SCIENCE AND TECHNOLOGY CENTERS

NSF Prepares for New Round With Cuts at Current Sites

Charles O'Melia still remembers the day, nearly 8 years ago, when he learned that the National Science Foundation (NSF) was not going to fund his proposal for a Science and Technology Center (STC) on environmental interfaces. "We were one of the finalists," recalls O'Melia, an environmental engineer at Johns Hopkins University, "and based on the reviews, I really thought we were going to make it." Despite 6 months of wasted effort, O'Melia says he had "a lot of fun" interacting with colleagues around the world drawing up a research plan to study the chemical reactions that take place at land-sea, sea-air, and other boundaries. Now he has to decide whether to do it again.

NSF is gearing up for a new generation of STCs to tackle big questions in science, and the prize—$25 million or more over a decade for each center—seems certain to energize thousands of academic scientists. "I expect you'll see even larger numbers of faculty members applying," says Jared Cohon, incoming chancellor of Carnegie Mellon University in Pittsburgh, who was Hopkins's vice provost for research when O'Melia put in his bid. "That much money for that length of time is bound to attract many applicants."

The new centers, to be funded starting in 2000, will replace the foundation's current crop of 24 centers. A formal announcement later this year will solicit proposals for eight to 10 new centers. Similar competitions will be held every 3 years until 2006, and the program's annual budget is projected to rise from the current $62 million to $75 million. In the meantime, existing centers will have their budgets trimmed by 30% or more in the last 2 years of their 11-year award.

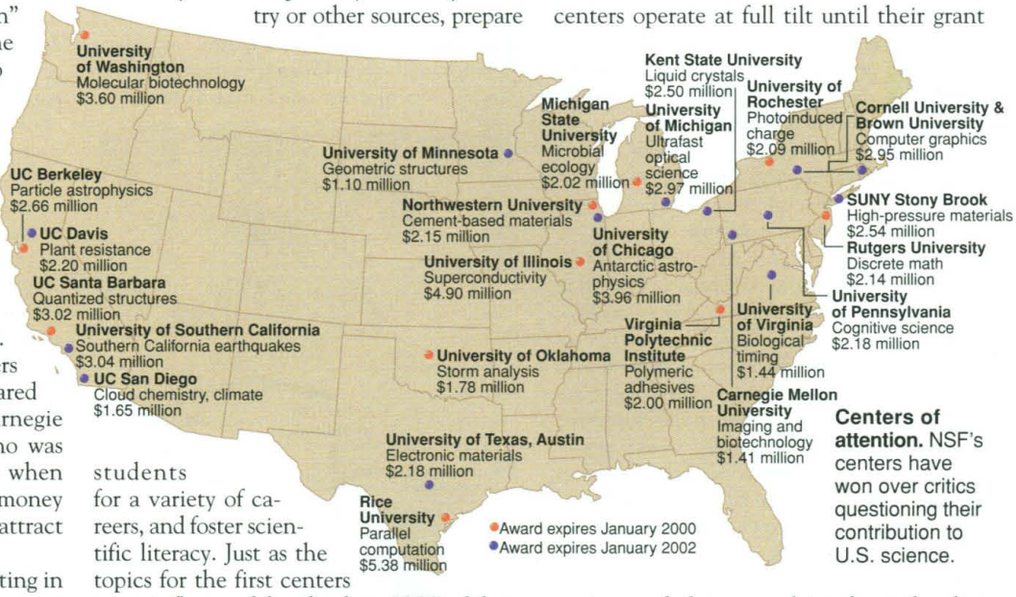
The next round of competition marks a new phase in an effort launched in 1987 to allow investigators from several disciplines to focus on crosscutting questions that require more resources than are available under the standard NSF grant. However, critics saw it as a threat to the funding of individual investigators and as a misguided response to pleas from Congress for scientists to help solve short-term economic problems. In addition, some disciplines felt slighted. "Just the name alone—Science and Technology Centers—sent a message to my community that we weren't welcome," recalls cognitive psychologist Bennett Berthenthal, NSF's assistant director for behavioral and social sciences, who is on leave from the University of Virginia. But the program never took up more than a tiny fraction of NSF's research portfolio, and a series of outside evaluators has concluded that the science it funds is top-notch (*Science*, 16 August 1996, p. 866).

Like NSF's current crop of STCs, the new centers are expected to serve several masters. They should be partially funded by industry or other sources, prepare students for a variety of careers, and foster scientific literacy. Just as the topics for the first centers were influenced by the late 1980s debate about so-called "critical technologies," says Nathaniel Pitts, head of the Office of Science and Technology Infrastructure, which manages the STC program, the next batch is expected to address concerns such as the computer-human interface, quality management, and public understanding of science.

The transition to the new program could be tough for the 24 existing STCs (see map). Although they may seek funding for a new topic or a radically different approach to their current field, both NSF officials and center directors think their chances of success are slim. "Ten years ago, high-temperature superconductivity was a household word. The field was new and the idea was easy to sell," says Miles Klein, a University of Illinois solid-state physicist and director of the Center for Superconductivity Research, which received $4.9 million last year from NSF. "Now it's just another problem, and we'd be competing against a lot of other new materials."

It's not only the post-2000 era that's worrying center directors. Klein says that the prospect of a 30% budget cut, while not a surprise, is still painful: "We'll have to cut about one-third of our programs. That means some research groups will have to be smaller, and others dropped."

Some directors say that they don't see the logic behind cutting a successful program before its time has expired. "NSF is bound and determined to show that they can kill things," says Marc Davis, acting director of the Center for Particle Astrophysics at the University of California, Berkeley, which gets $2.6 million a year from NSF. "But there are still a lot of fundamental questions about dark matter. Unfortunately, as soon as the cuts go into effect, morale will disappear and people will look for other jobs." Pitts says NSF wants to avoid a situation in which centers operate at full tilt until their grant expires and then complain about the dire effect of a sudden loss of funding.



SOURCE: NSF

Centers of attention. NSF's centers have won over critics questioning their contribution to U.S. science.

At least one center, however, is hoping to avoid extinction by seeking support from a major U.S. company. The University of Oklahoma–based Center for Analysis and Prediction of Storms, which received $1.8 million last year from NSF, has been negotiating with American Airlines to support continued development and application of a mathematical model that the center has created to simulate small-scale weather phenomena. "The goal is to keep the center intact," says assistant director David John, who adds that the center will not be requesting a new round of NSF funding. "We've had our moment in the sun, but now it's time to move on."

For other research groups hoping to bask in the federal sunlight, the process begins this fall with a program announcement describing the competition, followed by preproposals due next winter. The first set of awards, for up to 10 years of support, would be made in the fiscal year beginning 1 October 1999.

–Jeffrey Mervis