

# KANSAS

## EPSCoR

Partners in Science  
& Technology



March, 2010 Volume I, Issue 1

## \$20 Million Award Will Address Climate Change and Renewable Energy

Kansas NSF EPSCoR has recently embarked on a massive research endeavor in which 60 scientists will collaborate for five years on global climate change and renewable energy research.

The *Climate Change and Renewable Energy* project weaves together research on climate change with research targeting solutions for a cleaner environment through the latest advances in renewable energy sources.

The National Science Foundation awarded \$20 million to Kansas NSF EPSCoR, and an additional \$4 million in matching funds were committed by the University of Kansas (KU), Kansas State University (K-State) and Kansas Technology Enterprise Corporation (KTEC).

"This is a tremendous opportunity for the state of Kansas," said Kristin Bowman-James, University Distinguished Professor of Chemistry at KU, and principal investigator and project director of Kansas NSF EPSCoR. "With this funding we will be able to harness the talents of researchers across the state to address two major issues of society today—climate change and renewable energy—under the umbrella of a single integrated initiative."

*Climate Change and Renewable Energy* is a multi-institutional, multi-sector effort linking four universities: KU, K-State, Wichita State University (WSU) and Haskell Indian Nations University. Also participating are three Kansas-based companies: Abengoa Bioenergy, Midwest Grain Products and Nanoscale; and two companies outside the state: Archer Daniels Midland (Illinois) and Netcrystal (California).

Scientists representing many disciplines—agronomy, anthropology, biology, chemistry, computer science, economics, engineering, geography, mathematics, microbiology, physics and sociology—are working together on four interrelated research initiatives led by five team leaders.

**Charles (Chuck) Rice**, University Distinguished Professor of Soil Microbiology at K-State, and his collaborators will use climate modeling tactics to predict the effects of climate change on agriculture.

The models will explore climate change scenarios 20, 50 and 100 years from now. A prevailing theory is that precipitation will undergo significant changes in Kansas, making eastern Kansas wetter and western Kansas drier.

A major outcome of this research will be a better public understanding of the impacts

of climate change and especially its effects on Kansas agriculture.

**Dietrich Earnhart**, professor of economics at KU, is leading a team of social scientists who will assess how farmers make cultivation choices. Earnhart's work will rely on the Rice team research in several dimensions. For example, the Rice team is experimenting with second-generation feedstocks. With Rice's results, Earnhart's team will be able to convey more accurately the expected costs and benefits of cultivating these crops to the farmer survey respondents.

Ultimately, Earnhart believes the surveys and the information they provide will be important to policy makers.

**Judy Wu**, University Distinguished Professor of Physics at KU, and her group of scientists and engineers are using physics and nanotechnology for harnessing solar power. The team is applying the knowledge of how photosynthesis, the biological process that converts sunlight to energy, works in nature. They are designing molecules and extended molecular frameworks to replicate photosynthesis and ultimately to provide more efficient photovoltaic cells.

Wu's team is also looking at using waste water in algae production to provide better biofuels sources. This latter project links closely with Earnhart's focus on farmers' crop decisions.

**Dan Wildcat**, Director of the Haskell Environmental Research Studies (HERS) Institute and acting Vice-President of Academic Affairs at Haskell Indian Nations University, and **Joane Nagel**, University Distinguished Professor of Sociology at KU, are focusing on the education aspects of this project in an academic summer program for Native American undergraduate students (see page 5). The students will design research projects and they will have the chance to observe and learn about the research conducted by the Rice, Earnhart and Wu teams. A longer-term goal of the project is to develop an educational pathway for Native American students to pursue advanced degrees.



Leaders for *Climate Change and Renewable Energy* (left to right): Judy Wu, Dietrich Earnhart, Joane Nagel, Kristin Bowman-James, Dan Wildcat and Charles Rice.



Jesse Nippert, K-State assistant professor of biology, at the Konza Prairie Biological Station.

