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Research Connection



Photo credit: Broderick Stearns/The Noble Foundation

OKLAHOMA NSF EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH

Bringing Research into the Classroom

Oklahoma EPSCoR plant biologist Dr. Rao Uppalapati has developed Web-based lesson plans that bring his cellulosic biofuels research into classrooms around the globe. The lessons, which Uppalapati refers to as "Cellulosics 101," are available through the K20Alt portal, an interactive Web site hosted by the University of Oklahoma's K20 Center for Educational and Community Renewal.

The site allows teachers and scientists to collaborate and develop hands-on learning material that is designed to more fully engage middle school and high school

students in science, technology, engineering and mathematics.

"The goal," explained Uppalapati "is to show students the connection between the larger world and the lab."

As a researcher at the Samuel Roberts Noble Foundation in Ardmore, Uppalapati specializes in plant functional genomics and plant-microbe interactions, with particular focus on Switchgrass, a naturally occurring prairie grass that is farmed for biofuels use.

The curriculum Uppalapati has developed begins with photosynthesis and the basics of plant functions and ultimately leads students to an understanding of cellulosic biofuels production, or the process of converting plant tissue from energy crops into biofuel. As

part of the lesson, he also explains the challenges of biofuels research, including problems posed by pathogens.

"I want them to be aware that new, emerging fields require tremendous research in countless areas," he said.

"I specifically show what I do as a plant pathologist and how it impacts the entire spectrum of biofuels production."

continued on page 2

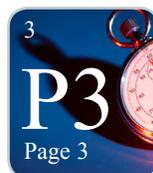
"This is the **future** of research and education."



APPLY NOW!
Summer research experiences for undergraduates and regional university researchers.



CALL FOR PRE-PROPOSALS.
OK EPSCoR is now accepting NSF RII Track-1 pre-proposals to be considered for the new research theme.



UPCOMING EVENTS.
Mark your calendars for these upcoming Oklahoma EPSCoR events.



WU NAMED TOP YOUNG SCIENTIST.
EPSCoR researcher receives Whatley Award, naming him top young scientists.

continued from page 1

Okema High School science teacher Jessica Thompson says the in-depth, research-based science lessons challenge her students to think critically like scientists. Previously, when asked about current environmental issues like alternative energy, Thompson said the students had opinions but couldn't explain their reasoning.

"Using the online multimedia science lessons, I was able to guide the conversation in thought

provoking ways," explained Thompson. "The students experience science as scientists, from discovering the problem, to using trial and error experiments for solutions."

Bringing the lab research experience into the classroom requires an educational bridge, said Cate. Uppalapati collaborated with K20 staff members to create grade-specific lessons that include online videos of teachers using the lessons in the classroom, video tutorials, detailed handouts and online support from K20 content specialists.

Uppalapati admits it can be difficult to break down some of the terminology to primary-grade level, but he says it is rewarding process for the researcher, as well as the students and teachers.

"I love that real-world research happening today can be translated and taught to students around the world as we're working on it," said Uppalapati. "This is the future of research and education."

Visit www.k20alt.ou.edu for more information.



EPSCoR Call for Pre-Proposals

NSF RII TRACK-1 AWARD

Oklahoma is making plans to submit a new application in Fall 2012 for continued support through the NSF EPSCoR Research Infrastructure Improvement (RII) Track-1 Program. Pre-proposals to establish the new scientific research theme(s) are now being solicited.

One-to-two scientific themes will be selected through the pre-proposal process for the 2012 application.

To be considered for the Oklahoma Track-1 scientific research theme(s), interested researchers must submit a White Paper for review by the Oklahoma EPSCoR Advisory Committee. The deadline for White Paper submission is 5 p.m. Friday, January 6, 2012. Submission details and requirements may be found at www.okeysco.org or calling 405.744.9964.



Apply Now: Summer Research Experiences

OKLAHOMA EPSCOR IS NOW ACCEPTING APPLICATIONS FOR TWO SUMMER RESEARCH PROGRAMS: RESEARCH EXPERIENCES FOR UNDERGRADUATES (REU) AND RESEARCH OPPORTUNITY AWARDS (ROA) FOR FACULTY MEMBERS. SUBMISSION DEADLINE IS MARCH 1, 2012.

Research Experiences for Undergraduates

REU awards provide funding to allow undergraduate students from institutions across the state to perform research at one of Oklahoma's comprehensive research campuses during the summer months. Students benefit from hands-on research experiences in STEM fields and one-on-one guidance from faculty mentors through the program.

Maximum allowable budget of individual REU awards is \$5,000. Award preference will be given to research proposals

in the bioenergy research field. However, areas of STEM research other than bioenergy will be considered.

Research Opportunity Awards

ROA awards provide regional university faculty members from primarily undergraduate institutions in Oklahoma with the opportunity to perform research at one of Oklahoma's comprehensive research campuses during the summer months. ROAs enhance regional faculty members' personal research

experiences, while also supporting the development of ongoing collaborations with faculty at the comprehensive research campuses.

For program details visit
www.okeysco.org

Maximum allowable budget of individual ROA awards is \$10,000.

Award preference will be given to research proposals in the bioenergy research field. However, areas of STEM research other than bioenergy will be considered.



upcoming
events:

MARK YOUR CALENDAR

1
RESEARCH DAY AT THE CAPITOL
March 15, 2012
State Capitol of Oklahoma, OKC
www.okepscor.org

2
OKLAHOMA EPSCOR ANNUAL
STATE CONFERENCE
April 10, 2012
Oklahoma State University, Stillwater
www.okepscor.org

3
NSF GRANTS WORKSHOP
May 17, 2012
Univ. of Central Oklahoma, Edmond
www.okepscor.org

4
SUPERCOMPUTING SYMPOSIUM
October 2-3, 2012
University of Oklahoma, Norman
www.oscer.ou.edu

5
WOMEN IN SCIENCE CONFERENCE
Fall 2012
Science Museum Oklahoma, OKC
www.okepscor.org

EPSCoR Researcher Named Top Young Scientist



Photo credit: Oklahoma State University

Dr. Yanqi Wu, Oklahoma State University associate professor and OK EPSCoR researcher, recently received the James A. Whatley Award for Meritorious Service in Agricultural Sciences.

