FOCUS

KANSAS EPSCOR NSF PARTNERS IN SCIENCE & TECHNOLOGY

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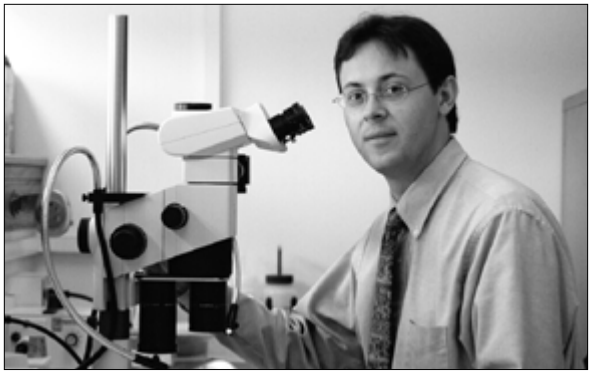
Early Investments Reap Rewards— KTEC Funds Eleven First Awards

The value of seed capital in developing a small business can't be measured. Likewise, investments in beginning faculty researchers to set up laboratories and hire assistants can't be measured. It's essential that these researchers have these investments to be competitive for federal research funding.

The Kansas NSF EPSCoR First Award program provides this kind of seed capital to early career faculty at the University of Kansas, Kansas State University, and Wichita State University. The program encourages submission of proposals to the National Science Foundation and accelerates the pace of their research and improves the quality of their proposals. Funding provides for supplies, equipment, research assistants, postdoctoral fellows, and other items that strengthen the research objectives.



The origins and role of ants, bees, and wasps as pollinators is the focus of a First Award project by Michael Engel, KU Assistant Professor of Ecology and Evolutionary Biology.

In June 2002, the Kansas Technology Enterprise Corporation provided $750,000 for 11 First Awards. The awards focus on research in Living Systems, for example, agriculture and food technologies, environmental quality, biological sciences, biochemistry, biophysics and biotechnology.

First Award recipients and their research focus include:

Cindy Berrie, KU Chemistry, investigates how fibrinogen binds to a variety of surfaces, which is important to understanding blood clotting.

Todd Easton, KSU Industrial and Manufacturing Engineering, solves problems in integer programs used to optimize radiation for cancer treatments, position the gamma knife to kill brain tumors, and sequence DNA.

Michael Engel, KU Ecology and Evolutionary Biology, studies the origins of ants, bees, and wasps to better understand their role as pollinators and parasites.

Keith Gido, KSU Biology, investigates the effects of climate change on organisms living in prairie streams.

Stephen T. Hasiotis, KU Geology, explores linkages among climate, ground water, soil and living organisms.

William H. Hsu, KSU Computing and Information Sciences, builds computational models to help us understand how genes affect crop development, disease resistance, and the spread of infection.

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Advisory Group Plans Kansas NSF EPSCoR's Future

Following a decade of steadily built successes, Kansas NSF EPSCoR decided early in 2002 that it was time to look at the future of Kansas' program.

Distinguished business, government, and university leaders were asked to join a new Implementation Advisory Group to help plan and shape the future of Kansas NSF EPSCoR.

An initial, organizational meeting was held on February 22, with Beth Brough, Kansas Technology Enterprise Corporation's Vice President of Academic and Government Programs outlining the important role EPSCoR plays in Kansas.

"EPSCoR helps the universities build the physical and intellectual infrastructure needed to stimulate technological innovation and development and drive the state's economy," Brough said.

Federal NSF EPSCoR Program Directors Fae Korsmo and Karen Sandberg were on hand to discuss changes in the NSF EPSCoR program.

"Identify problems," Sandberg said. "What is keeping your institutions from doing what you need to do? Your proposal to NSF EPSCoR needs to explain how infrastructure dollars can help solve the problems you've identified."

The group met again on April 6 and April 19, to review proposals submitted to the program and to develop a three-year focus for the state's NSF EPSCoR program. Living Systems, an area of strategic and timely importance to the state and nation, emerged as the top priority.

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From the Director

Dear Colleagues:

In the current climate of lagging revenues and increasing competition for scarce dollars, it is valuable to remember that more than 90 percent of Kansans believe it is important to invest in basic science research. In a real sense that translates into continued hard dollar support from the Kansas Technology Enterprise Corporation (KTEC) that is necessary to match funds requested in the Phase IV: Improvement of the Academic Research Infrastructure proposal. The Kansas proposal currently is under review by the EPSCoR program in Washington and I am optimistic that it will be funded.