## \$6 Million Will Establish Cyber Network for Ecological Forecasting Research

Kansas and Oklahoma share the Flint Hills grasslands, and now the scientists in the two states who study this tallgrass prairie will be better able to share information with one another.

A \$6 million NSF EPSCoR award will help Kansas and Oklahoma build a new cyber network to share ecological research data and to do it much more quickly and easily.

The project, called *Oklahoma and Kansas: A cyberCommons for Ecological Forecasting*, will link the University of Kansas, Kansas State University, the University of Oklahoma and Oklahoma State University.

Scientists at the four institutions are focusing on how climate change and changes in land use (such as increased urbanization) are affecting biodiversity, plant and animal diseases and invasive species.

This research has the potential to have an enormous impact on our region in terms of human health, agriculture and sustaining natural resources.

"The ecological data sharing will assist in the management of ecological resources in Kansas and help us respond to issues like global warming, invasive species and emerging diseases," said Walter Dodds, Distinguished Professor of Biology at K-State, and one of the Kansas co-principal investigators on the project.

With the expanded database, scientists will develop better models to predict the spread of invasive animals that carry deadly diseases, such as avian influenza, for example. Or, the shared information might also help them forecast the impact of climate change on crop pollinators, and, therefore, crops.

The project will go far beyond the four universities. Teachers and students at all universities, private colleges, community colleges and K-12 schools in Kansas and Oklahoma will eventually have access to the data via the web, said Leonard Krishtalka, director of the Biodiversity Institute at KU and co-principal investigator on the project.

"The ability to forecast complex environmental phenomena and to reach students at all levels will serve science, society and our economy," he said. "Especially because many of the people we will be able to reach are often underrepresented in the sciences."

Kristin Bowman-James, Project Director at the Kansas NSF EPSCoR office, is the principal investigator for Kansas portion of the project.

In addition to Krishtalka and Dodds, the Kansas co-principal investigators are Donald F. (Rick) McMullen, director and senior scientist for research computing at the Office of Research and Graduate Studies at KU; James Beach, assistant director for informatics at KU's Natural

History Museum; and Daniel Andresen, associate professor of computing and information science at K-State. Paul Risser, chair and CEO of the University of Oklahoma's Research Cabinet, is the lead principal investigator for the bi-state project.



This sensor collects data for the cyber network at the Konza Prairie Biological Station.

# Ecological Forecasting Project Leads to Current Cyber Initiatives



**Lisa Tiemann, KU graduate student in ecology and evolutionary biology, collecting soil cores for her research on soil and precipitation.**

Much of the research infrastructure for *cyberCommons* (see story on page two) was developed during *Ecological Forecasting in the Central Plains*, a three-year NSF EPSCoR project that began in April, 2006.

More than 100 researchers from three Kansas universities (the University of

Kansas, Kansas State University and Fort Hays State University) participated in *Ecological Forecasting*, focusing their efforts on the Kansas River basin.

Walter K. Dodds, K-State Distinguished Professor of Biology, and Leonard Krishtalka, Director for the Biodiversity Institute at KU, were the principal investigators of the project. They led a group of scientists who represented many disciplines: evolutionary biology, biodiversity, ecology, geography, hydrology, computer science, software engineering and also social sciences.

Over the three years, the scientists built powerful, integrated models to forecast ecological change in the Kansas aquifers and grasslands, including a data/information network featuring new tools—scintillometers (to constantly measure air temperature, humidity, etc.) and flux towers (which measure carbon sequestration and release). And, they were able to link those tools to cyberinfrastructure, so that data could be easily accessed and stored.

Large amounts of data have been collected and are still being collected. All of this information will lead to much better ecological forecasting for our state.

## ► Why is it important to study and model ecological phenomena of the Central Plains?

Our grasslands supply clean water, recycle essential nutrients, sequester carbon, preserve biodiversity and serve as a buffer to invasive species and emerging diseases. Further, Kansas grasslands are important to our state's economy and also to human populations worldwide, who depend on the crops grown here.

