EASTERN EUROPEAN SCIENCE

Program for Elites Draws Praise, Fire

DRESDEN—The European Commission (EC) has launched a new program to bring western European scientists to elite research institutions in central and eastern Europe. But the German administrator who was instrumental in persuading the EC to consider such a program now contends that the money fails to address the real needs of such institutions, which are hungry for first-rate labs and equipment.

Four years ago Wolf Lepenies, rector of the Institute for Advanced Study in Berlin, approached the EC on behalf of the Collegium Budapest, a multidisciplinary institute in Hungary. His modest plea for funds to host Western scholars for extended visits and put on international conferences eventually blossomed into a program unveiled here last week to support 34 top research centers in 11 nations that are candidates to join the European Union, from the Czech Republic to Lithuania. Each center, selected from 185 applicants, will get between $90,000 and $900,000 over 3 years to fund academic exchanges.

By bolstering a handful of scientific bastions that have earned international reputations, the new "Centers of Excellence" program offers an oasis of stability for institutes that can't rely on substantial support in countries with fragile economies. The program, says Jerzy Langer of the Institute of Physics in Warsaw, "is really a far reaching and very wise move of Brussels," headquarters for the EC. Encouraging mobility to these institutes "is a very important trend," believes David Schindel, director of the U.S. National Science Foundation's Europe Office.

But Lepenies and others say that its focus is too narrow. "We were thinking of creating a very specific atmosphere, supporting centers with a mix of disciplines," says Lepenies about his idea, which was discussed at a 1997 meeting in Budapest. But to EC officials, he says, "a center of excellence just meant an excellent center." Several meetings with former EC research chief Edith Cresson failed to alter this view, Lepenies says: "She never understood what it meant and didn't want to understand." EC officials have a different view. "Brussels is not the place to create an atmosphere," says Barbara Rhode, who points out that the EC strove for a broader vision than funding only the Collegium Budapest. "We have a responsibility of fairness and justness to everybody," she says. Last spring the commission selected the winners—chosen according to criteria that included how well they are managed and the potential economic impact of their research on their home countries—but spent months hammering out contracts before money finally started flowing to some centers in November.

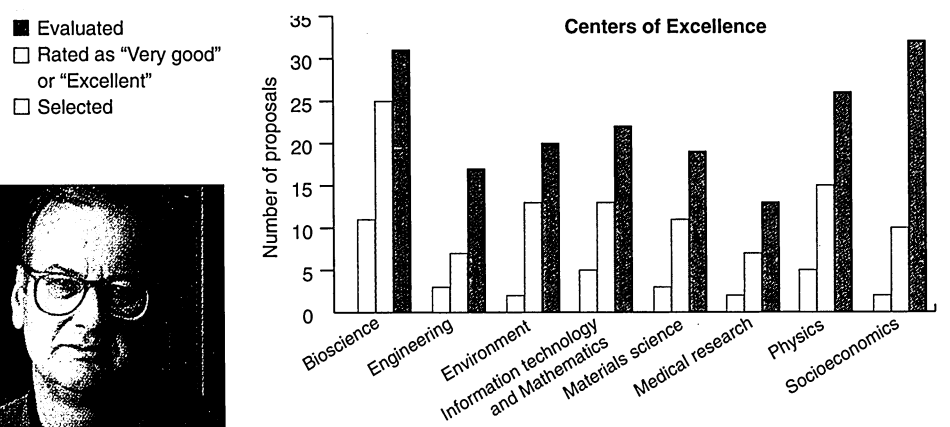
Describing the program here at a NATO forum organized by the journal *Nature*, Rhode noted that the peer-reviewed selection process bared some disturbing trends in central and eastern Europe. Whereas a large share of proposals from bioscience centers won grants or just missed the cut, the physical sciences fared poorly. "We have the feeling that [the region's] physics, materials science, and engineering are getting weaker," she says. Posting the worst showing were social sciences and humanities centers: Of 32 applicants, only two, including the Collegium Budapest, won funding. At the same time, countries that had been more aggressive in overhauling their scientific establishments after the Soviet Union dissolved tended to reap the biggest dividends: Four of five Estonian centers that submitted proposals got high marks, for example, and two won funding.