The proposal focuses on living systems research and is designed to complement expanding programs in the life sciences at the universities and a major initiative in Kansas City. It includes funding opportunities for multi-user equipment, faculty start-up, graduate student training, and planning assistance to increase the opportunities for Kansas researchers to compete for larger awards. Moreover, the proposal contains a rich portfolio of education and human resource development activities designed to stimulate interest in science, technology, engineering, and mathematics (STEM) careers by underrepresented groups and to enhance workforce training.

Two other NSF EPSCoR activities are important to note. First is the establishment of the Implementation Advisory Group, a broadly representative group that has helped to coordinate and establish priorities for Kansas NSF EPSCoR Second, is the $750,000 of financial assistance from KTEC to continue our highly successful First Award program. Eleven early career faculty at KU, KSU, and WSU received awards to accelerate their research programs.

By any measure, research activity in Kansas is moving forward rapidly. Kansas NSF EPSCoR will continue to assist the development of the research enterprise that is critical to the technological and economic missions in Kansas.

Thomas N. Taylor,
Project Director

Travel Incentives Encourage Interaction with Peer Researchers

Presenting research results at a professional meeting and interacting with leading researchers is a critical aspect of "on the job" training for graduate students. The reality is that more often than not, travel expenses and conference registration fees are beyond their modest incomes.

For the first time, in May 2002, Kansas NSF EPSCoR offered a Travel Program for Graduate Students. Under the program, graduate students enrolled in science, math, or engineering at Kansas State University, the University of Kansas, and Wichita State University could receive awards of up to $500 to present a paper or poster at a professional meeting.

Seventy-two students applied for travel funds; awards were made to 50 students before program funds were exhausted.

Todd Caton, a WSU graduate student, presented a poster at the American Society for Microbiology meeting in Salt Lake City, Utah. "My poster attracted the attention of a number of scientists whose work I was familiar with. Their comments and suggestions were useful and encouraging."

KSU graduate student, Monica Palomo, presented a poster at a conference on the Application of Waste Remediation Technologies to Agricultural Contamination of Water Resources. "One of the most important benefits was the valuable feedback. The seminars that I attended were interesting and enriching, letting me learn about the current research and latest advances in the remediation area."

Jenny Zhang, of KSU, made a 15-minute presentation at the North American Manufacturing Research Conference in West Lafayette, IN. "I met many industrial and academic professionals in manufacturing engineering. Networking with them will be beneficial. Their input will stimulate my research, expand my knowledge within this field, and help me apply my research to real manufacturing."

Christina Daniels, KU graduate student, delivered a paper at the American Society for Virology meeting in Lexington, Kentucky. "I am extremely grateful for the opportunity to attend the conference. Without programs such as this one, students are not afforded opportunities to participate in professional activities due solely to financial constraints."

"Clearly, the students benefit from their experiences at professional meetings and from the people they meet there," said Barbara Paschke, Assistant Director of Kansas NSF EPSCoR. "We hope to continue the program when additional funds become available."

Kansas NSF EPSCoR posts funding opportunities at its web site: http://www.nsfepscor.ku.edu

Lawrence Students Attend Nebraska Conference

Among EPSCoR states, collaboration often means sharing educational opportunities, such as Nebraska's Women in Science Conference designed to encourage high school women to pursue their interests in science, mathematics, engineering, and technology. The conference, co-sponsored by the Nebraska EPSCoR program and The Center for Science, Mathematics and Computer Education of the University of Nebraska-Lincoln, was held February 22, 2002.

Ms. Kristi Jensen, Free State High School mathematics teacher, Lawrence, jumped at the chance to take Dominique Duncan, 11th grade, Cassidy Carroll, 11th grade, and Amy Lavaveshkul, 10th grade, to the event. Kansas NSF EPSCoR underwrote the travel expenses.

"The girls had a chance to meet other girls their age interested in science and math," Ms. Jensen reported. "They often feel like a minority in their own schools, and it gave them a chance to see there are a lot of girls their age with similar interests. The girls asked questions and received some very useful advice and encouragement."

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Science and Math Careers for Young Women Focus of One-Day Workshop

These middle-school girls learned that it's more than finger Jello as they participated in the Experiment with Chemistry session at the Expanding Your Horizons Workshop.

Featuring titles like *What's Up Doc?, Cooking with Chemicals*, and *Performing Flying Feats*, career discussion sessions and hands-on workshops can't help but catch one's attention.

Will the special opportunity afforded these young women create an interest that will carry them through math and science high school and college courses and eventually land them in careers associated with math and science? Kansas NSF EPSCoR hopes so.

In the ninth year of development, "Expanding Your Horizons in Science and Mathematics" attracted more than 200 young women and 44 adult women to spend a Saturday in March on the campus of Emporia State University. The goal is to increase young women's interest in math and science, expand their awareness of career opportunities in math and science, and encourage interaction and mentoring between the girls and women working in math and science-related careers.

