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### **At Florida International U., a 'Bootstrap' Approach to Research**

*By Jeffrey Brainard*

Miami

Like the rest of South Florida, Florida International University has grown fast. First came the students, many of them children of Cuban immigrants. And now, perhaps surprisingly for a little-known institution that serves mostly commuters, the university is pushing to become a major player in scientific research.

Opened less than 40 years ago, Florida International is Miami's first and only four-year, public institution. It rose on the grounds of a defunct airport, inland from the glitz and breezes of Miami Beach.

Since then its rapid growth has made it the country's 20th-largest public university, with an enrollment of about 44,000. And although South Florida's historically high population growth has slowed, enrollment is projected to surge 50 percent by 2020. The university, where Spanish can be heard across the campus, has become the nation's largest source of bachelor's degrees for Hispanic students.

Perhaps less well known is the steady expansion of Florida International's research enterprise. Its federally financed spending on scientific and engineering research—a key marker of the volume and competitiveness of its scholarship—was \$53.6-million in 2009, placing it 140th among reporting institutions, up from 161st in 1999. That gain in rank was one of the largest among research universities during the decade. It put Florida International ahead of several older research institutions, like Auburn University and Rensselaer Polytechnic Institute.

Florida International's research budget appears poised to climb still further. In 2006, its state governing board authorized it to start a medical school, one of only three non-osteopathic ones created nationally in the previous 20 years. That will help the university vie for biomedical-research funds from the National Institutes of Health, by far the largest source of research funds.

Further expanding its research poses challenges for a university that is simultaneously trying to keep a lid on its student-faculty ratio, one of the highest among the nation's research institutions, while coping with deep cutbacks in state appropriations.

But the story of Florida International's growth to date offers a case study of what other midsized public research universities, and their legislative patrons, aspire to do: expand scientific research and educate a lot more students despite tight finances.

"This was Bootstrap U.," says Thomas A. Breslin, president of the Faculty Senate and a former vice president for research who oversaw much of the research growth. "We hired really ambitious and dedicated faculty who were willing to come to a place where there wasn't much infrastructure."

#### Using Its Money to Grow

One explanation for the growth in federal research money is that Florida International has primed the pump by spending more of its own internal funds on its research. That spending, \$26.5-million in 2009, more than doubled during the previous decade. It allowed the university to provide start-up money for young faculty members.

Florida International succeeded at assembling this pot of internal research money thanks largely to a feature of the state's financing for higher education. The Legislature annually doles out money for constructing campus buildings from its Public Education Capital Outlays fund, financed by a utility tax. With that support, the university has expanded its research facilities by about one-third in recent years with space within three new buildings for the health sciences on its main campus and one for marine biology on its Biscayne Bay campus.

The pastel-colored buildings are part of a spurt of construction during the past decade that brought a new museum, architecture school, football stadium, and parking garages to the main campus.

The buildings themselves have helped Florida International lift its research, because it collects overhead, or "indirect" cost reimbursements, from federal grants to help cover the costs of constructing those and previous campus laboratories. The university has been free to plow that money back into its own research in subsequent years. It did not issue bonds to construct the facilities, as other public institutions have done, and so did not have to use the reimbursements to service debt, notes the provost, Douglas Wartzok,

It also helped that Florida International's immediate past president, Modesto A. (Mitch) Maidique, an engineer, steadily advocated for

expanded research during his 23-year tenure, which ended in 2009. Mr. Maidique's big personality and self-assurance were on display when, in 2008, *The Miami Herald* noted that he had asked visitors to name the only other college president, besides himself, who had established schools of architecture, law, and medicine. The answer, he said: Thomas Jefferson.

#### Competing Priorities

A steep drop in state revenues is hampering all of Florida's public universities. Florida International's share of base appropriations fell from \$225-million in 2005 to \$170-million in 2010.

Another challenge for the university is to maintain its research growth while also finding funds to hold steady its student-faculty ratio, as both enrollment and the number of professors continue to grow. In 2009 this ratio stood at 27:1, the third-highest among all public research universities, U.S. Education Department data show.

