SD EPSCoR
RESEARCH. EDUCATION. ECONOMIC DEVELOPMENT.

September 2017 NEWSLETTER

SD EPSCoR Director Jim Rice Announces Retirement

Dr. Jim Rice, the Executive Director of the South Dakota Established Program to Stimulate Competitive Research will retire after 16 years of service to the state and 28 years as a Professor of Chemistry at South Dakota State University. He served as Head of the Department of Chemistry and Biochemistry from 1999 until 2015. Under Dr. Rice's leadership both SD EPSCoR and the Department have seen significant growth.

SD EPSCoR evolved from an institution-based program to one that now involves every public, private and tribal college and university in South Dakota. Rice has helped the organization build capacity with partnerships between higher education, state government and the private sector that have enriched research, education and economic and workforce development throughout South Dakota. SD EPSCoR and its State Committee (known as the REACH Committee) were asked by Governor Rounds and then Governor Daugaard again to develop a state science and technology plan, *The 2020 Vision*, to guide state investments in science, technology, engineering and mathematics (STEM) infrastructure to guide state investments. During this time, Dr. Rice served as project director and principal investigator of National Science Foundation (NSF) and Department of Defense EPSCoR grants that brought more than $67 million into the state to help build its research capacity. He chaired NSF's EPSCoR Project Directors Advisory Committee and serves as the vice-chair of the EPSCoR Foundation's Board of Directors.

The Department of Chemistry and Biochemistry's PhD program grew to 22 faculty to become the largest PhD program in the state at that time, and it added a PhD program in biochemistry, a M.S. in chemical education, and a B.S. in biochemistry. The undergraduate instructional program began to emphasize "doing' chemistry and biochemistry through research and industry internships. The department became the largest credit-hour generator in the College of Arts and Sciences.

In addition to his administrative duties, Rice maintained an active personal research program in environmental geochemistry. He supervised 11 postdoctoral research associates, and 13 PhD and 5 M.S. degree recipients. He mentored over 60 undergraduate research students. He served as principal investigator on research grants worth more than $6 million, published 100 papers in peer-reviewed journals (with several more still in various stages of the publication process) and made more than 220 presentations at national and international scientific meetings. He was a member of the NSF's Advisory Committee for Cyber-Infrastructure and its Advisory Committee for Environmental Research and Education.

INSIDE THIS ISSUE

USD-Led Consortium Awarded $4.35 Million PIRE Grant from National Science Foundation

The University of South Dakota is leading an international physics research project that has received a $4.35 million grant from the National Science Foundation.

The five-year effort by the Partnership International Research and Education (PIRE) program will work to advance germanium materials for developing detectors and other technologies in the study of dark matter and neutrinos.

The consortium involves six universities in the United States, two national labs and four international institutes from Canada, China, Germany and Taiwan.

Principle investigator Dongming Mei examines the quality of a grown germanium crystal with Guojian Wang, an assistant professor, and Alex Larson, a graduate student, in the crystal growth lab at University of South Dakota. Credit: Hao Mei and Bill Wen

"The general properties of neutrinos and the nature of dark matter are currently two of the most important questions in fundamental physics," said Dongming Mei of the Department of Physics at USD and the principle investigator. "Understanding these questions could unlock physics beyond the Standard Model, the basic but incomplete framework for fundamental forces and particle interaction."

Joining Mei is John Wilkerson, professor at the University of North Carolina at Chapel Hill and Rusty Harris, associate professor at Texas A&M University. Together they lead the group called the Germanium Materials And Detectors Advancement Research Consortium. The other U.S. institutions involved are Black Hills State University, University of Minnesota, Tennessee Technological University, University of California-Berkeley as well as Lawrence Berkeley National Laboratory. International collaborators include Queen's University in Canada, Tsinghua University in China, Max Planck Institute in Germany, and Academic Sinica's Institute of Physics in Taiwan.

NSF has a long history of fostering and supporting international relationships to address critical science and engineering (S&E) questions. Since its inception in 2005, the PIRE awards program has accelerated scientific discovery and enhanced the U.S. science and technology workforce by leveraging investments from foreign governments that also provide funding to these collaborative projects.

PIRE supports fundamental, international research and education in physical, living, human and engineered systems. NSF's Office of International Science and Engineering (OISE) funds the U.S. portion of the international collaboration, catalyzes global S&E activities and builds effective partnerships throughout the international S&E research and education community.

Courtesy of USD Marketing Communications & University Relations

South Dakota Researchers Receive NSF RII Track-4 Awards

Two University of South Dakota researchers have been selected to receive Research Infrastructure Improvement (RII) Track 4 awards from the National Science Foundation.

- **Dr. Jing Liu**, an Assistant Professor in the Department of Physics at USD received a $153,309 award for his research entitled: *Development of high-purity Ge detector technology with LBNL for dark matter and neutrino physics.*

- **Dr. Guojian Wang**, a Research Assistant Professor in USD's Department of Physics was awarded $155,558 for his research entitled: *The distribution and origin of deep level charge trapping centers in large size high-purity germanium crystals*.

