ND EPSCoR
Established Program to Stimulate Competitive Research

News & Notes

July 2021

Wrapping up an RII Track-1: INSPIRE-ND

North Dakota's $20 million National Science Foundation (NSF) Research Infrastructure Improvement (RII) Track-1 cooperative agreement (Innovative and Strategic Program Initiatives for Research and Education-North Dakota [INSPIRE-ND]) completed its seventh and final year on June 30, 2021. The agreement, which began in 2014, consisted of two agriculture-based centers: the Center for Regional Climate Studies (CRCS – see article on p.2) and the Center for Sustainable Materials Science (CSMS – see article on p.3). Faculty and student researchers from across the state collaborated within the CRCS and CSMS and its integrative broader impacts program, the EMerging PrOgrams for WorkforcE Development, OutReach, Education and Diversity-North Dakota (EMPOWERED-ND) Corps. The group is composed of individuals from every participating institution across ND whose efforts expanded diversity, enhanced educational and workforce development outreach, and increased partnerships, collaborations, and communication within both centers. Many of the EMPOWERED-ND Corps members also participated in CSMS or CRCS research, which developed new knowledge and practical information related to ND's agriculture base.

CRCS developed models about changes in land use, illustrated field hydrology and biomass production, as well as provided insights into the influence of global climate on regional weather, extreme weather events, and agricultural productivity. Through modeling and simulation efforts, CRCS researchers worked to understand how climate impacts the region's agriculture.

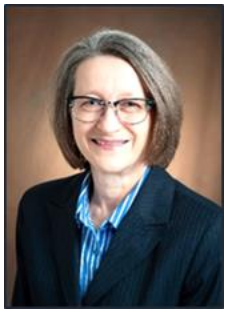
CSMS created numerous bio-based monomers, polymers, and composites that are derived from plant sources. Some of the researchers developed higher performance applications where durability is needed. Additionally, the center focused on specialty applications such as composites for vehicles and infrastructure. The research centered on using ND agricultural products that can contribute to the state's economy, while finding new uses for these lower cost and renewable feedstocks that are environmentally attentive.

The 11 INSPIRE-ND-participating institutions included one master's college/university (MCU), three primarily undergraduate institutions (PUIs), five tribal colleges/universities (TCUs), and two research universities (RUs). Most importantly, the collaborative efforts from both CSMS and CRCS strengthened the research infrastructure within ND, which fulfills one of the NSF EPSCoR goals of increasing the state's competitiveness for federally funded, merit-based grants and contracts to support research in science, technology, engineering, and mathematics (STEM).

INSPIRE-ND by the numbers: 201 undergraduate student participants, 180 graduate student participants, 31 senior personnel, 20 early career faculty supported, 4 new faculty hires, 8 Emerging Seed Awardees, 336 publications, 1,018 presentations, 200 proposals submitted, 83 proposals awarded totaling $20,566,098, 495 total participants, and 6,259 engagement activity attendees.

INSPIRE-ND had an incredible impact on the state and on our STEM pathways. We continue to improve our state's research capacity, increase our competitiveness, and cultivate and foster partnerships that help the entire STEM ecosystem within ND.

As we wrap up the seven years of the INSPIRE-ND cooperative agreement, we reflect on the impact of the research and outreach efforts this agreement made throughout the state and the many collective achievement of all of the participants. I hope that you are, and will continue to be, well.



Regards,
Kelly A. Rusch, Ph.D., P.E., BCEE
ND EPSCoR Executive Director

Celebrating seven years of CRCS

CRCS
Center for Regional Climate Studies

For the past seven years, CRCS scientists have conducted cross-disciplinary research centered in hydrology, meteorology, and agriculture. Examples of some research activities included: the study of market- and climate-related crop selection and agricultural land-use change; the study of hazardous weather in ND and the Northern Great Plains region; the impact of changing agricultural land-use patterns on regional weather; the development of micro-, meso- and macro-scale hydrological modeling efforts for the entire state and for several sub-regions; and the study of Devils Lake flooding/water pollution potential.

Some of the findings, such as those from the Devils Lake studies, have been presented at the Upper Sheyenne River Joint Water Resource Board meeting for assisting regional decision making. Other research has been in direct partnership with regional stakeholder groups such as local offices of the National Weather Service.