The definition of biology became clearer as attendees at the Expanding Your Horizons Workshop took knives in hand and began dissecting specimens.

"The impetus for creating and sustaining this particular program boils down to one thing," explained Dr. Marvin Harrell, Program Co-Coordinator with Dr. Elizabeth Yanik. "Women are greatly under-represented in most careers that are mathematically or scientifically based."

"Programs like Expanding Your Horizons that target young women during their middle school years, make them aware of careers that require a strong background in mathematics and the sciences, and highlight the importance of continuing their studies in these areas," he added.

"Mathematics and the sciences impact so many professions and young women need exposure to this wide variety of career choices," Dr. Yanik explained.

Conference attendees were offered 18 different career discussion sessions led by women with successful careers in each field, careers such as: Biologist, Ecologist, Physician, Pharmacist, Dentist, and Speech Therapist.

Hands-on workshops mixed fun and science in unique ways:

What's Shakin' in Kansas? Investigated the effect of earthquakes in Kansas.

Snakes Alive! Provided hands-on experiences with amphibians and reptiles.

The Sky is NOT the Limit. Answered why things work with engineering.

Germ Busters! Analyzed whether antibacterial soap does its job.

What do the young women who attend the conference have to say? The exchange is lively: "The lab was great and interesting." "Eyes on the World was the best workshop." and, "I enjoyed the afternoon talk and 'The Sky is Not the Limit' the most."

The parents who brought their daughters, and the professionals who presented the workshops and discussions were just vocal as in their praise of the program, "I felt the conference was outstanding. The students and I were able to gain some useful and memorable information and experiences."

It's one thing to read from a book and study a diagram that explains how the eye works to produce vision, but it's quite another to dissect an eyeball and feel the physical components. More than 200 young women and 42 adults attended the one-day workshop.

The one-day conference is funded by Kansas NSF EPSCoR, registration fees, and in-kind matching funds provided by Emporia State University. The next EYH conference is scheduled for March 8, 2003.

Planning & Workshop Grants — See RFP at http://www.nsfepscor.ku.edu

Kansas Technology Enterprise Corporation Funds First Awards

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Stacy Lewis Hutchinson, KSU Biological and Agricultural Engineering, studies ecologically sound ways to control and dispose of animal wastes in the environment.

Helena C. Malinakova, KU Chemistry, explores new strategies for synthesizing organic molecules that will be used as pharmaceutical agents and agrochemicals.

Brett K. Sandercock, KSU Biology, studies the evolution of mating behavior in the Greater Prairie Chicken to help prevent the further decline of this species.

Animal waste is the leading cause of water quality problems in the U.S. Stacy Hutchinson, KSU Assistant Professor of Biological and Agricultural Engineering, received a First Award to study the reduction of animal wastes in the environment.

Barbara Valent, KSU Plant Pathology, investigates how the rice blast fungus invades its host plant and grows there in spite of the plant's powerful defense mechanisms. This knowledge will advance efforts to make cereal crops, such as wheat, corn and sorghum, more resistant to fungal diseases.

Michael J. Van Stipdonk, WSU Chemistry, develops advanced mass spectrometry techniques to identify proteins crucial to research in living systems.

New Implementation Advisory Group

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The Implementation Advisory Group reports directly to the Kansas NSF EPSCoR director Thomas N. Taylor. It is charged to: assist in developing policies and strategies; ensure rigorous merit review of proposals; evaluate and assess progress of activities; align Kansas NSF EPSCoR with state and university strategic plans for R&D development; cultivate broad based understanding and support for academic S&T; and develop a strategy to sustain and further develop the state's research infrastructure.

Members of the Implementation Advisory Group are:

- The Honorable Barbara W. Ballard, Kansas House of Representatives
- Dr. Robert Barnhill, Vice Provost for Research, KU
- Mr. Sam Campbell, President, Campbell-Becker Inc.
- Mr. Patrick Connelly, Jr., President, ICE Corporation
- Dr. Jan E. Leach, Distinguished Professor of Plant Pathology, KSU
- Dr. Marigold Linton, Director of American Indian Outreach, KU
- Dr. Gerald Loper, Vice President for Research, WSU
- The Honorable Stephen R. Morris, Chair, Ways and Means, Kansas State Senate
- Mr. Tracy Taylor, President, KTEC
- Dr. Ron Trewyn, Vice Provost for Research, KSU
- Dr. T. H. Lee Williams, Vice President for Research, University of Oklahoma

The group will continue to meet several times a year to monitor progress.

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