Now that Brussels has put these 34 centers on a pedestal, observers say, it should also help out on big-ticket items such as new buildings and instrumentation. "Many centers need money for upgrading machines, not networking," says Simeon Anguelov, a consultant to UNESCO's Office for Science and Technology for Europe. Although only E.U. member states are eligible for structural funds, the EC's Rudolf Meijer says that Brussels is considering other mechanisms for candidate countries. "This is certainly not something we have neglected," he says.

Lepenies isn't counting on Brussels to come through. He's helped organize a handful of institutes into a network called Agora, after the ancient Greek word for a meeting place. Agora will soon identify worthy projects, then lobby agencies and private donors for funding.

Others, however, want Brussels to incorporate the centers program into its next 5-year research program, Framework 6, which will begin in early 2003. "It would be rather stupid not to continue it," says Anguelov. "Forget all critics, forget all troubles," adds Langer, "we really have to pray for its extension."

–RICHARD STONE



Stiff competition. Success rates varied widely across disciplines. Wolf Lepenies *(left)* is looking for funds beyond Brussels.

CREDITS: (LEFT TO RIGHT) INSTITUTE FOR ADVANCED STUDY, BERLIN; SOURCE: EUROPEAN COMMISSION

HEPATITIS C

New 'Replicon' Yields Viral Proteins

Twelve years ago, researchers identified hepatitis C virus (HCV) as the elusive pathogen that was causing liver disease in some people who had received blood transfusions. That had an immediate benefit: Donated blood is now screened for the virus, reducing the number of new HCV infections. But an estimated 1% of the U.S. population—more than 2 million people—has already been infected with the virus, which can persist in the body for many years. Most aren't aware of it, because the virus often produces no symptoms, or mild ones. But over time, it can damage the liver and increase the risk of cancer. Unfortunately, efforts to determine just how an infection develops—and how to combat it with antiviral drugs—have been frustrated by HCV's stubborn refusal to grow in the laboratory. Now, a team at Washington University in St. Louis led by Charles Rice has partly overcome that problem: On page 1972 of this issue, the researchers report the creation of an improved viruslike "replicon" that produces HCV proteins efficiently in the lab.

The innovation has piqued the interest of both industrial and academic scientists, who are racing to develop treatments. It should make it possible "for investigators to study the effects of antiviral drugs and host control mechanisms that regulate HCV replication," says Frank Chisari of the Scripps Research Institute in La Jolla, California.

Rice's new system also may elbow its way into a highly contentious industrial arena, where biotech firms and pharmaceutical

companies are battling for priority. Already, Chiron Corp. of Emeryville, California, has filed a string of lawsuits to protect its patents on HCV (*Science*, 2 July 1999, p. 28). Rice has begun making his replicon system available through a small company he founded, Apath LLC of St. Louis. Other groups are said to be developing similar replicons, and these, too, could become available. Apath is offering nonexclusive licenses to use its so-called "Blazing Blight 7" technology. The name refers to the system's blazing efficiency in producing HCV proteins and to the co-inventor at Washington University, Keril Blight.

Rice, now at Rockefeller University in New York City, says his replicon builds on earlier work by Ralf Bartenschlager and colleagues at the Institute for Virology at Johanes-Gutenberg University in Mainz, Germany. In work reported last year (*Science*, 2 July 1999, p. 110), Bartenschlager's team took the HCV genome apart and reassembled it into a replicon, editing out parts and adding new pieces, including an antibiotic resistance gene that can be used to select the cell clones that produce the viral proteins.

Replicons have drawbacks, however. Although they include genes that regulate some host-pathogen interactions, they do not include key genes that enable the virus to infect human cells and replicate normally (see diagram). And according to Rice, Bartenschlager's initial system is inefficient, producing HCV proteins in only about one in a million host cells.

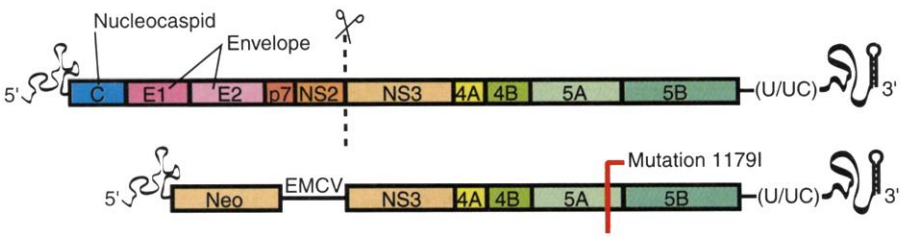
To improve the efficiency, Rice and Blight rebuilt the system using Bartenschlager's data from GenBank, looking for genetic mutations that might enable the replicon to be more productive. They found 10 interesting mutations, one of which, called S1179I, was outstanding. Replicons with this mutation produced abundant viral proteins in one out of 10 host cells. "That really makes a big difference," Rice says. "It means you can do experiments over a long term" without having to rely on cumbersome cell selection techniques, and "it is going to allow us to do genetic studies on a much shorter time scale."

