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Foreign Scientists Drawn by Lucrative State Mega-Grants

By Natalya Krainova

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Peter Koltermann, an oceanographer from Germany.

Leading German oceanographer Peter Koltermann was fascinated when he won a Russian "mega-grant" of 150 million rubles ($5 million) last year to research natural disaster risks.

"The Russian government is very daring, allocating a lot of money only under a promise [from researchers] to do it," Koltermann told a recent roundtable in Moscow.

But he has struggled to concentrate on studying tsunamis, earthquakes and melting Arctic ice. Instead, he has spent much of his time fighting red tape.

"I don't expect Russian bureaucracy to be simple," Koltermann said, speaking in English. "And I think that in every bureaucracy, there is some way around. But I'd like to know for sure" how to navigate the bureaucracy in Russia.

In Russian academia, the 1990s are known as the brain drain era. Thousands of leading scientists and hopeful doctorate students moved abroad, prompted by meager salaries and nonexistent research funding at home.

A decade into the "fat years" of oil prosperity, the government is finally trying to reverse the trend, allotting 40 "mega-grants" to people like Koltermann in 2010 and to a new batch of 39 people, including Nobel laureates, last month.

But for now, the government seems to be learning that managing science is a science of its own.

The program is obviously working, because this year's 39 recipients include two Nobel Prize laureates, astrophysicist George Smoot and organic chemist Osamu Shimomura, as well as the former director of the German-based Max Planck Institute of Plasma Physics, Friedrich Wagner, and surgeon Paolo Macchiarini, the first person to successfully transplant a trachea grown from a patient's own stem cells.

But the six mega-grant recipients who took part in the roundtable in Moscow last month had a lot to complain about, including visa problems, endless paperwork, spending restrictions, and a lack of equipment and qualified staff.

Then there is uncertainty about schedules, copyrights and the application of their research in Russia, where the high-tech industry is no less decrepit than academia.

"We need to internationalize our science and education," Vladislav Surkov, the Kremlin's first deputy chief of staff and political strategist, said when the grant program was rolled out in April 2010.

"We must take a practical view of things: Researchers in both the West and the East have moved further than we have," Surkov said, in remarks published in Kommersant.

To rectify the situation, the Education and Science Ministry started the mega-grant program, whose recipients get 150 million rubles each and are required to establish laboratories or research centers in Russia. Each grant is to be used within two years, and recipients must spend at least four to five months a year in the country.

"The 150 million rubles are not just to work on a specific issue. The main task is to open a research center where other scientists will work after the program ends," Andrei Malyavin, head of the science department at the Moscow State Medical and Stomatological University, told The Moscow Times.

"The money is to be spent on salaries and the purchase of modern equipment and research materials," Malyavin said in an interview in November.

His university, for one, attracted Ferid Murad, a U.S. Nobel Prize laureate in physiology and medicine.

"Murad, like other scientists [in the program], has skills lacked by our researchers in setting up scientific research," Malyavin said.

Other prominent names in 2010 included Gerard Mourou, a French pioneer in the field of electrical engineering and lasers; Manfred Thumm of Germany, winner of the prestigious IVEC award for excellence in vacuum electronics; and Stanislav Smirnov, the Russian-born and Geneva-based winner of that year's Fields Medal, a top award in mathematics.

Program supervisor Igor Protsenko, a department head at the Education and Science Ministry, called the mega-grant project unprecedented.

"In essence, this is the first time that international expertise has been used" in Russian research, Protsenko told the roundtable.

Indeed, the project is "one of the first instances where a Russian institute has invited a foreign scientist to work on its soil," Jörn Thiede, a German marine geologist taking part in the program, said in an interview.

Paper Sea

The general idea for the mega-grant program is a good one, researchers agreed at the roundtable. But the bureaucratic obstacles in the scientists' path are many and varied.

One major problem is the federal law on state tenders, which involves protracted — to put it mildly — procedures to purchase necessary equipment and materials.

"In Russia, to buy a chemical agent, you need three months," said Yuri Kotelevtsev, a researcher at the British Heart Foundation Centre for Cardiovascular Science with the University of Edinburgh.

"If you need just one chemical agent, no one will talk to you, and you will have to wait till someone orders a truckload of them," said Kotelevtsev, who won a grant to open a laboratory for stem cell research at the Pushchino State University in the Leningrad region.

The system of online tenders was introduced to curb graft among state officials but is applied to government-backed scientific institutions as well.

The government also demands reports on every bit of spent mega-grant money, which results in towering piles of paperwork.

"Don't make our life crazy by constantly demanding to explain why we need this or that," complained Sergei Lukyanov, a researcher at the Institute of Bioorganic Chemistry of the Russian Academy of Sciences.

"How we do research — using this or that device — is our own business. The main thing is to get results," said Lukyanov, a grant recipient who has opened a laboratory at the Nizhny Novgorod State Medical Academy.

The tenders are actually supposed to be handled by college administrators, but they tend to offload responsibility onto the researchers, the researchers said.

"We have very little administrative support," oceanographer Koltermann said. "And not every scientist is a good administrator."

Yet another inconvenience is that the grant money cannot be spent on capital repairs, even though "it's next to impossible to find ready-to-use premises of high quality and fit to conduct research in a short time," said Malyavin of the Moscow State Medical and Stomatological University.

Biochemist Lukyanov said the Nizhny Novgorod university provided his laboratory with a basement where repairs are being carried out "in full swing."