And, Kansas grasslands are somewhat of a mystery for scientists who work to predict what will happen here as the climate changes. However, the prevailing theory is that eastern Kansas will become wetter (especially with winter precipitation) and western Kansas will become drier. These changes in precipitation will of course affect agriculture, and, therefore, Kansas as a whole.



**Sharon Billings (left), associate professor, and Alexis Reed, KU graduate student in ecology and evolutionary biology, coring trees for their research on growth-climate relationships.**



Kansas NSF EPSCoR is funded by the National Science Foundation Grant No. EPS-0903806 and the State of Kansas. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

The Kansas NSF EPSCoR newsletter is published by Kansas NSF EPSCoR, University of Kansas, Foley Hall, 2021 Constant Avenue, Lawrence, KS 66047. For additional copies of this newsletter, write to us, call us at 785/864-6120, or e-mail us at [nsfepscor@ku.edu](mailto:nsfepscor@ku.edu).

Newsletter Editor: Jill Giele

Newsletter Design: Shala Stevenson

# EPSCoR PEOPLE

## ▶ EPSCoR Scientists Receive Awards



Stuart Macdonald



Kendra McLauchlan

Two researchers who were new faculty hires as a result of Kansas NSF EPSCoR initiatives have been successful recently in bringing further research dollars to Kansas.

Stuart Macdonald, assistant professor of molecular biosciences at KU, has received a \$2,472,000 award from the National Institutes of Health to study the genetic analysis of complex traits; he was also awarded a \$500,000 supplement for this research from the American Recovery and Reinvestment Act stimulus funds.

Kendra McLauchlan, assistant professor of geography at K-State, has been awarded a CAREER grant from the National Science Foundation. The Faculty Early Development (CAREER) Program is the NSF's most prestigious award for new faculty members.

## ▶ Ogallala Aquifer Research Funded by NSF



Dave Steward

Dave Steward, associate professor of civil engineering at K-State, and his team of researchers have been awarded \$1.5 million from the National Science Foundation to study the Ogallala Aquifer and its sustainability.

Steward is also a researcher on ecological forecasting initiatives with Kansas NSF EPSCoR.

He has assembled an interdisciplinary team of K-State researchers for the Ogallala project, who will create tools to predict the consequences of water policy decisions.

## ▶ Krishtalka Chairs Global Biodiversity Committee



Leonard Krishtalka

Leonard Krishtalka has been named chair of the science committee and a member of the executive committee of the Global Biodiversity Information Facility, based in Copenhagen, Denmark.

Krishtalka is Director of the Biodiversity Institute at KU and a lead investigator for *Oklahoma and Kansas: A cyberCommons* (see page 2) and *Ecological Forecasting in the Great Plains* (see page 3).

**Do you have an item for EPSCoR people?**  
Call or e-mail Jill Giele, Communications Coordinator, Kansas NSF EPSCoR, at 785-864-6120/jgiele@ku.edu.

## ▶ K-State Scientists Receive Honors



Charles Rice



Walter Dodds

Charles W. Rice, professor of soil microbiology, and Walter K. Dodds, professor of biology, were recently named distinguished professors at K-State.

Rice is one of the lead investigators on the current *Climate Change and Renewable Energy* initiative. Dodds is a lead investigator on *Oklahoma and Kansas: A cyberCommons* and *Ecological Forecasting in the Central Plains*.

Rice also recently received two additional awards: the Irvin Youngberg Award for Applied Science, one of the Higuchi Awards at KU, and a Commerce Bank Distinguished Faculty Award.

## ▶ John Blair Serves on NEON, Inc. Board



John Blair

John Blair, K-State Distinguished Professor and Edwin G. Brychta Professor of Biology, was elected to the Board of Directors of NEON, Inc.

NEON stands for National Ecological Observatory Network. The goal of researchers involved with the NEON effort is to create a nationwide observatory network to collect climate change and ecological data. Such a network would enable ecological forecasting not only in the contiguous United States, but in Alaska, Hawaii and Puerto Rico as well.