Besides research findings, which are documented in 123 peer reviewed journal papers that are directly supported by CRCS (resulting from CRCS studies), a significant number of undergraduate and graduate students were trained under the project for STEM related areas that build the potential STEM workforce for the future in ND. Many of these students have now graduated and acquired jobs in their respective fields in organizations such as the National Center for Atmospheric Research, the National Weather Service, in the North Dakota University System, and at academic institutions. Using the expertise built from these studies, the group will continue working on cross-disciplinary studies related to hydrology, agriculture, and meteorology while seeking new funding sources at both regional and national levels. One recent example of funded efforts includes the partnership with the National Weather Service.

Research by CRCS Co-Lead **David Roberts** (NDSU) and former CRCS graduate student **Bayarbat Badarch** (NDSU) indicates climate change—especially temperature increases during the growing-season—will likely substantially increase the maximum potential yields for corn (by as much as 40 bu./ac.). Farmers will need to adjust their nutrient management regimens to target higher potential yields as climate change makes these yields attainable.

Research by former CRCS graduate student **Khan Chowdhury** (NDSU) and Roberts (NDSU) indicates, not surprisingly, that earlier spring warm-ups induce farmers to plant more corn and soybean in a given year than they otherwise would, and that recent agricultural and energy policies are also speeding up the process of climate-related agricultural land-use change. Research by former graduate student **Eugene Nuworsu** (NDSU) and Roberts indicates that new crop rotation regimes adopted in North Dakota over the past 30 years have led to changes in rainfall and precipitation patterns during the growing season, driving temperatures lower in some months of the growing season (but higher in other months) than would be expected otherwise.

While the average effect of one additional acre of corn on temperature is small, it is statistically detectable and, given the dramatic increase in annual corn acreage in ND over the past 30 years has led to substantial regional climate variations that may locally counteract the warming effects of greenhouse gases by altering the reflectivity of cropped surfaces, increasing photosynthetic activity, and increasing the potential evapotranspiration from agricultural land, relative to the small grains cropping systems that previously dominated the state.

Co-led by **Jianglong Zhang** (UND), **Aaron Kennedy** (UND), and David Roberts (NDSU), CRCS faculty and student researchers also integrated with EMPOWERED-ND Corps to expand diversity and to contribute to educational and workforce development outreach efforts. Over the course of the cooperative agreement, CRCS researchers participated in Nurturing American Tribal Undergraduate Research and Education (NATURE) programming, which augments STEM education in tribal communities among middle school, high school, and tribal college students, and builds a pathway for American Indians living in North Dakota who are interested in pursuing careers in STEM disciplines.

More about the seven years of the Center for Regional Climate Studies can be found in the recently released Center for Regional Climate Studies brochure, which focuses on how the Center brings research on the interactions of social, water, and weather to ND agriculture. Click here to access the Center's website.

Celebrating seven years of CSMS

The Center for Sustainable Materials science has been advancing new discoveries of bio-based, sustainable materials that give more consideration to the environment and contribute to the state's economy through their low cost and renewable sourcing, durable lifetimes, and recyclability. Faculty and student researchers from across the state collaborated within the CSMS.

"One thing the Center has done is it has developed collaborations between researchers throughout the state. We are all involved in those collaborations and ongoing proposal submissions," noted CSMS Lead **Dean Webster** (NDSU). The CSMS research team included faculty members from North Dakota State University, the University of North Dakota, Cankdeska Cikana Community College, Mayville State University, Minot State University, and Sitting Bull College.

"The institutions and researchers working as a team was a big accomplishment," said CSMS Co-Lead **Mukund Sibi** (NDSU). "I think it is phenomenal in terms of our accomplishments – the number of papers with a number of collaborations." Because of the strong base of researchers and technology within CSMS, NDSU was able to join the NSF Industry & University Cooperative Research Center (I/UCRC) Center for Bioplastics and Biocomposites and many CSMS researchers are now carrying out projects in that center.