Despite agreeing to finance the medical school, the Legislature has been cool to financing an expansion of research generally at Florida International when the state already has two top-tier research institutions, the University of Florida and Florida State University. In response, officials here have emphasized how far away they are from those campuses, in Gainesville and Tallahassee, respectively.

"The urbans"—Florida International and the University of Central Florida, another fast-growing research institution, in Orlando—"have managed to get the Legislature increasingly comfortable that we don't intend to be as comprehensive as Florida and Florida State," says Mark B. Rosenberg, Florida International's president. "I don't think the allocation of resources from the Legislature will change appreciably. We'd like to have more support for our enrollment, but we're not standing around waiting for the Legislature to fix the challenges that we have."

Florida International has worked to add financing and hire faculty members in niche areas of science that are a good fit with its strengths and its region's needs.

That effort has included environmental and marine research to protect the Everglades and coastal waters; engineering research to prepare for hurricanes; and public-health research to deal with AIDS and other conditions that afflict the area's black and Hispanic populations at disproportionately high rates. In 2008 the university cut 200 jobs and 23 academic programs as part of efforts to better focus its resources on those and other specified areas.

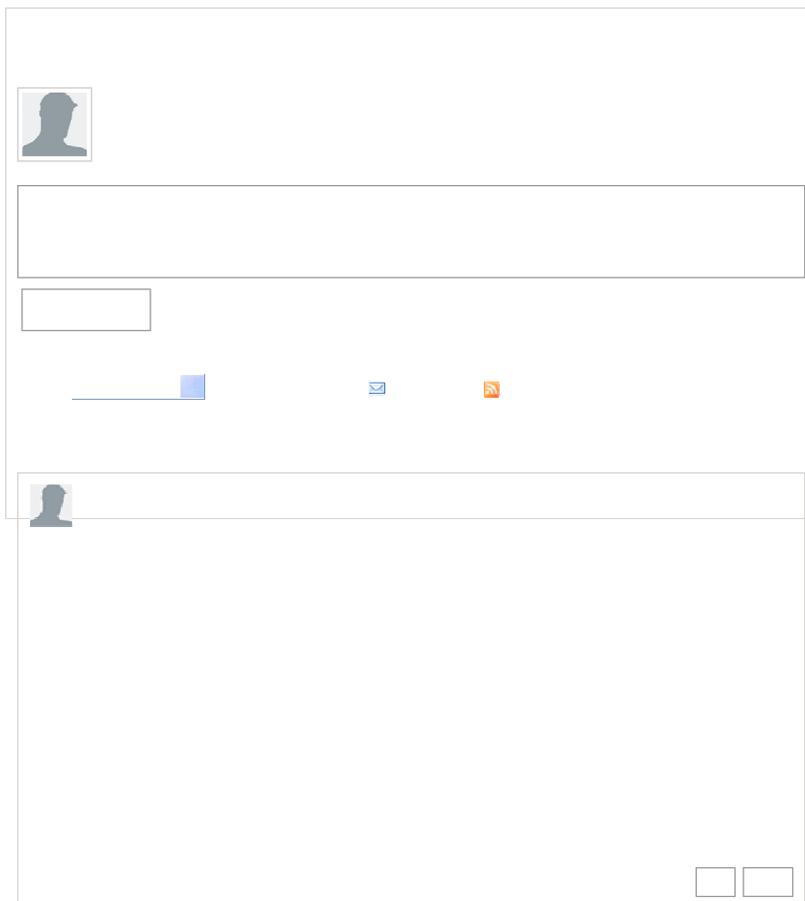
The university is also expanding its recruiting of accomplished professors. It increased its faculty of about 900 full-time members

by an additional 64 positions during the past year and plans to add 80 next year.

One recent hire was Ranu Jung, a specialist in research on prosthetic limbs who became chair of biomedical engineering. She was attracted, in part, because Hispanics are underrepresented in science and engineering. She wants to encourage more Hispanic students to pursue degrees and careers in science.

Eventually, Florida International's biomedical-engineering department will be located adjacent to its new medical school to encourage interdisciplinary collaborations.

"There was excitement here," she said, "that we were going to build those bridges."



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