INTERNATIONAL SCIENCE FUNDING

Hughes Tosses Lifeline to 90 Eastern European Scientists

In 1988, after 12 years of strenuous effort, Russian neurobiologist Pavel Balaban achieved a major breakthrough—although some might call it a breakout. Balaban had been trying to get an exit visa to attend scientific conferences and to visit labs abroad, but the Soviet government repeatedly turned him down. Finally Balaban managed to break loose for a 6-month stint at McGill University in Montreal, Canada. It saved his career: "That's why I and my colleagues are still in science," he says. Back in cash-strapped Russia, collaborative projects with U.S. scientists that grew out of his trip have kept funds flowing into Balaban's lab at Moscow's Institute of Higher Nervous Activity and Neurophysiology.

Now Balaban is about to catch another lifeline from across the Atlantic. Next week the Howard Hughes Medical Institute (HHMI) in the United States will unveil a program to support outstanding biomedical scientists in Russia and Eastern Europe. Balaban is one of 90 scientists to win awards of $25,000 to $35,000 a year for 5 years. The grants are intended to maintain islands of world-class science in 10 countries hard pressed these days to support any science at all (see table). "The grants give us a chance to do good science and not be forced to leave our country," says Jiri Forejt, one of five grantees at Prague's Institute of Molecular Genetics in the Czech Republic.

The grants are slim by Western standards, but most grantees contacted by *Science* estimate that the money will provide 50% to 90% of their annual lab budgets for supplies, equipment, and salaries—budget wizardry only possible because Polish biochemists such as Staniskaw Zolnierowicz of the University of Gdansk, a Hughes grantee, currently earn a mere $175 per month. And many Western scientists hail the program. The grants "will help outstanding laboratories, comparable to top labs here in the United States, that are really in desperate situations," says University of Wisconsin, Madison, biochemist William Reznikoff, who has collaborated with Hughes grantee Vladislav Lanzov, a molecular geneticist in St. Petersburg, Russia. There are, however, lingering worries that because the grants are going mostly to elite researchers who already have some funding, other agencies may reduce their support, leaving the HHMI winners no better off than before.

Hughes is not the first would-be rescuer of former Soviet bloc scientists. As countries in the former Soviet Union have focused on nonscientific priorities—like growing food and manufacturing growth—the plight of their underfunded scientists has attracted the International Science Foundation (ISF), a fund established by financier George Soros, as well as the Civilian Research and Development Foundation now being organized by the U.S. National Science Foundation (NSF). But funds from these sources are small and getting smaller—the ISF will run dry in December—and little of this money has gone to scientists in Eastern Europe, as these agencies have concentrated on the former Soviet countries.

In July 1993, HHMI announced it was joining the rescue squad. After collecting more than 2000 proposals in the following 6 months, HHMI staff culled the field to 500, which were then sent out for peer review in the United States by experts in genetics, molecular biology, and other fields. The 90 winners were selected according to their publication records and the novelty of their proposals, says HHMI program analyst Tony Tse. The institute's trustees approved the final selections in November 1994, after which HHMI spent several months verifying, among other things, the citizenship of each grantee and the nonprofit status of their institutions. HHMI plans to disburse awards on 15 August.

The winners, by and large, are those with a proven track record in the West. Of the 46 Hughes grantees in the former Soviet Union, 21 had already won ISF awards, and most say they have multiple grants from Western sources. Overall, 60 of the 89 Hughes grants (two Slovakian scientists shared one grant) are being funded as collaborations with scientists in the United States, Western Europe, Japan, and Australia.

There's a reason for this, the grantees point out: Researchers who have not been able to win Western grants and forge collaborations abroad during the past 5 years have generally not been able to do cutting-edge work. "Those who have to rely on modest Polish grants certainly cannot compete," says Hughes grantee Andrzej Jerzmanowski, chief of the laboratory of Plant Molecular Biology at the University of Warsaw. According to Jerzmanowski, his lab has been surviving on a grant from the Polish-American Marie Sklodowska-Curie Fund.

HHMI officials acknowledge that their money is going to the elite. "We wanted to find the best possible scientists and give them the kind of support that would make a difference," says HHMI President Purnell Choppin. "Their approach is certainly a very reasonable one," says NSF's Gerson Sher, who until May helped run the ISF. That foundation was criticized because it "tried to fund too many people and gave them too little money," says Sher. The Hughes grants, which are two to three times the size of the average ISF grant, "provide serious money to a much more select number of projects," he notes.