Chisari says that the Rice team's work provides "a major improvement in the efficiency of the replicon system that Bartenschlager developed." He and Stanley Lemon, dean of medicine at the University of Texas Medical Branch at Galveston, note, however, that it will be important to develop a system that can produce all the important HCV proteins. Both Bartenschlager and Rice are working on such projects.

Academic researchers also hope that the Apath replicon will be easy to obtain. Until now "it's been hard to get a system that was widely enough available so that people could play with it," Lemon says. It will be great news, he continues, if this innovation means that the technology will now be widely available. Bartenschlager could not be reached for comment.

Asked whether Apath would seek restrictions on academics' use of the new technology, Rice said he does not want to do anything that would "impede academic research." Apath may ask for a 30-day prepublication review of scientific papers written by those who use the technology. And it may request that such investigators who produce patentable discoveries negotiate first with Apath on the intellectual property rights. But aside from that, Rice says, "I think that sharing material for academic research should be done with as few strings as possible."

–ELIOT MARSHALL



Cut and paste. From the hepatitis C genome (top), researchers cut genes for structural proteins and added others to make a replicon (bottom). A productive mutation (S1179I) appeared in region 5A.

CREDITS: (LEFT TO RIGHT) RICE *ET AL.*; NIH

PALEONTOLOGY

Tiny, Feathered Dino Is Most Birdlike Yet

Last November, in what was to prove an embarrassing blunder, *National Geographic* magazine trumpeted the discovery of a "missing link" between birds and dinosaurs. *Archaeoraptor* turned out to be a primitive bird with a dinosaurian tail glued on (*Science*, 14 April, p. 238). Even so, many paleontologists saw a silver lining in the debacle: The chimera consisted of two partial specimens interesting in their own right. Now Chinese paleontologists describe the dinosaurian half, and they say it reinforces the same message as the falsified *Archaeoraptor* did: Birds evolved from dinosaurs.

The new fossil, dubbed *Microraptor*, is by far the smallest adult dinosaur yet discovered—about the size of a crow. Like some

ScienceScope

Looking for Alternatives British scientists should beef up their research on alternative medicine, according to a report issued last week by the House of Lords' Science and Technology Committee. Noting a dearth of high-quality research in alternative medicine, the committee urged the National Health Service and the Medical Research Council to develop a few "centres of excellence," following the path taken by the U.S. government's National Center for Complementary and Alternative Medicine. The report added that the work should ultimately be guided by a clearinghouse that is partly funded by the government.

In a separate report, the Foundation for Integrated Medicine, an advocacy group headed by Prince Charles, offered to fill that role. It outlined a 5-year, $7 million plan to jump-start new research, support existing studies at medical schools, and fund 5-year fellowships to train medical students in research methods for alternative medicine. Right now, the field is "not particularly respectable as a research career," notes the foundation's Tricia Darnell. Increasing funding would make it "more mainstream," she says.

The foundation hopes for backing from the U.K. Department of Health but admits the agency has been "lukewarm" to the idea. Meanwhile, the foundation welcomes feedback (www.fimed.org) and is waiting for a government response to the House of Lords' report.

Apple II Last January, some observers dubbed neuroscientist Gerald Fischbach "director-to-be" of the National Institutes of Health (NIH), after Harold Varmus quit the post for a prestigious job in New York City. But by spring, the White House had decided that election-year politics would sink the planned promotion of Fischbach, who had run the National Institute of Neurological Disorders and Stroke for 2 years.

Now, Fischbach is also headed to the Big Apple. Columbia University last week appointed him to its top medical post. As vice president for health and medical sciences, he will command an $815 million budget and be dean of the faculties of health and medicine. His wife, Ruth Fischbach, is leaving a biomedical ethics position at NIH to become a professor of bioethics in psychiatry at nearby Columbia-Presbyterian Medical Center.

Contributors: Richard Stone, David Malakoff, Erik Stokstad, Eliot Marshall