

the nation's efforts in information sciences. The latter study is seen as a prelude to new research initiatives: Similar studies of brain science in 1996 and life sciences in 1997 preceded jumps in funding for those fields.

Imura's appointment to the 3-year term, which begins this week and can be renewed twice, is widely applauded by science administrators. "He's probably the best person for the job," says Kaoru Mamiya, deputy director-general for policy at STA. Ken-ichi Arai, director of the University of Tokyo's Institute of Medical Science, says he expects Imura to play "an active role" on the council by parlaying the respect he enjoys within the scientific community with his skills as an administrator.

Imura succeeds the retiring Wataru Mori, a pathologist and former president of the University of Tokyo. The other full-time council post is held by Mutsumu Ishizuka, a former STA official. Although Imura declined to discuss specific policies facing the council, he said that the coming reorganization is one of its important challenges.

The council, whose members include several Cabinet officials and the president of the Science Council of Japan, an independent scientific association, draws its support staff from STA. Although Japan's notorious bureaucratic rivalries have lessened, the council's close ties to STA limit its authority over other ministries. Under the reorganization, the council will draw its support staff from within the Cabinet secretariat rather than from STA, and its authority will extend to the social sciences and humanities. "It will be a place to discuss the country's overall science policy," Imura says.

In addition to Imura's arrival, science advocates are also eagerly awaiting the expected election next month to the nation's upper house of Akito Arima, a physicist who has headed the University of Tokyo and the Institute of Physical and Chemical Research (RIKEN). Arima is rumored to be a candidate for education minister if the Liberal Democratic Party maintains its grip on power. That one-two punch would be good news for science, says Arai. "Imura's [efforts will] complement Arima's activities," he says. "They make a good team."

Scientists hope that the presence of Imura and Akima might lessen the chance that research gets short shrift in a combined STA-Monbusho ministry. In particular, some fear the loss of status for STA, which has begun such innovative programs as the Frontier Science Program and the Exploratory Research for Advanced Technology (ERATO) program. Genya Chiba, executive director of the entity that administers ERATO, praises both men but worries about the influence they will have. "There are limitations to what ministers can do," he says. As for the council, "until we see it, we can't know for sure."

—Dennis Normile

ROMANIA

Science Emerges From the 'Dark Age' of the Ceausescu

BUCHAREST—In the final years of Communism in Eastern Europe, while most regimes were still pouring resources into scientific research, scientists in Romania were in the midst of a terrible "dark age." Elena Ceausescu, wife of the repressive communist leader Nicolae Ceausescu and Romania's self-appointed "First Chemist," took advantage of her dubious scientific qualifications to dominate the nation's science policy, decimate the Romanian Academy—shifting its institutes into government ministries—and dictate a nationwide shift toward applied research.

That period of tyranny ended with the firing squad that executed the Ceausescus on Christmas Day, 1989. But when the country entered its new era of freedom, most of its scientific enterprise was in shambles. Since that unpromising start, Romania has made a significant effort to turn itself around. Some scientists have attained positions of political influence, including Romania's president, former geology professor and university rector Emil Constantinescu, and the new research minister, mathematician Horia Ene. Universities, academy institutes, and research centers are all adopting a competitive process for scientific grants. The Parliament recently endorsed the concept of increasing the currently anemic level of R&D funding. And the revived Romanian Academy, universities, and industry are now developing a national research plan to set scientific priorities. But, as in most countries in Eastern Europe, there is still a long way to go before Romanian science is back on its feet.

Romania has a proud history of research, particularly in chemistry and physics, which accounted for 60% of all Romanian scientific papers published between 1993 and '97; the country's mathematicians and computer scientists now have a noticeable impact, according to statistics compiled by Philadelphia's Institute for Scientific Information (ISI). Overall, however, ISI's latest figures indicate that Romania ranked 31st out of 33 European na-

tions in terms of the citation impact of its scientific publications from 1993 to '97—outranking only Turkey and Slovakia.

The citation figures have improved since they bottomed out in 1989–90. But Romanian researchers still work within a crumbling scientific infrastructure. "Because the government must contend with so many problems, science is not a major priority right now," says Petru Filip, director of the academy's Institute of Organic Chemistry. "The best we can do today is reorganize our research, keep as many talented young people as possible, and survive this difficult transition period intact."

Some research institutes have been unable to buy a major new piece of equipment in decades; many institute directors earn the equivalent of about \$150 a month; and last year's budget for research and development fell below 0.3% of the gross domestic product—compared to about 2.5% of GDP in leading industrial nations. At Romania's Institute of Atomic Physics—a sprawling complex of nine research institutes in Magurele, near Bucharest—gypsy caravans rumble past the partly empty buildings, where hallways are sometimes dark because thieves pilfer the light bulbs. "We are trying to be as competitive as possible with badly outmoded equipment—most of which is more than 20 years old," says Voicu Lupei, the Atomic Institute's general director. "During the last 10 years, we have had barely enough funding to cover the scientists' salaries."

"There is great talent and potential here," says biologist Maya Simionescu. "But you can't keep that talent unless research institutes receive a critical mass of funding." Simionescu heads one of the few independent research facilities that was able to thrive during the nightmarish 1980s, the Institute of Cellular Biology and Pathology. She and her late husband, Nicolae Simionescu, founded the institute in



Trying to be competitive. Physicist Voicu Lupei.



Imported Western techniques. Biologist Maya Simionescu.

