



## Pilot Fund Research Grants Reap Big Benefits

*The following is the first in a two-part series on a unique Louisiana EPSCoR pilot program introduced in 2004 and funded in 2005.*

As any good gardener will tell you, you must cultivate what you want to grow.

That gardening mantra is precisely what Louisiana EPSCoR had in mind when in 2005 it awarded one-year seed grants of up to \$12,000 each to 40 science and engineering faculty at institutions across the State.

The ultimate goal was to help research faculty grow and become more competitive in acquiring federal funding. To say the goal was reached is an understatement. As of June 18, 2007, the 2005 Pfund grants had enabled the following:

- Twenty-two proposals that were awarded grants totaling \$14,360,086, of which \$8,958,560 came from federal agencies;
- Nineteen pending proposals for funding;
- Eighty-eight presentations and 68 publications; and
- Support for 55 student researchers.

“While our out-of-state reviewers had ranked 50 percent of the 108 proposals for the grants at 90 or above, 38 percent at 92 and above, and one with a perfect score of 100, even I was amazed at the results,” admits Dr. Michael Khonsari, Louisiana EPSCoR project director and originator of the Pilot Funding for New Research (Pfund) program.

Funded by the National Science Foundation EPSCoR program, the Pfund project was the result of a 2003 Louisiana EPSCoR online survey of the State’s research faculty and vice chancellors for research. “One of the identified needs was funding for the exploration of novel research and development of innovative skills that can help them become more competitive for federal grants. It was in response to that need that we introduced the Pfund as part of our statewide NSF EPSCoR grant proposal.

“The 108 proposals submitted from 18 institutions was a much larger number than expected. In order to support this overwhelming need among our researchers, we thus went before the Board of Regents, which unanimously agreed to match the \$180,000 NSF EPSCoR funds with \$180,000 from unspent monies in the Board of Regents Support Fund,” adds Dr. Khonsari, who is also the Regents’ Associate Commissioner for Sponsored Programs Research and Development.

Untenured faculty were invited to use the Pfunding to enhance their research focus, explore new ideas and develop cutting-edge techniques; tenured faculty, to become more competitive by investigating new areas requiring a shift in their current research directions. Award dollars could be used in support of their Pfund research projects for student researchers, travel, and scientific equipment and supplies. Out-of-state reviewers evaluated the merit of each of the 108 proposals based on the potential of both the investigator and the project to secure federal funding.

Highlights of eight of the 40 funded programs include the following:



*Robin Reger collecting microbial mat samples from the Frasassi Caves, Italy, for Pfund-supported research conducted with LSU’s Dr. Annette Engel. Robin was the recipient of the National Speleological Society’s 2006 James G. Mitchell Award for a presentation describing her research. Photograph courtesy of Dr. Marco Menichetti, University of Urbino, Italy.*

**Dr. Annette Summers Engel** conducted geochemical and microbiological analyses at Italy’s Frasassi Caves (FC) and laboratory genetic analyses of the samples. The **Louisiana State University and A&M College (LSU)** assistant professor of geomicrobiology also documented for the first time the diversity of microbes living in the caves. The research could play a role in assessing whether the bacteria in the FC system influence limestone and in our understanding of the role bacteria have played through time in biogeochemical and geologic processes. Based on her Pfund research, Dr. Engel gave four presentations, one to an international symposium; authored two publications and co-authored a third. Robin Reger, the Master’s student funded by the grant, also developed a scientifically unique side-project. *(See photo above)*

“Writing the Pfund proposal was the first step of a coherent, integrated research strategy that coupled specific scientific projects and proposals. The science resulted in the publication of the first ever molecular dynamics simulation of a nucleosome,” reported **Dr. Thomas C. Bishop**, assistant professor of environmental sciences at the **Tulane University Health Sciences Center**. This in turn led to a three-year Board of Regents Research Competitiveness grant funded at close to \$77,500, and a five-year National Institutes of Health award of over \$1,000,000. He gave invited talks at four universities and authored a paper published in a leading professional journal.