The reason these small sums are "serious" is, in part, that Eastern European salaries are minuscule. Grantee Alexander Mironov, a geneticist at Moscow's Institute of Genetics and Selection of Industrial Micro-Organisms, says he earns about $60 a month, about one-fifth the salary of a Moscow bus driver. His postdocs fare even worse, each earning about $14 a month. So grantees will be able to pay themselves and their staffs a living wage. "I'll be able to support my existing lab staff with salaries that allow them to approach modern grocery stores in Moscow without fear," says Vladimir Shirin-

SAVING SCIENCE IN EASTERN EUROPE
Hughes Research Grants by Country

Country	# of Grants	Total Funds* ($ millions)	Selected areas of research
Russia	36	5.3	DNA sequencing of *Helicobacter pylori*; modulation of the nervous system in snails; DNA repair in yeast
Hungary	14	2.2	Sensory processing in the spinal cord; mast cells in intestinal injury; chaperone proteins in protein folding
Czech Republic	12	1.8	Molecular interactions of metals and DNA; variation in genomic imprinting; polyomavirus protein function
Poland	12	1.6	Binding of fibrinogen; neural plasticity in the rat brain
Slovak Republic	6	0.7	Interactions between yeast mitochondria and nucleus; protein markers for Alzheimer's disease
Ukraine	3	0.5	Calcium transport into nerve cells in the hippocampus; role of cell surface receptors in apoptosis
Lithuania	3	0.4	How DNA-methyltransferases modify cysteine; gene expression in bacteriophage T4
Estonia	2	0.3	Replication of human papillomavirus
Belarus	1	0.1	Properties of nitric oxide in nerve cells
Latvia	1	0.1	Pharmacology of melanocortin receptors

SOURCE: HHMI * For 5 Years

sky of Moscow's Institute of Experimental Cardiology.

By providing money to supplement the salaries of postdocs, the Hughes grants may help stem a two-pipe "brain drain" from their countries' scientific establishments. Talented young scientists are emigrating to the West, and at home, an increasing number of students are choosing careers in business over science. The loss is felt sharply at the postdoc level. "The biggest impediment [to doing research] is the lack of close friends and colleagues who were working with me for many years but had to take jobs abroad," says cell biologist Fatima Gyoeva, a grantee at the Institute of Protein Research in Moscow.

For some scientists, the grants will help them realize dreams shattered by the economic chaos left after the demise of communism. In 1990, Vladimir Bashkirov became head of the genetic recombination lab in a brand-new Institute of Gene Biology in Moscow. The lab's opening "coincided with the beginning of great cuts in science funding," says Bashkirov. "All we had was old equipment and enthusiasm," he recalls. "You can imagine how glad we were to get an HHMI grant. Now we can go on with our project," he says. Although equipment in Eastern Europe and Russia costs up to twice what it does in the United States, grantees estimate they will have enough funds for small items and chemicals.

Big-ticket items, like an electron microscope, are another story. Jolanta Vidugiriene of Vilnius University in Lithuania says she must spend a third of her grant money this year on a single item: an ultra-cold freezer. "It's important to realize that the grant award will only partially cover the numerous expenses involved in running a productive research program," she says.

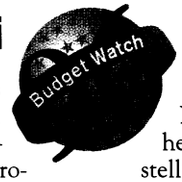
A more serious concern is that local institutions will penalize HHMI recipients by chopping the funds they get from other sources. It's not just a theoretical worry. Vadim Mesyanzhinov, a molecular biologist at the Ivanovsky Institute of Virology in Moscow, won an HHMI award to work on protein folding in collaboration with Michael Rossman at Purdue University in the United States. But Mesyanzhinov says that when a Russian science agency heard about the HHMI grant, it stopped funding his lab. "They think we have a lot of money from HHMI," says Mesyanzhinov, who sees a potentially dangerous new trend: "Successful research attracts a bigger grant that makes further research impossible." HHMI's Choppin says that "it's regrettable that an institute would take this point of view," but "it's not something we can control."

