U.S. RESEARCH CAPACITY

A Controversial IDeA to Shrink the Biomedical Gap

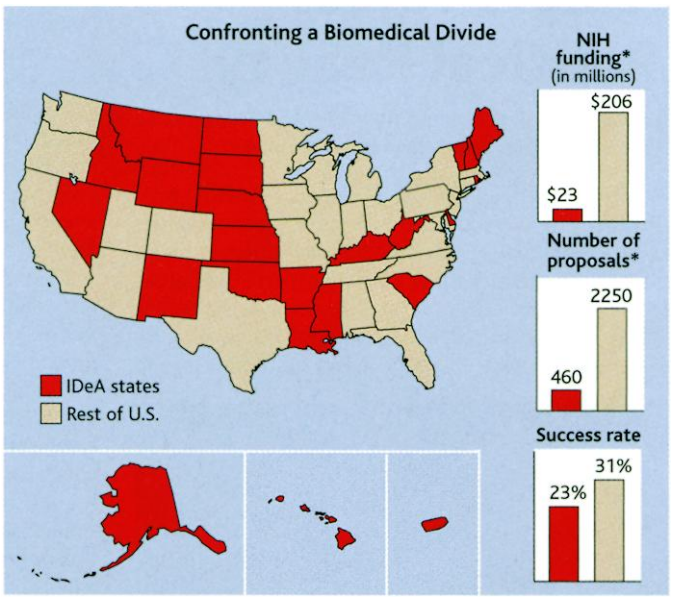
How should NIH help states that do poorly in the race for federal research dollars? A new and growing program draws criticism

If you are a scientist from a U.S. state that doesn't do much biomedical research, your chance of getting a bigger slice of the National Institutes of Health's $20 billion funding pie are looking up. This month NIH will award $45 million to 23 states and Puerto Rico under its new Biomedical Research Infrastructure Network (BRIN), part of a rapidly expanding program to help build up the capacity of those states to do good research. "The goal of BRIN is to create opportunities in states where people haven't had them," says Adele Pittendrigh, associate dean for the college of arts and letters at Montana State University in Bozeman, which is in line for one of the grants.

Some scientific leaders, however, see a downside to a competition whose participants are limited by geography. "We all understand the need to help emerging institutions become more competitive," says William Brody, president of Johns Hopkins University in Baltimore, Maryland, and a member of the NIH director's advisory council, which was briefed on the BRIN program at its June meeting. "But that process needs to be merit-based, and there is a sense that some of these programs aren't." At the same meeting, Thomas Cech, president of the Howard Hughes Medical Institute in Chevy Chase, Maryland, labeled the initiative "a dangerous direction [to go]. ... Throwing funds on infertile ground is not going to result in anything."

The model for the NIH program is a 2-decade-old effort at the National Science Foundation (NSF) called the Experimental Program to Stimulate Competitive Research (EPSCoR). The $100 million a year program provides research, equipment, and training grants to scientists in 19 states that annually rank at the bottom of NSF funding charts. The idea has been adopted by seven other federal agencies, including NIH, which in 1993 launched its version, called the Institutional Development Award (IDeA). The BRIN awards are the newest element of that program.

Hamstrung by initial skepticism from then–NIH director Harold Varmus and other top officials, IDeA limped along for years on a budget of a few million dollars. But it gained a strong advocate in Ruth Kirschstein, who became acting director in January 2000. Responding to the arguments of officials in the EPSCoR states and the urging of Congress, Kirschstein has used some of the large increases in NIH's overall budget to ramp up the program, now at $100 million.



* Figures represent an annual mean. Funding is a 5-year average, 1994–99.

SOURCE: NIH

The first significant awards under IDeA were made last fall, when NIH pledged $165 million over 5 years to create what it calls Centers of Biomedical Research Excellence (COBRE) in 16 states and Puerto Rico. This month a portion of IDeA's 2001 budget will be spent on the BRIN awards, with the rest going for a second round of COBRE centers. And there's more on the way: NIH has requested $135 million in its 2002 budget now before Congress.

Statistics on who receives NIH funding highlight the need for IDeA, says Judith Vaitukaitis, director of the National Center for Research Resources, which runs the IDeA program. "Investigators from the EPSCoR states do well in competition for NIH funds," she explains, citing success rates for some small states that equal those of such research powerhouses as New York and California. "But there just aren't enough of them." Institutions in Wyoming, for example, submit an average of only 49 proposals and receive $1.3 million annually, compared with more than 13,000 proposals and $1.1 billion for New York, although Wyoming's 22% success rate isn't that far below the Empire State's 29%. To be eligible for IDeA, states must have received less than $70 million a year from NIH over a 5-year period or have success rates lower than 20%.

To help close the gap, NIH officials in the fall of 1999 invited universities to submit COBRE proposals built around a senior investigator with a successful NIH track record. The goal is to provide younger investigators with the right environment to compete for NIH grants on their own, as well as to train replacements for investigators who use NIH grants as a springboard to positions at more prestigious institutions.

Although officials from EPSCoR states welcomed the COBRE program, they soon realized that it was weighted in favor of states with the highest concentration of talent and most experience garnering NIH grants. "They thought COBRE was too advanced for some states," says Fred Taylor, who runs the BRIN program and helped organize a July 2000 workshop on the future of the IDeA program. "So [last fall] we created BRIN."

The new program goes beyond promoting biomedical research excellence by offering ways to increase a state's capacity to do good science in any of a number of areas. That includes a greater emphasis on improving undergraduate education and promoting diversity. "It gives states the opportunity to propose what they need," says Frank Waxman, chair of the state's EPSCoR program and vice president for research at the University of Oklahoma Health Sciences Center in Oklahoma City, which last year received a COBRE award. Oklahoma's BRIN proposal, for example, focuses on functional genomics, with plans to develop a network of five labs working on microarrays.