Some people simply give up. Eight researchers failed to arrive at the laboratory of algebraic economics at the Higher School of Economics because they "were unable to cope with ... filling out endless papers," grant recipient Fyodor Bogomolov told the roundtable via speakerphone.

Time vs. Money

The proposed time frame of two years to use the grants also appears too short, Koltermann said. In Europe and the United States, he said, grants to start a laboratory usually last four to five years, with the researcher required to spend the entire time in the country that pays him — and not waste much time on paperwork.

Another shortcoming is that similar contests for grant money are usually announced a year in advance, while in Russia the first was announced two months before it was held. "Therefore, it was rather difficult to prepare a substantiated bid," university official Malyavin said.

Also, while 150 million rubles is certainly an impressive sum, it may not be enough to operate a laboratory for two years, Malyavin said.

"Co-financing is not mentioned in the contract but was an indispensable part of the bid and will be one of the main criteria to achieve the grant's goal," he said.

Malyavin's college managed to attract private sponsors and other European grants to help the laboratory's work.

Dim Future

What will happen after each two-year project ends is another concern.

"In two years, a foreign professor can take our best specialists and leave," biochemist Lukyanov said. "This way, [the program] can turn into a personnel recruitment drive for the foreign specialist. We risk seeing a new wave of specialists fleeing abroad."

Any Russians who leave may not be to blame because Russian industry has little way to apply whatever breakthrough discoveries are made.

Industrial production in Russia is not developing, which means "any results in research here ... go to the West," said Sergei Nikitov, deputy head of the Institute of Radio-engineering and Electronics of the Russian Academy of Sciences.

"There will be results, but in 10 or 20 years, not one or two," said Nikitov, who won a grant to open a laboratory at Saratov State University.

"You can shower someone with money, but it's impossible to do something fundamental in two years," added Vladimir Klimenko, head of Laboratory of Global Power Engineering Problems at the Moscow Power Engineering Institute.

That is provided that the laboratories survive long enough. No funding is guaranteed for them after the mega-grants, and how the first ones will continue to work after 2012 is anyone's guess, said Vladimir Malakhov, a researcher at the biological faculty of Moscow State University who has opened a laboratory at Far East Federal University to study the fauna of local seas.

Who Owns What

The program gives all rights to the research's findings to the college that hosts the grant recipient, which means that "the leading researcher can't sell the results of his research," medical scientist Malyavin said.

In the United States, researchers can take out a patent on their discoveries, but Russian laws give them no such option, he said.

Imperfect and contradictory patent legislation results in less than 10 percent of Russian discoveries being patented, which hinders the practical application of the research, he said.

Larisa Petrova, a senior researcher at the Physics Research Institute at St. Petersburg State University, said profits from a patent sale would likely go to the host university, leaving out the researcher who actually made the discovery.

Moreover, grant rules oblige a university to pay for securing legal protection of the research's findings from its own pocket, and most colleges do not have the money, Petrova told The Moscow Times in an interview in November.

"Consequently, as soon as such an opportunity arises, the patent — if the university gets one — will be sold by the university, possibly in cooperation with the Education and Science Ministry," Petrova said.

She also said buyers would likely be foreigners because there are "no developed structures in our country to adapt a product of scientific research for commercial use."

They're Working on It

Program supervisor Protsenko of the Education and Science Ministry pledged to have most wrinkles ironed out in the near future. Amendments to the law on state tenders, exempting scientific research from the cumbersome procedures, are to be passed by the State Duma this fall, he said at the recent roundtable.

He insisted that successful projects would not be abandoned because the program's rules allow financing to be prolonged to laboratories for one or two years, depending on their performance.

Evaluation criteria for success are still being worked out, Protsenko said. But this means grant recipients can contribute to the discussion, he said, urging researchers to submit their

proposals on how their work must be judged.

He also condemned college administrators for "shifting their responsibility" on administrative matters onto the researchers. "The only documents a researcher must sign are the research paper and the bill," Protsenko said. He gave no advice on how that might be achieved.

Home Front Problems

Eduard Kruglyakov, who chairs a commission against bogus science at the Russian Academy of Sciences in Novosibirsk, said Russian universities had enough qualified scientists, but their achievements are often modest because authorities allocate almost no money to modern equipment and materials for research.

"I think that inviting the researchers is a humiliation of our own academia and an attempt to destroy it," Kruglyakov told The Moscow Times in an interview in November.

He also blamed poor school education for the dried-up "inflow of smart youth" into scientific research.

Grant recipients might struggle to staff their laboratories because the "prestige of higher education has fallen, and few young people want to do scientific research," agreed Klimenko of the Laboratory of Global Power Engineering Problems at the Moscow Power Engineering Institute.

Two foreign mega-grant recipients were more optimistic about the professionalism of Russian researchers, saying they are well educated. But they also said their Russian colleagues have few opportunities to apply their knowledge and skills inside the country.

Peter Sloot, a professor of computational science from the Netherlands, said by e-mail that Russian scientists are "very good," but the problem is that "sometimes their scientific results are not published in international peer-reviewed journals."

"This is mainly because of the language problem and because of traditions," Sloot said, referring to the Soviet-era isolation of Russian science.

"Due to this, these results might not be recognized by the international scientific body for a long, long time," he said.

Russian researchers have "excellent basic education," at least in planetary geodesy, Jürgen Oberst, a German specialist in the field, said by e-mail.

But "what is missing are projects and jobs for young researchers," he said.