## ▶ Ecological Genomicists Receive Accolades



Michael Herman



Loretta Johnson

Michael Herman, K-State geneticist, and Loretta Johnson, ecologist, in K-State's Division of Biology, led the ecological genomics research for Kansas NSF EPSCoR from 2003 to 2006. Subsequently, Herman and Johnson

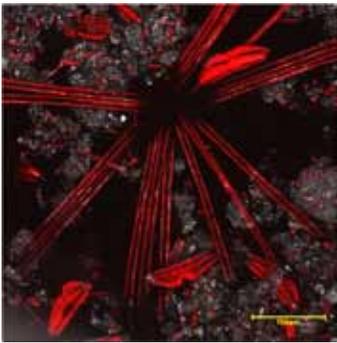
received over \$2 million from K-State's Targeted Excellence to advance the Ecological Genomics Institute (EGI).

Much of the \$8.5 million of subsequent awards can be attributed to this early funding from Kansas NSF EPSCoR and K-State.

Johnson and Herman were also named in October, 2009, as two of the principal investigators on a \$783,936 GAANN (Graduate Assistance in Area of National Need) award. It will support a new graduate fellowship training program in the ecology, evolution and genomics of changing environments.

# RESEARCH NOTES

## ► Measuring Single Cell Nitrogen Uptake with Infrared Microspectroscopy



When humans overrun a system with nutrient pollution, algal blooms can harm aquatic life by blocking the sun, using up oxygen and producing toxins.

Justin Murdock, a post-doctoral researcher at K-State, studied algae attached to surfaces. Murdock, an aquatic geologist now employed by the U.S. Department of Agriculture, wanted to know

more about maximizing algae's natural processes to clean water.

This algae biofilm reveals that many different species of algae grow very close together. Do the different algae compete with each other for light and nutrients?

Answers to this question were provided by the first high resolution uptake of isotopically labeled nitrogen using Fourier Transform Infrared (FTIR) microspectroscopy. Murdock was able to see how single cells take in nitrogen and also to identify where protein synthesis was occurring, leading to better understanding of how algal cells function.

## ► Lifemapper Tells Us Where Life Is, Where It Should Be and Where It Might Be



Natural history museums are filled with plant and animal specimens, and scientists have gone to great lengths over the past 300 years to collect them, along with data

describing what lived where, and when. Unfortunately, it can be difficult for scientists to see the whole picture for even one species because all of the specimens and information aren't in one place.

Lifemapper, developed at the Biodiversity Institute at KU by Aimee Stewart, senior systems programmer, and James Beach, assistant director for informatics, is solving this problem. It makes the big picture more easily accessible by linking all of the species data into one virtual database. Lifemapper then creates maps to show where species live and also where they should be able to live.

The tools found at [www.lifemapper.org](http://www.lifemapper.org) could be increasingly important to scientists interested in assessing the impact of global climate change on wild species, thus helping them identify research priorities for systematics, ecology and conservation studies.

## ► Partnering with Haskell Indian Nations University



Through the *Climate Change and Renewable Energy* initiative, Kansas NSF EPSCoR is developing a strong partnership with Haskell Indian Nations University.

Dan Wildcat, Director of the Haskell Environmental Research

Studies (HERS) Institute, and Joane Nagel, University Distinguished Professor of Sociology at KU, are working with Haskell students.

For ten weeks during the summer of 2009, ten Haskell students began HERS Institute internships in the Kansas NSF EPSCoR *Workforce Development and Climate Change in Indigenous Communities* project.

Interns studied the ecology and geo-history of Southwest Kansas on a field research trip to Scott City, and analyzed samples at KU's Stable Isotope Lab. They also developed individual research projects on climate change and indigenous communities.

"For some of our students, especially those who are the first generation in their families to go to college, being a scientist is probably something they have not thought about much," said Wildcat. "So encouraging them to do research and learn more about science, could truly be transformative for these students."

## ► Predicting Rabies Outbreaks in the Great Plains

Can diseases that have been long-presumed controlled in the



United States come back to bite us as the climate changes and as communities continue to expand into rural areas?