In addition to the CSMS research on bio-based, sustainable materials, the Center helped to facilitate education, workforce development, and outreach on the importance of sustainable materials. Sibi further explained that training students was always a number one priority within CSMS. "It has been a great platform for training undergraduate and graduate students. Students benefit from being part of the team, many have received scholarships or fellowships. The ultimate goal for our students is a career and CSMS has trained students for whatever goal they have." CSMS students have presented at a variety of conferences and meetings over the years and earned prizes for their research. "They have been great ambassadors for the Center," added Webster.

The CSMS research team participated in activities to support the goals of the EMPOWERED-ND initiative, a tightly integrated workforce development, education and outreach and partnership program designed to support the STEM pathway to meet the future needs of the ND economy.

CSMS faculty also created activities for the Nurturing American Tribal Undergraduate Research and Education (NATURE) program. "Many of the Center's students and faculty have participated in the NATURE program and faculty at NDSU and UND hosted TCU students for the University Summer Camp," said Sibi. "Students have gone out and given presentations at local high schools and been a part of many activities," Webster added, " and a number of our faculty have participated in NATURE Sunday Academy."

Sibi noted the positive outcomes of the formal and informal mentoring that occurred within the Center. "The graduate students trained undergraduate students and served as mentors. They have been awesome mentors for junior students, undergraduate students, and high school students."

Many professional development opportunities were offered throughout the seven years of INSPIRE-ND. As a result of industry collaboration and translational activity, CSMS has developed intellectual property and a number of patents have been applied for and several issued. CSMS held a two day symposium with dozens of companies from both within and outside of the region. "We learned, from a company's perspective, where they see the needs for sustainability. We were getting really useful insights on what it takes to commercialize something really new and what some of the barriers are," said Webster.

Additionally, CSMS faculty researchers developed a new course for undergraduate and graduate students. Enrollment trends show that this new course is already popular among students.

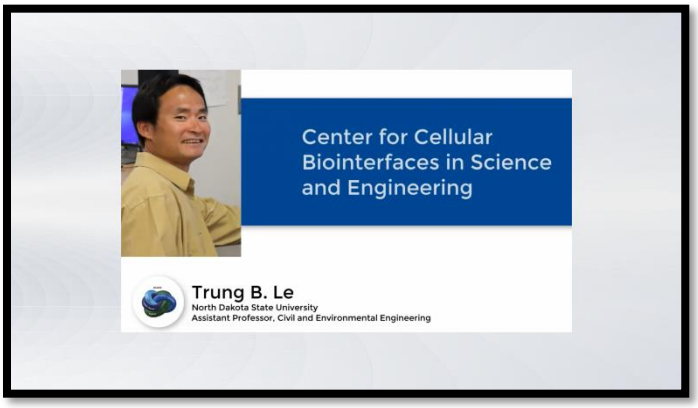
CSMS was successful in making their interdisciplinary research team a collaborative group that made their mark on the field now and in the future. "Some of the biggest impact that the CSMS had, has been in establishing North Dakota as a place where research in bio-based materials is happening. It has become a reputation (for the state) and I think that is helping us to get additional funding and people who come to us with questions and problems and needs. I see that as a great benefit going forward that we've established this team so when proposal opportunities come up or needs come up, we know each other, we know what our capabilities are and we can put a team together to address them," said Webster.

Click here to access the Center's website.

Meet the ND-ACES Faculty and Student Researchers video series

ND EPSCoR thanks ND-ACES Computation, Machine Learning, and Predictive Modeling Pillar researcher **Trung Le** (NDSU) for allowing our cameras to capture his research and outreach efforts. He talks with ND EPSCoR about teaching, research, and STEM outreach.

In the video (linked below), Le, an assistant professor in the department of civil and environmental engineering, discusses the importance of the ND-ACES research activities and outreach efforts and the resulting impact on students.



Meet Distributed Research Experience for Undergraduates (dREU) awardee **Ethan Wells**. Wells is spring graduate of Nueta Hidatsa Sahnish College, advised by **Trung Le** at NDSU and surpervised by **Kerry Hartman** (NHSC).

Wells recently visited North Dakota State University for a two week research experience with Le. “If I were to describe my two week experience here at NDSU in one word: enlightening. From the size of campus, the resources, the wild diversity of students and faculty, and the wide variety of great minds. My initial feelings when coming onto campus was a culture shock. The work I did and the knowledge I gained made me feel like I really was making large contributions towards a common goal of my group,” declared Wells.