The grant awarded to **Dr. Kevin Macaluso** enabled him to establish cohorts of uninfected and infected ticks in his laboratory

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*LSU graduate student April Mason collecting samples from the Atchafalaya on a foggy morning in Morgan City. She was a member of a project for which Dr. Yi-Jun Xu was awarded a Pfund grant.*

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and enhance the development of the lab's molecular tools. Furthering the understanding and ecology of rickettsial diseases was the project's goal. (Rickettsia is any of various bacteria of the genus *Rickettsia* carried as parasites by many ticks, fleas, and lice that cause diseases such as typhus and Rocky Mountain spotted fever in humans.) Based on the research data, the assistant professor with the **LSU Center of Biomedical Research Excellence** received a two-year grant of over \$404,000 from the National Institutes of Health's National Institute of Allergy and Infectious Diseases.

Based on his research, **Dr. Rastko Selmic** received two grants totaling over \$238,158, one from the Air Force Research Lab, the other from NASA LaSPACE, and established collaborations with the NASA Stennis Space Center and two world famous researchers. At the 2005 Institute of Electrical and Electronics Engineers (IEEE) International Symposium on Intelligent Control, the **Louisiana Tech University** assistant professor of electrical engineering gave a presentation, served as an associate editor and an International Program committee member, and chaired a session. He also authored or co-authored six publications.

The Pfund research focus of **Dr. Yi-Jun Xu**, LSU associate professor of environmental studies, was to determine if the Atchafalaya River Basin has the potential to remove a significant amount of nitrogen currently discharged into the Gulf of Mexico by the Mississippi River. The collected data resulted in a grant

from the National Oceanic and Atmospheric Administration's Cooperative Remote Sensing Science and Technology Center. Based on his research, Dr. Xu published two papers and co-authored two book chapters. He also gave five presentations and supported three graduate students. (See photo, left)

**Dr. Elhab H. Shaban** purchased equipment to establish Microstructure X-ray gas detectors in the **Southern University and A&M College** electrical engineering department and to build and test an X-ray gas detector at the Department of Energy's Brookhaven National Laboratory. The associate professor of electrical engineering, two of his students and two Brookhaven researchers co-authored a paper published by the American Society for Engineering. He was offered a one-semester sabbatical leave funded in part by Brookhaven and one of the four students supported by his grant is pursuing a master's degree at Michigan Tech University.

**Dr. Nikhil K. Sarkar**, head of the LSU School of Dentistry biomaterials department, used his Pfund grant to address an "urgent" need identified by the American Dental Association (ADA): biocompatible root canal end filling materials. His team optimized a powder-liquid material system that exceeds the current American National Standards Institute/ADA specifications for endodontic filling materials, with respect to setting time and flow and has the potential for multipurpose use in root canal therapy. The **LSU Health Sciences** professor presented three papers at the 2007 Annual Meeting of the International Association for Dental Research and supported a graduate student and a postdoc.

**Dr. Jing Deng**, **University of New Orleans** assistant professor of computer science, addressed what is referred to as routing "misbehavior" in Mobile Ad Hoc Networks (MANETs). Although routing protocols for MANETs are generally designed on the assumption that all participating nodes are fully cooperative, the open structure and scarcely available battery-based energy may cause node "misbehaviors." The researchers focused on the design, evaluation and simulation of a misbehavior detection technique dubbed the 2ACK scheme simulation code which they expect other researchers to borrow and compare with their proposed schemes. Dr. Deng co-authored an article in *IEEE Transactions on Mobile Computing*; his grant also supported a graduate student researcher.

"The fact that hurricanes Katrina and Rita hit Louisiana about five months before the completion date of the 2005 Pfund grants makes the resounding successes that much more impressive," says Dr. Khonsari.



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