Samantha Wisely, assistant professor of biology at K-State, and her team researched rabies

ecology in striped skunks as part of *Ecological Forecasting in the Central Plains*.

Using radiotelemetry collars, the scientists tracked 27 skunks, all of them infected with rabies, and 47 den locations for two years at the Konza Prairie Biological Station near Manhattan.

Of particular note is that skunks choose to live in areas altered by people and they also like woody areas. So, as towns and cities grow into formerly rural areas and as climate change creates more woody encroachment on the Great Plains grasslands, skunks will proliferate.

"There will be increased incidence of disease," said Wisely. "These [woody areas] are enhanced disease highways."

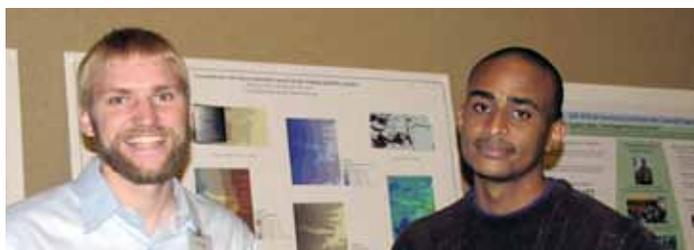
# Expanding Horizons: Basic Research and Beyond

## Kansas NSF EPSCoR Statewide Conference

Kansas NSF EPSCoR researchers and staff gathered for a one-day Statewide Conference titled *Expanding Horizons: Basic Research and Beyond* on October 6, 2009, at the K-State Alumni Center in Manhattan. The participants reviewed recent research initiatives and then turned their attention to translating scientific discovery to commercial ventures.

"The future of research looks bright in Kansas, despite the economic climate," Bowman-James told the attendees.

She noted that KU, K-State and WSU all have major research projects that are just getting started: the Bioscience and Technology Business Center at KU (an incubator for companies that spin off from research); the selection of K-State for the National Bio and Agro-Defense Facility; and the Center of Innovation for Biomaterials in Orthopedic Research at WSU.



**Kansas scientists, including Paul Bruss (left) and Philip Mzava, both from K-State, displayed posters at the Statewide Conference, and discussed their research with the attendees.**

As research continues to accelerate in Kansas, one model that scientists and industry leaders may find helpful is Discovery Park, a research park at Purdue University, West Lafayette, IN.

Charles O. (Chip) Rutledge, Purdue's Vice President for Research Emeritus, spoke about Discovery Park to the attendees, and he also moderated a panel discussion of Kansas research startup leaders.

Discovery Park has a clearcut mission: to facilitate complex, research that addresses real world problems. Much of the research is interdisciplinary and scientists represent many fields. In all, about 1,000 Purdue faculty members are affiliated with Discovery Park.



### **New K-State President, Kirk Schulz, Appreciative of Science and Research**

Kirk Schulz, the new President at Kansas State University, welcomed the 79 participants to the conference at the start of their day.

Schulz hails from another EPSCoR state, Mississippi, and he told the attendees that their work and the further goals of building research infrastructure are going to be imperative to the Kansas economy.

Schulz is an engineer who completed his bachelor's and doctoral degrees in chemical engineering, with doctoral work in metal oxide surface chemistry.

In the six years since Discovery Park was founded, 40 start-up companies have been launched from its state-of-the-art labs, which were planned and built to support emerging technologies.

Rutledge was joined by a panel of Kansas experts on commercializing science ventures:

- Sam Campbell, President and Chairman of Crititech, Inc.
- Kevin Carr, Interim CEO, Kansas Technology Enterprise Corporation
- Kenneth J. Klabunde, K-State Distinguished Professor of Chemistry and founder, Nanoscale, Corporation.
- Matthew P. McClorey, President and CEO, Lawrence Regional Technology Center (LRTC).

They each took a few minutes to describe their role in meshing science and commercial ventures, and then took many questions from the conference participants, offering a great deal of advice and insight.

