Building Critical Resources for Health and Economic Gain [1]

Submitted on 20 October 2009 - 9:55pm

Calificación:

CienciaPR Contribution:

No

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State-of-the-art research facilities that encourage interaction and collaboration among scientists; cutting-edge instruments that enable breakthrough discoveries; powerful computers and programs that process and store massive amounts of data; highly skilled scientists, technicians and students — these are key ingredients for a thriving research environment.

Establishing this critical infrastructure not only advances science and medicine but also spurs economic growth. Investments in research create new positions for scientists and support staff, advance discoveries, and promote education in science and medicine, all of which lead to better health and a more productive workforce. Construction of research buildings requires many workers, from architects and builders to facility and technical staff. Jobs in engineering, manufacturing and sales result from the purchase of laboratory equipment and reagents.

The far-reaching economic impact of investments in research is one reason the American Recovery and Reinvestment Act (ARRA) of 2009 provides $10.4 billion to NIH in two years. NCRR will administer more than $1.6 billion in ARRA grants in several areas, including $1 billion for construction, repair and renovation of research facilities; $300 million for shared instrumentation and other equipment; and up to $310 million in support of biomedical research priorities.

Some NCRR ARRA-funded grants already have been awarded; their impact on job creation, economic growth, and advances in science and medicine will become clear in the months and years ahead. For now, past examples from institutions that received similar grants provide a look at what the future may hold.

FACILITIES FOR THE FUTURE

In San Juan, the University of Puerto Rico, Río Piedras Campus, received Extramural Research Facilities Improvement grants (C06 construction grants) from NCRR in 2000 and 2002. The university combined these grants with commonwealth funds to begin construction of a 152,000-square-foot research facility. "It will be the first building in Puerto Rico to be designed and built exclusively to support research," said Emma Fernández, vice president for research and technology at the University of Puerto Rico (UPR), the first public university in the commonwealth. "This building is an icon for the knowledge-based economy Puerto Rico wants to pursue."

UPR matched each $2 million NCRR grant, which gave the Río Piedras Campus $8 million to start construction. The government of Puerto Rico then provided an additional $25 million for the building, and UPR added $35 million to reach the total construction cost of $68 million. "It is a great example of what can be achieved with federal grants if you can leverage that money with government and university funds," Fernández said.

The first phase of construction, to be completed in December 2009, will produce 12 laboratories for research in neuroscience, cancer and molecular studies. "To support that research, we are focusing on state-of-the-art technologies, such as proteomics, nanotechnology and molecular genetics," Fernández explained.
Architects used the latest concepts in laboratory design to give the building flexible work spaces and natural lighting. They also plan to add green concept elements (see "Going Green") to obtain certification from the U.S. Green Building Council's Leadership in Energy and Environmental Design.

The Río Piedras Campus' research standing has greatly advanced in recent years. "Since the 1980s, we have doubled external funding every five years, and NCRR has played a significant role in that growth," Fernández noted. UPR also has received NCRR support through the

Research Centers in Minority Institutions program, which builds research capacity at minority institutions, and the Institutional Development Award program, which fosters health-related research in areas where NIH support historically has been low.

The new Río Piedras facility will give UPR another major boost. "Visiting professors can come to the university to share and exchange ideas with students, and we can hire new faculty with expertise in the areas we want to pursue," Fernández explained.
The new building also will be a boon to the pharmaceutical and biotech industries — two of the main economic drivers in Puerto Rico. "The new building will allow us to provide some joint activities," Fernández said. "It will allow us to conduct translational research and develop applications that can be transferred to industry."

Situated between the Río Piedras and Medical Sciences campuses, the new research building will facilitate interaction between basic and clinical researchers. Fernández added that "the building shows the university's commitment to research and development and its understanding of the importance that research has for the population — especially research for diseases that affect the population of Puerto Rico and other underserved groups."

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