The award is presented annually to the top young scientist in OSU's Division of Agricultural Sciences and Natural Resources, which is comprised of the college and two statewide agencies: the Oklahoma Agricultural Experiment Station system and the Oklahoma Cooperative Extension Service.

"Dr. Wu is one of the rising stars in grass breeding and genetics, and he is increasingly looked upon as a leader in professional societies here in the United States and worldwide," said Dave Porter, interim associate dean of the OSU College of Agricultural Sciences and Natural Resources. "He is – without a doubt – one of the brightest young scientists I have ever met."

Wu has released one switchgrass cultivar and three bermudagrass cultivars in the last four years. He has also proven instrumental in advancing both basic and applied scientific understanding.

Simple sequence repeat (SSR) markers are among the best molecular marker systems in crops, but were not available in bermudagrass and limited in switchgrass until Wu and his team developed more than 1,000 SSR markers in bermudagrass. The respective SSR markers are the largest set in each species contributed by one laboratory in the world.

"Yanqi's projects span from improving turf and forage bermudagrasses to developing switchgrass as a biofuel feedstock," said Jeff Anderson, OSU professor of horticulture. "I find this to be a rather remarkable level of diversity, especially at an early stage of one's career."

Wu has been awarded nearly \$5 million on 13 research projects since joining the division in 2006.

A prolific author, Wu has authored or co-authored 17 peer-reviewed journal articles, five book chapters, 10 technical publications, four international proceedings, 42 research abstracts and 26 other publications in Chinese books and journals.

In 2010, Wu received a Certificate of Excellence from the American Society of Agronomy and was honored with the Early Career Award by the National Plant Breeders Association. He was the recipient of an OSU Inventor Recognition Award in both 2008 and 2010.



Photo credit: Oklahoma State University

Wu earned his Bachelor of Science degree in animal science from Ningxia Agricultural College in 1985, his Master of Science degree in forage science from Sichuan Agricultural University in 1988 and his doctoral degree in crop science from OSU in 2004. He joined the Oklahoma EPSCoR cellulosic biofuels research team in 2008.

Visit www.okepscor.org to learn more about Dr. Wu's OK EPSCoR research.

Story credit: Donald Stotts, OSU Agricultural Communications Services

Because STEM is a part of Oklahoma's Future.

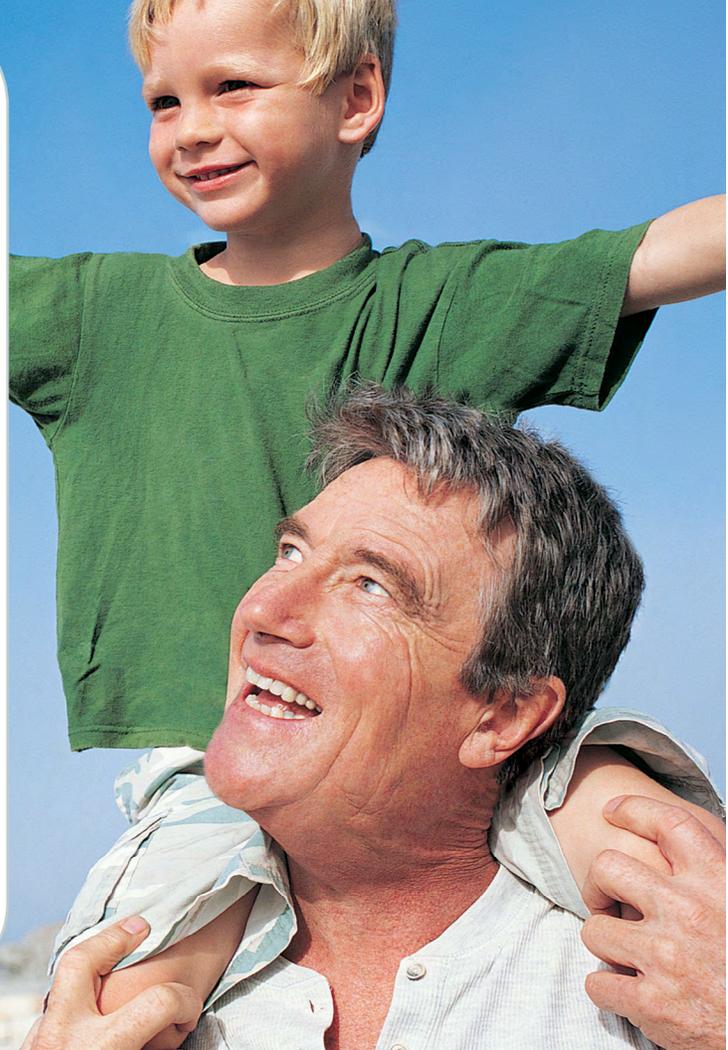
HOW TO GET INVOLVED:

405.744.9964

WWW.OKEPSCOR.ORG

The Oklahoma Experimental Program to Stimulate Competitive Research (OK EPSCoR) was established by the National Science Foundation in 1985 to strengthen Oklahoma's exploration and growth in science, technology, engineering and mathematics. OK EPSCoR's central goal is to increase the state's research competitiveness through strategic support of research instruments and facilities, research collaborations, and integrated education and research programs.

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