Other speakers and presenters at the conference were:

- Walter K. Dodds, K-State and Jorge Soberón, University of Kansas, who gave overviews of some of the research from *Ecological Forecasting in the Great Plains*.
- Uma Venkateswaran, the NSF EPSCoR Program Officer for Kansas, who traveled from Washington, D.C. to brief participants on the NSF organizational structure and the many NSF funding opportunities.
- Poster presenters and participants, who had time throughout the long lunch break to discuss research from *Ecological Forecasting*, as well as some of the emerging research from *Climate Change*.



**Charles O. Rutledge, the conference keynote speaker.**

## Connecting Biofuels to Kansas Classrooms

### *\$500,000 NSF Award Will Provide Research Experiences for Teachers (RET)*



Alan Gleue, an RET participant in 2008, experimented with Gratzel Solar Cells (dye-sensitized solar cells) using nanoparticle titanium dioxide and fruit dyes.

The Center for Environmentally Beneficial Catalysis (CEBC) at KU has received a \$500,000 award from the National Science Foundation for its Research Experiences for Teachers (RET) program.

Kansas NSF EPSCoR first provided funds in 2007 with an Education and Diversity

grant, in the hope that the CEBC would then be able to compete nationally for a larger award. With the \$500,000 award, the program will not only continue, it will expand to include more teachers—some from rural areas in eastern Kansas.

Susan Williams, associate professor of chemical and petroleum engineering at KU, is the principal investigator for the project. Her co-principal investigators are Claudia Bode, CEBC, and Lisa Blair, Southeast Kansas Education Service Center in Greenbush (SEK-Greenbush).

With the new award, RET will bring science teachers from middle schools, high schools and community colleges together to research renewable fuels, in projects that range from biomass production to fuel production and utilization. RET is partnering with the Transportation Research Institute at KU and also with educators at SEK-Greenbush, who will help the teachers

develop lesson materials related to their research.

RET participants are encouraged to enroll for two consecutive summers (the summer sessions will run for six weeks) so they can have time to modify their lessons and create links. These links could be between science teachers in a particular school or with other teachers and schools via the internet. These links will help their students begin to appreciate how various disciplines must work together to advance biofuel research.

The first session of the expanded Research Experiences for Teachers, called “Connecting Biofuels to the Classroom” will be offered this summer, June 7 through July 20. Middle school, high school and community college science teachers are encouraged to apply. For more information, see <https://rhodium.cebc.ku.edu/education/RET-2010.shtml>.

## Former EPSCoR Researcher Earns Presidential Early Career Award

Joy Ward, associate professor of ecology and evolutionary biology at KU, was honored in January at the White House with a Presidential Early Career Award for Scientists and Engineers (PECASE) from the National Science Foundation.

The PECASE award is the highest honor that can be bestowed upon a young scientist or engineer in the United States. Honorees are chosen from CAREER award recipients. The Faculty Early Development (CAREER) Program is the NSF’s most prestigious award for new faculty members.

Ward was associated with Kansas NSF EPSCoR from 2003 to 2006, with the ecological genomics project. Her current research focuses on plants that grew during the last ice age, and how the low levels of carbon dioxide affected them.



Joy Ward, immediate left of President Obama (his right), was honored with other Presidential Early Career Award winners at a reception in January.

## From the Director

# Two Major Projects and Much More Make for a Banner Year

This has been a banner year for NSF EPSCoR in Kansas (KNE); one I can truthfully say has not been paralleled in the history of KNE in the state.

To begin with, our integrated proposal targeting both climate change and renewable energy research has been funded at the unprecedented level of \$20 million from the NSF! As you will note from our cover story this challenging project consists of more than 60 researchers at KU, K-State, Wichita State and Haskell Indian Nations University. At about the same time, our joint proposal with Oklahoma NSF EPSCoR that focuses on ecological forecasting and creating an expanded "cyberCommons" was funded. This project is described more fully in the article on page 2.