Despite such obstacles, most grantees say they are embracing the prospect of 5 years of steady funding and productive research. "Something I really like about the award is being sure that the money will come, and that it will not be greatly devalued," says Malgorzata Kossut of the Nencki Institute of Experimental Biology in Warsaw. In uncertain times, a little certainty—and a little funding—can go a long way.

–Richard Stone

SPACE SCIENCE

House Panel Targets Centers, Cassini



Space science is the clear loser in a radical 1996 budget approved earlier this week by a House panel that funds the National Aeronautics and Space Administration (NASA). The measure would halt work on Cassini, an international $3.5 billion probe to Saturn slated for launch in 1997, and would close the Goddard Space Flight Center in Greenbelt, Maryland, which oversees the bulk of NASA's space science work. The international space station, space shuttle, and proposed $8 billion Earth Observing System (EOS) emerged unscathed in the bill, which would also hold the National Science Foundation (NSF) to $100 million below its current $3.26 billion budget and reduce research funding by 1%.

Led by Representative Jerry Lewis (R–CA), the House appropriations subcommittee for housing, veterans affairs, and independent agencies chopped NASA's budget for 1996 to $13.5 billion—$837 million less than this year. The subcommittee also sought to squeeze out longer term savings by "essentially closing" Goddard, Marshall Space Flight Center in Huntsville, Alabama, and Langley Research Center in Hampton, Virginia, by 1998, according to committee documents. Marshall specializes in propulsion, while Langley is a center for aeronautics research. The three centers employ more than 10,000 people. Much of Goddard's work would be shifted to the Jet Propulsion Laboratory in Pasadena, California; Langley's work would go to Ames Research Center in Mountain View, California; and Marshall's missions would be spread out among several centers.

Critics vowed to fight the plan as it works its way through Congress, noting that Lewis's state is a big winner in the reshuffling. "The House proposal to cut Goddard is preposterous and purely political," says Senator Barbara Mikulski (D–MD). "There will be a cohesive united front against this," added a congressional staffer.

The plan to cancel the Cassini probe to Saturn stunned space scientists. The program, which includes major Italian and European Space Agency cooperation, aims at delivering a probe to Saturn's moon Titan and a battery of scientific instruments to monitor the planet. NASA has already spent about $1 billion on Cassini; it needs more than $300 million to complete the project and between $750 million and $1 billion to operate it during the life of the mission. Other costs include $450 million to launch the spacecraft and contributions from other federal agencies and foreign partners.

"Cutting Cassini now is ludicrous and crazy," argues Lou Friedman, executive director of the Planetary Society in Pasadena. "It would be bad, bad, bad," warned one European space official. "It's staggering," says Glenn Mason, a University of Maryland astronomer who monitors space science policy.

The bill would also halt funding for Gravity Probe-B, a $580 million mission to measure effects predicted by relativity theory (*Science*, 24 March, p. 1756), and it would put on ice NASA plans to build the Stratospheric Observatory for Infrared Astronomy and the Space Infrared Telescope Facility. Other smaller projects would also get the ax.

House aides say the cuts are Lewis's response to a tight budget, the high priority allotted the space station, and NASA's failure to provide a comprehensive plan to restructure EOS, a constellation of environmental satellites. Space science programs, they add, offer the potential for clear savings.

Administration officials were caught off guard by the attack on NASA but vowed to take action. "We will fight for space science and to keep a balanced NASA program," says Skip Johns, associate director for technology at the White House Office of Science and Technology Policy. Vice President Al Gore spoke with Lewis hours before the markup but failed to stave off the cuts.

The panel was much kinder to NSF, which would receive $3.16 billion—$200 million below the president's request and 3% below current levels. The panel endorsed NSF's plan for no growth in the $600 million education directorate and for $100 million for academic facilities and wiped out the proposed 8% increase in NSF's $2.28 billion research account, leaving it with $2.25 billion. And although the Environmental Protection Agency's budget was cut by a third, research and development would receive $384 million, a 10% boost and only slightly below the president's request.

The full House Appropriations Committee is slated to take up Lewis's bill on 18 July. The measure must then go to the House floor. Given the radical surgery that's been proposed for NASA, observers expect a summer of budgetary fireworks that could rival last week's Independence Day celebration on the Mall.

–Andrew Lawler