1979 after spending 10 years at Rockefeller University and Yale University in the United States. They applied up-to-date Western research techniques in their laboratories and as a result were able to win grants from the U.S. National Institutes of Health.

But for many Romanian scientists, a second job is a necessity, and some institutes earn extra funds working for private companies. For example, scientists help bolster the organic chemistry institute's meager budget by using a spectrometer to analyze water samples for Pepsi Cola bottling plants. Says Marius Peculea, a nuclear engineer who is secretary-general of the Romanian Academy: "There is very little money available now to truly invest in science. And without such investment, we cannot do much more than persevere."

In Romania, as in the rest of Eastern Europe, international cooperation and grants sometimes provide a welcome lifeline. "We would all like to see more substantial funds dedicated to improving the obsolete equipment in our labs, but the only hope is from external funding," says chemist Alexandru T. Balaban of Bucharest's Polytechnic University. Aurel Sandulescu, a theoretical

physicist who is also a member of Parliament, agrees that "we badly need international cooperation. The best Romanian scientists have good contacts abroad, and those contacts can benefit our research."

As a vice president of the Romanian Academy, Sandulescu helped introduce a system of competitive grants at its research institutes in 1994, and he strongly backs the government's new plans to award grants to other research centers on a competitive basis. "The doors are opening here in Romania," says Sandulescu, who has conducted research at the Institute of Atomic Physics since 1956. "But we are still in a transition period." Ene, a fluid-mechanics specialist who became Romania's research minister earlier this year, told *Science* that the new open grants process soon will apply to all institutes that his ministry supervises. "We are serious about stimulating competition," he says. "I want to finance research, not chairs" in institutes.

One trend that has worried some researchers is the government's enthusiasm for applied research. In all, Ene expects to spend 20% of the science budget on basic research and the rest on fields such as materials re-

search, biotechnology, and communications. "My hope is that the high quality of our individual scientists will help us revitalize Romania's research program and restore science to its proper role," Ene says.

Many Romanian scientists, however, feel that the government needs to do more in support of basic research. That sentiment is echoed by the only Romanian-born scientist to win a Nobel Prize, George E. Palade (medicine, 1974), now dean of scientific affairs at the medical school of the University of California, San Diego. Even though he left Romania for the United States a half-century ago, Palade has assisted many Romanian biologists over the years—including the Simionescus—and has kept up with scientific developments there. Romania, he says, should try to foster both basic and applied research and focus resources on the best institutes. Romania "shouldn't phase out basic research," he warns, "because, once disassembled, it may take many years to start again when economic conditions improve."

—Robert Koenig

Robert Koenig is a writer in Bern, Switzerland.

HUMAN EXPERIMENTATION

Review Boards: A System 'in Jeopardy'?

An ad in a Philadelphia subway asks: "Is addiction a problem for you or someone you care about?" It continues: "Free help is available in exchange for research participation at The Treatment Research Center." Subway riders are invited to call the clinic to set up an appointment for screening. It is one of several ads cited in a report to Congress last week illustrating what the authors see as a worrisome trend in clinical research—an increasing reliance on slick marketing techniques to recruit subjects for drug trials.

Marketing techniques are not the only problem the report, by the Inspector General (IG) of the U.S. Department of Health and Human Services (HHS), turned up. The study concludes that the growth of commercially sponsored clinical trials, coupled with an expected boom in government-funded clinical research, is outpacing the ability of a 25-year-old federal system to oversee volunteer recruitment, fee payment, and other issues. The chief author, Mark Yessian of the IG's Boston office, said during a hearing on 11 June in the House government reform subcommittee on human resources: "We are offering a loud warning signal" that the system to monitor such practices "is in jeopardy." Deputy HHS Inspector

General George Grob added that "we are not talking about tweaking the system at the edges" but about the need for "a major overhaul." (The report is available on the Web at www.hhs.gov/progorg/oig)

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Aggressive recruitment.
Growth in clinical trials is stressing the system to protect volunteers, says HHS report.

The system they targeted for analysis is a collection of more than 3000 locally managed "Institutional Review Boards" (IRBs) empowered by HHS and 16 other federal agencies to protect volunteers in studies at U.S. hospitals and clinics. Each IRB—made up of at least five unpaid members, one of them a nonscientist—is responsible for checking out the ethical aspects of projects within its purview.

The small group of IRBs sampled by

HHS reported experiencing on average a 42% increase over 5 years in the number of primary reviews they've been asked to do. Some are now overseeing more than 2000 active protocols. Because many academic medical centers depend on clinical research funds for income, the HHS authors

also expressed concern that IRBs might trim their sails to "accommodate institutional financial interests." They also said they feared that such pressures may be particularly intense at the 16 or so privately owned IRBs that do reviews for profit-making research organizations. The report urged the federal government to certify all IRBs, reform the system to give members less paperwork but more substantive assignments, establish a new education program for IRB members, seek to reduce potential conflicts of interest, and institute stronger federal oversight.

The warnings from HHS drew emphatic declarations of concern from House subcommittee members, particularly from the chair, Christopher Shays (R-CT), and ranking Democrat Ed Towns (D-NY). Citing a 1995 New York study of serotonin and aggression in which minority children were given the drug fenfluramine (now withdrawn from the market), Shays said, "The current system of bioethical review failed miserably." Towns said it would be best to "tear the system down and rebuild it. ... I don't like