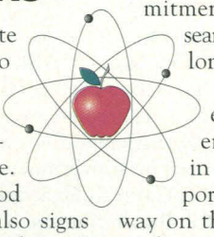
NATIONAL SCIENCE FOUNDATION

Awards Mark Research-Learning Links

The National Science Foundation (NSF) is hoping to change the image of the research university as a place where scientists spend too much time in their labs and too little on the job of teaching. And it is offering research-intensive universities $5 million to help make its case to legislators who determine the level of federal support for academic research.

Two weeks ago NSF officials held a workshop to let universities know how to apply for NSF's new Recognition Awards for the Integration of Research and Education (RAIRE). The promise of 3-year, $500,000 awards that will come with few strings attached lured nearly 100 faculty members and administrators from more than 60 of the nation's top universities to Washington, D.C., on very short notice. Unlike most NSF programs, RAIRE is focused on rewarding past achievements rather than supporting untested ideas.

NSF hopes the awards will enable it to publicize innovative, campus-based efforts that integrate research and education at all levels—from improved training of public school science teachers to tenure policies based on classroom excellence as well as publications. The foundation is also looking for models that will help it expand its existing stable of programs, including research experiences for undergraduates, early-career faculty awards, and academic partnerships with industry, that promote these twin missions. "We want to learn from you, and we want to recognize, reward, and help you replicate these best practices," explained NSF director Neal Lane. "We know there are lots of good things going on, but there are also signs that the elegant seesaw is out of balance."



Most of the educators who showed up last week were enthusiastic. "I'm glad they are doing it," says Mi Ja Kim, vice chancellor for research at the University of Illinois, Chicago. "NSF needs data to show that these research universities are the place where this integration happens. It has not done as well as NIH [the National Institutes of Health] in making its case to Congress" that the institutions it supports care about teaching as well as cutting-edge science.

Kim says her university's policies on tenure already reflect the importance of good teaching. As part of her application, she plans to collect examples of campus initiatives to strengthen precollege science instruction. Microbiologist Michael McInerney of the University of Oklahoma adds that at his university, the incentives are very direct: "If I don't spend an equal amount of my time on each task, I don't get a pay raise. Achieving that balance is one of the key factors in my performance rating." Paul Martin, dean of the division of applied sciences at Harvard University, thinks NSF has "underestimated" the community's commitment to balancing teaching and research. "We've been doing this for a long time," says Martin.

Some participants who don't expect to win said that they nevertheless hoped that NSF's interest in the topic would help build support for small efforts already under way on their campuses. "We're not quite ready to compete," says biologist Tim Spira of Clemson University in South Carolina, "but I think this will help move us in the right direction."

Three-page preliminary applications for RAIRE awards are due on 5 July. NSF has promised to send back helpful comments by early September, in time for universities to flesh out their stories in a 15-page submission due 15 November. "We're looking for success stories—what you've done in the past 2 to 10 years that has worked," NSF's David Schindel, who is overseeing the new activity, told the workshop. "And I'll give you some advice—the key is to explain your criteria for judging success."

Applications must be submitted electronically (see http://www.nsf.gov/od/osti) as part of NSF's effort to move toward online processing of all grant applications. "We figured that this group was probably the best equipped to try it," says Schindel. "It's another first for us."

–Jeffrey Mervis

JAPAN

Five-Year Plan to Boost Spending

TOKYO—Japan's cabinet was expected to give researchers a big boost this week by pledging to spend a total of $170 billion on science and technology over the next 5 years. Reaching the target would effectively double by 2000 the $21 billion that the government spent on science in 1992, and it would be a substantial boost over this year's budget of $27 billion.

The fiscal goal is the centerpiece of an overall 5-year plan for science proposed by the Council for Science and Technology, an influential government advisory committee asked to flesh out a new law setting national policy on basic science (*Science*, 10 May, p. 804). It is seen as an endorsement of the council's 1992 recommendation that the government double science spending "as soon as possible." At the same time, the new plan goes far beyond fiscal matters, recommending several ways to improve the research environment, boost productivity, and apply more rigorous peer review.

One provision would end the tradition of employment-for-life at national institutions by offering limited-term appointments. Another would lower the ratio of researchers to assistants, from 8:1 to 2:1 at universities and from 3:1 to 1:1 at national laboratories. The council's plan also backs such current initiatives as creating 10,000 postdoctoral positions by 2000 (*Science*, 8 September 1995, p. 1335).

While the plan lays out goals, it is vague about how to achieve them. Some proposals, such as the introduction of limited-term employment, may require legislation. "There is still a lot to be decided," admits Yoshiaki Ando, deputy director of planning in the policy bureau of the Science and Technology Agency.

The council's report sparked a sharp internal debate within the Japanese cabinet. The Ministry of Finance fiercely opposed setting any spending target, for example, citing the need for flexible budgets to help lift the country out of a 4-year recession. But its view did not prevail. "Of course, there will be an argument every year," says Hiroyuki Osawa, a former vice minister of the Science and Technology Agency and head of the council subcommittee that drafted the plan. But cabinet approval, says Osawa, means that "the Ministry of Finance is at least in principle agreed on $170 billion as a target."

A fight also looms over how to spend the growing pot. The plan cites a pressing need to modernize the nation's research facilities and calls for a sharp increase in the share of research funded through open competitions, but it does not set priorities by field. Akito Arima, a physicist and president of the Institute of Physical and Chemical Research, believes the debate will highlight the need for new procedures for evaluating scientific quality. "Up to now the evaluation system has been very weak," Arima says. "But now there are many reasons why we need to establish better reviewing systems."

Other elements of the plan include simplifying procedures for researchers at national institutions who want to work for companies, making it easier for scientists to obtain intellectual property rights for their work, and encouraging international exchanges by having at least one foreign scientist in every research group at national facilities.

–Dennis Normile