State officials admit that no NIH program will ever vault them into the ranks of the nation's elite universities. But they think that it's appropriate for the government to lend a hand as institutions try to climb the research ladder. "We have strong students who deserve the chance to move ahead," says Pittendrigh. "I like excellence, but I also like the idea of including more people

in the scientific mainstream."

Brody, too, is a fan of greater inclusion. And he concedes that geography has become an essential element in the federal funding picture. "Five years ago, I'd have said that emerging institutions can do it on their own. Today there's a realization that the lack of geographic distribution undermines political support for all biomedical research," he says.

But Brody and others worry that BRIN may not be the best strategy. "It doesn't require states to make the necessary investment in their research infrastructure," he notes. "Look at some of the newer UC [University of California] campuses or the Florida system. State legislators there decided to put up the money, and those schools have become topflight research institutions."

Vaitukaitus says that NIH chose not to require states to ante up money for BRIN "because we didn't want to be unfair to those states that can't afford it. But they do need to show an institutional commitment to strengthening their research capacity." She says that "these people can be the best, too, given the resources and the wherewithal to carry out research."

The BRIN awards will provide each state with up to $2 million a year for 3 years, and some state officials are already hoping for a second round to allow sufficient time to collect data on the program's impact. Next month NIH will sponsor a workshop in Oklahoma City to discuss the evolution of both COBRE and BRIN. "From our perspective," says Taylor, "the best thing that could happen is for these states to graduate from the IDeA program."

However, EPSCoR's track record at NSF suggests that such an outcome is unlikely. All the original states are still eligible—and thus still at the back of the scientific pack. At the same time, NSF raised the bar a few years ago by shifting some of the funding to its research directorates, forcing applicants to hold their own against proposals from the rest of the country.

That's the sort of competition that NIH must foster, the advisory council told Kirschstein this summer. "Whatever you do, you need to rely on merit review and competition," says Brody. "Without that, you risk the loss of scientific quality."

–JEFFREY MERVIS

CONSERVATION BIOLOGY

Bold Corridor Project Confronts Political Reality

Eight countries have launched an ambitious effort to link protected areas, but critics say that the project's conservation goals have been diluted

EL NARANJO, THE PETÉN, GUATEMALA—From a motorboat plying the tranquil San Pedro River in this remote area, John Beaver surveys the jungle around him. To the north, a wetland teeming with birds and alligators fans out from Laguna del Tigre, a national park. To the south, verdant karst hills stretch off into the Sierra del Lacandón park. Beaver, a field staffer with The Nature Conservancy (TNC), hopes to provide safe passage for the animals by protecting a strip of land, or corridor, between the two parks. To do so, TNC will work with landowners to head off development. "For certain species, [the land link] is going to be key," says Beaver.

TNC's plans here are part of one of the largest, most ambitious conservation initiatives in the world. In an effort spanning eight countries, conservationists hope to establish scores of corridors that will one day connect a rosary of parks and managed lands running from Chiapas, Mexico, to Panama's Darien Gap. At a time when Central America's tropical forests outside parks are fast disappearing, these connections should enable genetic exchange and provide habitat for the isthmus's rich bounty of plants and animals.

That's the dream, at least, of the Mesoamerican Biological Corridor (MBC). First envisioned a decade ago by conservation biologists, the multinational effort is based on the idea that connecting protected areas is the only way to save dwindling populations of species. Creating the network over the next 40 years will require shoring up protected areas and managing agricultural land to harbor biodiversity. "This is perhaps the most advanced and the most pioneering attempt at corridors at this scale," says biodiversity expert Kenton Miller of the nonprofit think tank World Resources Institute (WRI) in Washington, D.C., an initiative partner. Since 1997 funders including the World Bank, the United Nations, the Global Environment Facility, and the Dutch and German governments have poured at least $100 million—and as much as $1 billion depending on what's counted—into the program.

Tropical link. A proposed wildlife corridor would help jaguars, scarlet macaws, monkeys, and other wildlife move between Sierra del Lacandón national park in Guatemala (above) and another park.

CREDIT: ANDY DRUMM/THE NATURE CONSERVANCY

Some scientists and environmentalists are disappointed with the path Central America's ecocorridor has taken, noting that politicians have turned the original scientific concept into a catch-all for rural development projects, which they feel now overshadow conservation. "There is a concern that what started out as a science-based project has become populist-based and less guided by ecological principles," says Jim Barborak, a protected areas specialist with the Wildlife Conservation Society (WCS) in New York City. In only a few cases have countries actually begun to create corridors by setting aside land and working with farmers to change land use. And only a fraction of the funding is supporting the existing parks at the corridor's core.

But even skeptics say the corridor's underlying goal—creating a web of biological passages in densely populated countries struggling to overcome poverty—will serve as a test case for saving biodiversity in other places where walling off more forest isn't an option. "There's no place harder to deal with or more dramatic than Central America," says Katrina Brandon, a social scientist with Conservation International in Washington, D.C.

The MBC idea was hatched around 1990 by Archie Carr III, an estuarine ecologist at the WCS's office in Gainesville, Florida. WCS had a long history of working in Central America, whose mountains, tropical forests, and coral reefs hold 7% of the world's species, from howler monkeys to resplendent quetzals. In the late 1980s, as the region was emerging from several wars, countries were rapidly being deforested, and their parks—many of them fledgling