We were also fortunate to be able to jump-start the educational outreach part of our program, the summer internship

at Haskell Indian Nations University. Ten undergraduate Native American students participated in a program that ran parallel with KU's G-Change (G stands for climate) IGERT program. Three of these students accompanied the EPSCoR staff to Washington, DC for the 21st EPSCoR National Conference (see stories on page 5 and below).

To celebrate our new endeavors during this "banner year" we are also unveiling our new banner, which is seen on the front of this newsletter. The colors were chosen to depict our climate/energy focus, and they also reflect the beauty of Kansas sunsets. We have Shala Stevenson of KU Continuing Education to thank for such a beautiful rendering utilizing our state flower. This is also the perfect time to introduce the latest addition to our office staff, Jill Giele, who has joined KNE as our Communications Coordinator. Jill has done a superb job in gathering

the stories for our newsletter and in crafting our press releases this last year. Momentarily we will also launch our new website, which has been fashioned by our Administrative Assistant, Pat Schmidt. Pat has also worked long and hard on finding just the right "new look" for KNE.

In wrapping up my commentary, I would like to thank all of the wonderful people throughout the state who helped with the proposals we submitted this year. This includes researchers, students, and administrators across the state from many different disciplines. I must also thank our dedicated KNE staff, Pat and Jill, who I already mentioned, and Doug Byers, who not only provides TLC for all of our researchers' budgets, but also excellent advice for program management. It is indeed a privilege and honor to be associated with such a fine program.

► **Kristin Bowman-James**  
Project Director, Kansas NSF EPSCoR



## Students Present Posters at 21st EPSCoR National Conference

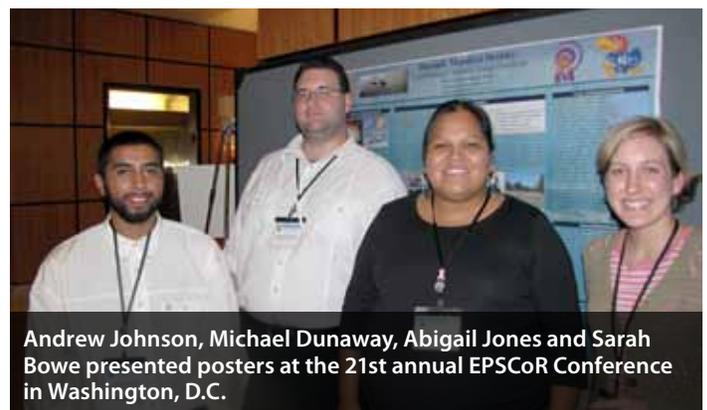
Three Haskell Indian Nations University undergraduates and a Kansas State University graduate student presented posters at the 21st EPSCoR National Conference, October 19–21 in Washington, DC.

The students, and their posters, were:

- Sarah Bowe, a K-State graduate student in biology, *The Influence of Disease Host Ecology and Underlying Landscape Alteration on the Propagation of Rabies Virus Across the Flint Hills.*
- Michael Dunaway, Haskell undergraduate student, *Corn: It's What's Eating You.*
- Andrew Johnson, Haskell undergraduate student, *Sustaining Navaho Country*
- Abigail Jones, Haskell undergraduate student, *Oceanic Manifest Destiny: Confronting Climate Change Genocide.*

The Haskell students are participating in the *Workforce Development and Climate Change in Indigenous Communities* project. Dan Wildcat accompanied the students to DC, along with Paula Smith, a KU graduate student and Haskell graduate.

Kristin Bowman-James, KNE Project Director, Doug Byers, Assistant



**Andrew Johnson, Michael Dunaway, Abigail Jones and Sarah Bowe presented posters at the 21st annual EPSCoR Conference in Washington, D.C.**

Project Director, and Jill Giele, Communications Coordinator, also attended the conference.

Bowman-James was invited to speak at the conference. She outlined many exciting science initiatives that have been leveraged by NSF EPSCoR funding into nationally and internationally competitive ongoing large-scale endeavors in her talk, *Kansas Science Smokes.*