The RII Track-4 is awarded from the NSF's Established Program to Stimulate Competitive Research (EPSCoR) to provide opportunities for non-tenured investigators to further develop their individual research potential through extended collaborative visits to the nation's premier private, governmental or academic research centers. Through these visits, the EPSCoR Research Fellows learn new techniques, benefit from access to unique equipment and facilities, and shift their research toward transformative new directions.

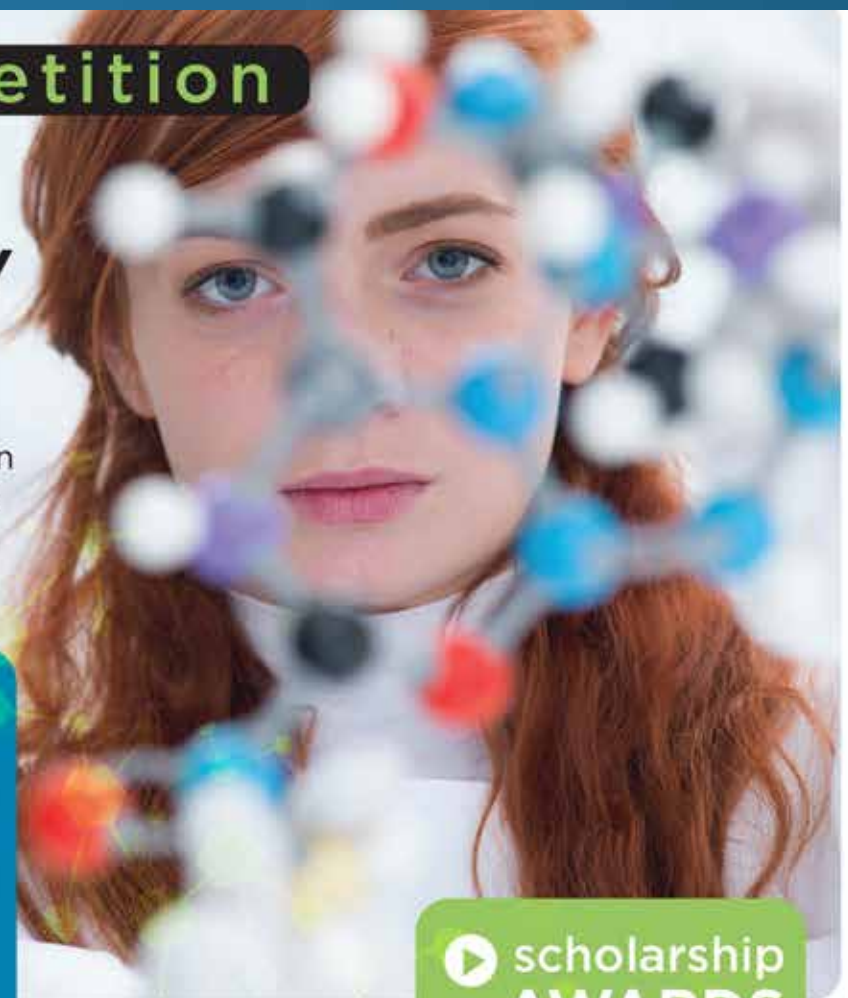
The experience gained through the fellowship is intended to provide a foundation for research collaborations that span the recipient's entire career. These benefits to the Fellows are also expected to in turn enhance the research capacity of their institutions and jurisdictions.

SD EPSCoR Holds Bioinformatics Workshop

SD EPSCoR and South Dakota State Univesrity recently partnered to hold a bioinformatics workshop. Bioinformatics is an interdisciplinary field that develops methods and software tools for understanding large biological data sets. It is an interdisciplinary field of science that combines computer science, statistics, mathematics and engineering to analyze and interpret data that can't be understood in any other way.

The workshop showcased the bioinformatics tools developed by BioSNTR researchers. Workshop participants focused on bioinformatics tool discovery, its applications to meta-genomics, gene regulation and RNA sequencing. Thirty-four research professionals participated in the event.

video competition



WHAT DOES BIOTECHNOLOGY MEAN TO YOU?

Explore how biotechnology is a part of your community and earn a scholarship for undergraduate education in South Dakota.

who
9-12 grade high school students

what
Begin by researching and connecting with regional biotechnology companies and organizations.

how
Create a short, creative 60-120 seconds video on the topic:
A. How does Biotech Feed SD?
B. How does Biotech Fuel SD?
C. How does Biotech Heal SD?

The competition encourages students to be creative and use videos to show how biotechnology is feeding, fueling, or healing in their community and helping to make a better world.

Act it out, create an animation, sing it, but, it must be appropriate for all ages.

launch date
October 1, 2017
all submissions due by
January 31, 2018

scholarship AWARDS

$750 1ST PLACE
$500 2ND PLACE
$250 3RD PLACE

Scholarship will be awarded to the top three submissions. Video submissions can represent an individual or a team of two students.

for rules and registration visit
http://sdepscor.org/resources/sd-biotech-video-competition

QUESTIONS? Please contact Joni Johnson at SD Biotech or Liz McMillan at Sanford Research:
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UPCOMING EVENTS

- **Innovation Expo** - *Oct. 10 - Rapid City, SD*
- **Innovation Expo** - *Oct. 12 - Sioux Falls, SD*
- **National NSF EPSCoR Conference**- *Nov. 5 - 8 - Missoula, MT*

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