Louisiana EPSCoR
Experimental Program to Stimulate Competitive Research
Volume 1
Number 6
Oct. 2004

Collaborating Is Where It's At!

In 2000, a review panel strongly recommended that three teams seeking a National Science Foundation grant join forces and submit one collaborative proposal.

Michael Khonsari, Louisiana EPSCoR Project Director, speaks with Micro/Nano Technologies Consortium team leaders Nicolas Bazan, Charles O'Connor, and Kody Varahramyan (left to right) about their teams' accomplishments.

The rest is Louisiana EPSCoR history: the resulting *Micro/Nano Technologies for Advanced Physical, Chemical, and Biological Sensors Consortium* went on to receive a three-year $9 million grant, the largest NSF EPSCoR grant ever awarded to Louisiana at that time.

By spring 2004, the Consortium's three teams of researchers from nine universities had been awarded over $25 million in external funding, 16 patents and eight highly competitive Small Business Innovation Research and Small Business Technology Transfer grants. They had given 306 presentations and their publications counted 187. They were attracting national and international attention as they continued to collaborate on multidisciplinary research projects.

The Consortium's research teams are: *nanomaterials*, led by Dr. Charles O'Connor, director, University of New Orleans Advanced Materials Research Institute; *microfabrication*, directed by Dr. Kody Varahramyan, director, Louisiana Tech University's Institute for Micromanufacturing; and *neural signaling*, headed by Dr. Nicolas Bazan, director, Neuroscience Center of Excellence, LSU Health Sciences Center in New Orleans.

The six other participating universities include Grambling State University, Louisiana State University and A&M College, Southern University and A&M College, Tulane University, University of Louisiana at Monroe, and Xavier University. The project also includes a number of private companies.

"This Micro/Nano Consortium is an excellent example of the strengths and possibilities of collaborative research efforts and projects and of a way to significantly improve the competitiveness of Louisiana universities, especially now, with the Louisiana Optical Network Initiative (LONI) scheduled for implementation in the spring" says Dr. Michael Khonsari, Louisiana EPSCoR project director. "Although the researchers' individual areas of expertise are often quite diverse, their combined efforts, different perspectives and unique approaches to solving problems are leading to major scientific advances with a number of military, commercial, and healthcare applications."

When the three teams first met to discuss a possible collaborative effort and began exploring each other's needs and capabilities, they discovered that they had even more in common than they first thought. It wasn't long before they were discussing, among other things, the production of faster microprocessors, tiny tools that can work in and around cells, miniature communication devices, and microreactors that can produce small amounts of chemicals on-site, eliminating the need to make and transport large quantities of a substance.

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Collaboration, continued

The researchers began by sharing ideas, resources, and information. They recruited outstanding faculty and students and began collaborating on publications, projects and grant proposals. During the next three years, they held a series of individual team and consortium-wide meetings, and evaluated their progress through meetings with their advisory panel of out-of-state experts.

Their interactions did not stop there. Participants are continuing their collaborative efforts, working together to undertake complex and interdisciplinary research problems. One group, for example, was awarded a five-year, $7.5 million grant from the Defense Advanced Research Projects Agency. Employing nanomaterials and biotechnology techniques, they are working on improved biosensors for biological and chemical warfare agents and pathogens and to improve neuronal response to injury and pain for military application.

In its final review, the Consortium's external advisory panel noted that it "represents a good investment of funds toward improving Louisiana's research competitiveness."

"More than that, the researchers continue to demonstrate several key elements of successful research projects that other Louisiana researchers can utilize," says Dr. Khonsari. These include:

- a willingness to collaborate with others who possess expertise in often very different, yet related, fields;
- inclusion of a diverse group of students, post-doctoral researchers, and faculty;
- mentoring and opportunities for growth for junior faculty;
- strong program management and organized reporting;
- clear, attainable goals, objectives, and milestones;
- budgetary plans that tie resources to expected outcomes;
- long-term collaborations, rather than competition, with other universities;
- interactions with business and industry; and
- responsiveness to the public and private sectors.

Louisiana Partners with National Labs on New LINK Program

Louisiana EPSCoR is making it easier for the State's researchers and students to visit and train at national laboratories. Discussions with national laboratory representatives are leading to formal agreements that allow award recipients of Louisiana EPSCoR's new LINK (Links with Industry, Research Centers and National Labs) program to receive additional stipends from the laboratories they visit. LINK provides up to $7,000 for tenured and tenure-track faculty members, post-doctoral researchers, and graduate students to visit and train at an industrial facility, research center, or national laboratory for a duration of two to twelve weeks.

Argonne and Oak Ridge National Laboratories have committed to provide such support for individuals recommended for LINK awards. Participants will not only receive stipends, but will also be assigned laboratory mentors to guide them toward the completion of research projects that are related to their academic goals and the mission of the laboratory. Discussions are underway with other national laboratories to develop similar partnerships. For more information about LINK, visit www.laregents.org.

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