but the researchers will now have a bigger say in how it is allocated.

Researchers are divided over the shifts. "It's a good idea," says Paul Murdin of Cambridge University's Institute of Astronomy, a former director of science at BNSC. "There's nothing like owning a budget to make you really care about it." But Birmingham University's Mike Cruise, chair of PPARC's space science advisory committee, thinks it is "regrettable." Although BNSC still coordinates the government's overall space activities, he says, it will be further removed from the scientists who can help craft long-range strategy.

tainly a big advance." Robert Lehrer, who first described human defensins in 1985, agrees. "The data are very convincing," says Lehrer, a researcher at UC Los Angeles.

But several leading AIDS researchers aren't convinced. Levy himself applauds "the great effort" to find the defensins in CD8s, but he says that it's not the factor he postulated. Levy says his lab has tested defensins and found that they did not meet his criteria for the factor, which he called CAF (for CD8 antiviral factor). Robert Gallo,



On the defensive. A claim that α-defensins (shown above in crystal form) are the long-sought factor is drawing fire.

head of the Institute of Human Virology in Baltimore, says that although he finds the work "technically sound," the paper relies on too few patients, offers no mechanism for how defensins stop HIV, and dismisses other factors that he believes are likely to be more important. Bruce Walker, whose lab at Harvard Medical School in Boston also recently described a candidate CAF, says the new data show that the defensins have "a very modest effect" against HIV.

In the study, the Aaron Diamond researchers teamed up with scientists from Ciphergen Biosystems Inc. in Fremont, California, to compare secretions of CD8 cells from three HIV-infected "long-term nonprogressors," four HIV-infected "progressors," and 15 uninfected people. Ciphergen makes tiny arrays of proteins that, with the help of mass spectrometry, allowed them to analyze the components in each sample. Company scientists found that only the long-term nonprogressors and uninfected people produced three small, related proteins that a database search revealed as defensins.

As first reported by Lehrer, human defensins are secreted primarily by neutrophils and break down bacterial walls, acting like natural antibiotics. A group in Japan 9 years ago showed that defensins from guinea pigs, rabbits, and rats could inhibit HIV, but the work received little notice. Some AIDS researchers also have incorporated defensins into their vaccines because the molecules can act like an adjuvant, boosting the immune response to the HIV components of the preparation.

When Ho and his colleagues depleted the defensins in the cell secretions from the long-term nonprogressors, they found that the secretions had markedly less anti-HIV activity. And when they depleted both defensins and immune messengers known as β-chemokines—which Gallo's lab in 1995 showed powerfully prevent HIV entry into cells—the secretions had almost no antiviral activity. In what's sure to be the paper's most controversial assertion, the researchers state that the α-defensins "collectively account for the anti–HIV-1 activity of CAF that is not attributable to β-chemokines." As for the mechanism, Ho and Zhang say the shortage of clean defensin material makes it difficult to conduct experiments that might tease out how it combats HIV. But they have now begun those experiments.

Gallo takes exception to the entire concept that a single mysterious, undiscovered CAF exists. "This is ludicrous," he says. He argues that CD8 cells secrete many substances that inhibit HIV, including one his lab has yet to describe that he says appears to be much more powerful than defensins. "We don't use the word 'CAF,' " says Gallo. "Throw it out."

Zhang agrees that CD8s might well secrete other, undiscovered molecules that inhibit HIV. "CAF is a black box," he says. "Different molecules could play different roles in different circumstances. We have no idea in vivo." Still, the α-defensins' apparent anti-HIV powers are likely to provide a new focus for research and, if they pan out, open new avenues for treatment. **–JON COHEN**

CREDIT: R. I. LEHRER, T. GANZ, M. E. SELSTED, *ASM NEWS* 56, 315–318 (1990)

CHEMISTRY

Catalyst Boosts Hopes For Hydrogen Bonanza

Solar cells are the best known way to turn sunlight directly into usable power. But green-energy aficionados have long dreamed of using the sun's rays to make a chemical fuel as well, by splitting water molecules to release hydrogen gas, which produces only water when it burns. For decades researchers have tinkered with light-triggered catalysts that encourage this water splitting. But although a handful of efficient catalysts have been found, none are both cheap and stable enough to be practical. Now researchers at Duquesne University in Pittsburgh, Pennsylvania, have come up with a novel catalyst that might bring the long-sought goal within reach.

On page 2243, chemist Shahed Khan and his graduate students Mofareh Al-Shahry and William Ingler Jr. report that

ScienceScope

Overseas Students Scrutinized U.S. graduate schools that train foreign bioscientists are looking for better ways to prevent cheats from slipping onto campus. The problem broke into the open earlier this month when University of California, Los Angeles (UCLA), dean David Meyer announced that his school will be heightening scrutiny of foreign applicants to its bioscience graduate programs. The change came after UCLA officials learned that a Chinese applicant had added phony courses to his transcript. To prevent future fraud, UCLA has begun verifying transcripts of foreign students—about half of them Chinese—accepted by its bioscience admissions program. Chinese students pose a special problem, Meyer says, because their universities don't directly supply transcripts. Meyer will also be briefing members of the Association of American Medical Colleges, with an eye toward holding a meeting next April in Montreal on screening out fraudulant applicants.

Curbing Conflicts U.S. medical colleges are attempting to set their first standards for limiting conflicts between their corporate financial interests and their duties as overseers of clinical research. A task force of the Association of American Medical Colleges (AAMC) this week issued a report that calls on members to manage "institutional conflicts of interest" more aggressively.

The task force, headed by former Washington University chancellor William Danforth, does not offer specific rules. But it recommends that institutions separate the management of finances and research and create special committees to examine every financial relationship that might "reasonably appear to affect human subjects research." For example, the panel says a university should conduct a "fact-driven inquiry" whenever it acquires more than a $100,000 equity interest in a publicly traded company that also sponsors human subjects research at the school.

Reaching agreement on the guidelines was a "very significant accomplishment," says AAMC's David Korn, a former dean of medicine at Stanford University. He says the panel wants to "set a very high standard of oversight and management" that will convince Congress and federal regulators that the government doesn't need to intervene. Korn expects AAMC to undertake a follow-up study in 18 to 24 months to learn how its members responded.

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