

Record Number of Students Present at Research Symposium

Over 250 students, faculty and industry experts from institutions across the state gathered in Pierre on Aug. 2-3 to participate in the fourth annual Undergraduate Research Symposium. The symposium showcased summer research projects from more than 185 undergraduate students representing South Dakota's public, private and tribal universities who participated in the Research Experiences for Undergraduates (REU) and the Biomedical Research Infrastructure Network (BRIN) summer research programs. The symposium was first established in 2014 to bring together undergraduate students across the state to gain real-life research experience, strengthen their skill-sets, network and learn more about South Dakota graduate programs.



The event kicked off with two student sessions entitled, *Applying for Graduate School* and *Ins and Outs of Medical/Health Professional Schools*. The graduate school session included a panel of faculty who are members of their university graduate admission committees. The medical/health professional schools panel explored the process of getting into medical school and how students can leverage their experiences in research to prepare them for the future.

The final session of day, *STEM Career Opportunities in South Dakota* included panelists: Mark Anderson, SD Department of Labor; Eric East, Black Hills Energy; Pam Hilber, Avera Health; Heather Perry, SD Bureau of Human Resources; Penny Sattgast, PCS Biotech Services; Matt Smart, Smart Software Solutions. In addition to talking about their own experiences panelists explored STEM career opportunities in the state and highlighted skills employers are seeking.

Other speakers during the symposium included Dr. Giselle Muller Parker, program director for the Division of Graduate Education's Graduate Research Fellowship Program (GRFP) at the National Science Foundation. Muller Parker spoke on the benefits of receiving a fellowship and answered questions on the application process, provided advice and encouraged students interested in pursuing a graduate degree in STEM to apply.

On the final day poster sessions showcased summer STEM research conducted by students throughout the state. The presentations were reviewed and evaluated on technical content, poster appearance and oral presentation by a panel of judges consisting of faculty mentors from each of the universities represented.

"Undergraduate research is the culminating experience in an undergraduate STEM major's education," said Dr. Jim Rice, project director for the SD EPSCoR program. "It's where they learn to apply what they know from their studies to solve a real-world problem. These problem-solving experiences are also important because they help prepare the students for entering the STEM workforce. The demonstrated ability to apply what a student knows to solving a problem and then communicating that solution is a highly sought-after ability by STEM employers."

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Sani Receives RII Track-2 Award

The National Science Foundation's (NSF) Established Program to Stimulate Competitive Research (EPSCoR) program has announced the recipients of its FY17 Research Infrastructure Improvement (RII) Track-2 awards. The RII Track-2 program is intended to build national research strengths in targeted focus areas by catalyzing collaborations across institutions in two or more EPSCoR jurisdictions.

Dr. Rajesh Sani, a microbiologist and associate professor in the Chemical and Biological Engineering Department at the South Dakota School of Mines and Technology, has been awarded one of these projects. He will lead a consortium of experts from the South Dakota School of Mines and Technology, Montana State University and the University of Oklahoma. The project is entitled *Building Genome-to-Phenome Infrastructure for Regulating Methane in Deep and Extreme Environments (BuG ReMeDEE)*. The overarching goals of the BuG ReMeDEE consortium are to investigate methane cycling in deep and extreme environments and develop new biological routes for converting methane into value-added products.



Rajesh Sani

This year's NSF EPSCoR RII Track-2 program sought to build capacity to research enhance our understanding of the relationship an organism's genetic make-up, or genotype, and its physical characteristics, or phenotype. The genotype-to-phenotype relationship has significant societal and economic implications across many scientific fields and areas of industry, including but not limited to medicine, agriculture, biotechnology and ecology. An enhanced understanding of this relationship holds the potential for improved food crop yields, better prediction of human disease risk and new drug therapies. Through these investments, NSF EPSCoR sought to provide the scientific community with new tools and resources for future discoveries.

SD EPSCoR Sponsors Computer Coding Camp for Girls



SD EPSCoR, South Dakota State University (SDSU) and South Dakota Code Bootcamp recently partnered to organize two one-week computer coding courses for girls ages 10-13. The camps attracted over 40 girls to the bootcamp, which was hosted at SDSU.



Led by instructors from South Dakota Code Bootcamp the camp taught girls to use the game engine *Construct 2* to create 2D games. During the five-day period the girls built multiple games with the final one being bigger and more complex than the others. At the end of the week the girls showcased the games and their new tech skills to friends and family.

Linking South Dakota's Future to Science & Technology

NASA EPSCoR Announces Major Research Grants



A South Dakota research group has been selected to receive a NASA EPSCoR (Established Program to Stimulate Competitive Research) major research grant in the amount of \$750,000. The project entitled, *Wireless Body Area Network in Space: Development of Wireless Health Monitoring System with Flexible and Wearable Sensors* is a joint effort between researchers from South Dakota School of Mines & Technology (SDSM&T), South Dakota State University (SDSU), University of South Dakota (USD) and

collaborators at four NASA research centers.

The proposed outcome of the research is to enable a wireless network system for real-time and multi-dimensional monitoring of the physiological parameters of the human body, which will provide key technologies for evaluation of health impacts of the space environment on astronauts. In addition to the research goals the project will provide high-quality research and educational opportunities for k-12, undergraduate and graduate students while also strengthening science, engineering and healthcare programs at SDSM&T, SDSU and USD.

NASA EPSCoR received a total of 52 proposals for this solicitation. From these, 25 were recommended for funding (13 in 2017 and 12 in 2018.) EPSCoR, establishes partnerships with government, higher education and industry that are designed to effect lasting improvements in a state's or region's research infrastructure, R&D capacity and hence, its national R&D competitiveness.

Fall Science Communication Fellowships Now Available



Are you a faculty member, graduate student, or post-doc interested in becoming a pro at sharing your research with the general public?

Become a Science Communication Fellow!

Contact Dr. Rhea Waldman at educationdirector@sd-discovery.com for an application or with any questions.



Undergraduate Symposium continued...



185 Undergraduates



12 Public and private institutions



7 Award Recipients



6 Guest Speakers

Poster Competition Results:

Morning Poster Session:

- 1st: Jacqueline Dyer, USD
- 2nd: Laura Brunmaier, Augustana
- 3rd: Allisan VanLaecken, USD

Afternoon Poster Session:

- 1st: Sydney Kreutzmann, SDEPSCoR/BioSNTR
- 2nd: Claire Fanta & Katie Tlusty, Augustana
- 3rd: Jacob Byron, SDSU



Upcoming Events:

- South Dakota Innovation Expo - Oct. 16 - Sioux Falls, SD
- National NSF EPSCoR Conference- Nov. 5 - 8 - Missoula, MT

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