RUSSIAN SCIENCE

Moscow Cardiology Institute Battles for Its Life

MOSCOW—While cardiovascular research is thriving in most of the developed world, one institution, this city's Cardiology Research Center (CRC), finds itself on the critical list. The CRC was once a shining star in Russia's scientific firmament, its reputation so bright that during the Soviet invasion of Afghanistan, when the United States severed most of its ties with the Soviet Union, U.S. officials still pushed ahead with an exchange of researchers between the National Institutes of Health (NIH) and the CRC. But after the Soviet Union dissolved in 1991, the CRC's fortunes plummeted. Now, starved for funds and with many of its most talented researchers absconding to the West, CRC is fighting for its life in a battle whose outcome is still uncertain.

In its more illustrious past, the CRC gained fame for bringing under one roof the Soviet Union's best cardiologists, who staffed the center's clinical branch, the Myasnikov Institute of Clinical Cardiology (ICC), and its finest basic cardiology researchers, who worked in the center's Institute of Experimental Cardiology (IEC). "We learned medicine from them, and they learned science from us," says Vsevolod Tkachuk, head of CRC's biochemistry department.

CRC investigators made key discoveries—such as finding size and shape variations in the cells lining the human aorta that may presage the biochemical changes leading to atherosclerosis—and pioneered the use of a therapy now standard in the West: the use of enzymes such as urokinase to dissolve blocks in coronary arteries. Their achievements helped IEC researchers forge many collaborations with Western scientists, in addition to those with NIH.

And on the clinical side, CRC became the first center in Russia to install a magnetic resonance imaging (MRI) machine. CRC director Evgeny Chazov himself gained fame as a personal physician to two Communist Party chiefs, Leonid Brezhnev and Yuri Andropov.

But CRC's glory days ended abruptly 5 years ago, when the Soviet Union dissolved and Russia's science budget fell precipitously. Accustomed to a multimillion-dollar budget in Soviet days, in the early 1990s the CRC had to scrimp by on a few hundred thousand dollars a year. "We were in shock for 2 or 3 years," recalls Tkachuk, who says the worst year was 1991, when his lab operated a charity soup kitchen for hungry researchers, supported in part by emergency grants provided by the International Science Foundation.

Hardest hit were IEC's basic researchers. With the CRC unable to pay more than token salaries, many of its best scientists, now free to leave Russia, capitalized on their Western ties and landed jobs abroad. Within months after the Soviet Union dissolved, the IEC lost 150 of its 250 scientists. From 20 fully functioning labs a decade ago, the IEC now has only six.

Government support of the CRC has failed to rebound. In 1995, the center received only $200,000 from the Russian Academy of Medical Sciences. Last month, CRC severed its organizational and financial ties to the academy and joined the Russian Ministry of Health in the hopes of winning more government funds. But the situation remains so dire that CRC has trouble paying its electric bills. "Now my workday starts by thinking where I can find money for our budget," says Chazov.

On the edge. Since the Soviet Union dissolved, the CRC (pictured here) has had to contend with sparse funding and a declining staff.

Meanwhile, the cardiologists running ICC's 410-bed clinical ward have fared much better, because most of their patients are either covered by Moscow insurance companies or able to pay on their own. Such revenue accounts for more than 85% of CRC's current budget of roughly $1.6 million. That's reflected in the salaries of ICC's scientists and physicians, who earn as much as $1000 a month—while their colleagues at IEC pull down a mere $140 a month. The salary gap chafes many IEC staff. "It's a kind of discrimination," says IEC director Vladimir Smirnov. "I agree to play the game by American rules"—that clinicians earn about twice as much as basic researchers—"but the difference here is more than that," he says.

Still, IEC's basic researchers hope they can make a comeback, and here, too, their Western ties come into play, although in a beneficial way. The CRC's winnowed staff has collaborations with 21 groups in eight other countries, which give CRC researchers access to equipment and reagents they can't afford in Russia, as well as direct cash support from Western funding agencies such as the Howard Hughes Medical Institute. "Three years ago the situation was terrible, but now we are able to get funds to continue our studies," says Michael Ter-Avanesyan, head of IEC's molecular genetics lab.

Western researchers say they, too, benefit from the collaborations. Steven Marston, a professor of cardiovascular biochemistry at the National Heart and Lung Institute of Imperial College, London, was so impressed with CRC on a visit there in 1994 that he initiated a project on smooth-muscle cell cultures with CRC senior investigator Vladimir Shirinsky. The labs still operating "were up to Western standards, and more important, everyone was up-to-date with the current—mostly Western—literature and state of the art," he says.

Foreign collaborations have won a newfound freedom for IEC's researchers. In the past, Chazov, with his hands on the budget strings, could influence the direction of individual projects. But now, with most funding coming from Western donors, the scientists have more control over their research plans. "This is not a Russian system," says Ter-Avanesyan. "We are a unique example of freedom to do research." The freedom is taking a toll on cardiology research, however. Robert Beabealashvili, the head of IEC's gene-engineering lab, estimates that since *perestroika*, the percentage of IEC projects related directly to cardiology has fallen from 50% to 20%, as researchers follow their hearts into other areas of molecular biology.

For the future, Chazov would like to create a federal medical research center, along the lines of NIH, from the CRC and 10 or so other premier medical institutes in the Moscow region. Such a center, he hopes, would guarantee more stable funding for CRC, particularly for its basic research. The plan has won support from Russian Prime Minister Viktor Chernomyrdin but is on hold until at least after Russia's presidential elections next month (*Science*, 29 March, p. 1795).

No matter what the political fate of the CRC, its long-term fortunes hinge on its next generation of researchers—and that's another cause for concern. Enthusiasm for science is ebbing among Russian youth, forcing CRC to accept almost anyone who comes knocking. Some of these young researchers "turn out to be weak and unmotivated," Shirinsky says. Without an infusion of talented fresh blood, Russia's premier cardiology research center may never make it off life support.

–Richard Stone