Wells’ experience leads him to recommend it to his peers, saying, “I would tell my fellow tribal students to take up an opportunities in topics that you believe you will succeed in. It's an experience that'll help you focus on what you want to do with your future career. It's great for students who enjoy traveling and expanding their knowledge. You'll gain insight and experiences that can't be found in the common classroom. It's definitely something you'll worry about when you turn that application in, but also something you'll never regret.”

Learn more about Wells and his experiences as a student researcher in the video linked above. You can find out more about the faculty and students behind the ND-ACES research in our previous News & Notes editions. Videos from our prior visit to to Dickinson State Univerity in News & Notes' November issue. Videos from our prior visits to North Dakota State University and the University of North Dakota can be found in News & Notes' December issue. Videos from our visits to Mayville State University and Minot State University can be found in News & Notes' January issue.

Subscribe to our channel on YouTube as we continue to feature ND-ACES student and faculty researchers at participating institutions across North Dakota.

Update on NATURE University Summer Camp

By **Scott Hanson**, ND EPSCoR Tribal Colleges/Universities Liaison Manager (right)

Just as last year, the 2021 NATURE University Summer Camp is being conducted virtually. **Uwe Burghaus**, associate professor of chemistry and biochemistry at NDSU, is the associate coordinator for the NDSU campus, and **Justin Berg**, associate professor of psychology at UND, is the associate coordinator for the UND campus. Sixteen participants, seven from NHSC and nine from TMCC, signed up for this year’s camp.

The virtual opening ceremony took place via Zoom on June 7. A total of 10 faculty submitted virtual lab

tours. Six of the participants are partaking in online research. In one aspect of the camp, three computer science/engineering sessions, were offered by the ND-ACES cyberinfrastructure outreach group. The sessions were organized by **Dave Apostal** (Computational Research Center [CRC], UND), **Aaron Bergstrom** (CRC, UND), **Khang Hoang** (Center for Computationally Assisted Science and Technology [CCAST], NDSU), and **Kim Owen** (CCAST, NDSU). The sessions were:

- June 8: **Jingyan Fu,** CI Assistantship awardee, CCAST, NDSU, offered a session on Supercomputing
- June 9: Apostal offered a session on Artificial Intelligence and Cybersecurity
- June 22: **Nick Dusek** (CCAST, NDSU) offered a session on High Performance Computing, a recording of which is available on the NATURE University Summer Camp webpage and linked in the photo below.

Get to know the 2021 STTAR participants

The ND EPSCoR State Office recently kicked off another summer of STTAR (Students in Technology Transfer And Research) internships. We are continuing to feature a Q&A series with our participating companies. This month features **Interstate Engineering** (Jamestown), **Mobile Recon Systems** (Grand Forks), **Nodak Electric Cooperative** (Grand Forks)**, WCCO Belting** (Wahpeton).

Q. Tell us about your company.

A. As a 100% employee-owned company, Interstate Engineering provides consulting, engineering, land surveying, GIS services, planning, and various additional services to service our clients. For 45 years, we have work with cities, counties, state agencies, water districts, and private clients. We have offices across the Great Plains region, with our headquarters in Jamestown, ND.

STTAR intern Alexandra Speidel (NDSCS) is majoring in land surveying and working for Interstate Engineering.

Q. What are the benefits of having STTAR interns (to your company and the student)?

A. An internship provides hands-on experience allowing students to put their education into practice. It also builds confidence and connections with experienced professionals. All of these benefits lead to a competitive advantage for these rising stars. From our perspective, we are investing in the future of the company and the industry. By offering up-and-coming professionals experience now, we are developing long-term relationships, and we get to hear fresh and innovative ideas. Fiannly, the energy and excitement young professionals have is contagious. Interstate Engineering has three STTAR interns this summer, **Lindsay Hagerty** (NDSU), **Alexandra Speidel** (NDSCS), and **Brayden Wahl** (NDSCS).

STTAR intern Lindsay Hagerty (NDSU) is a civil engineering major.

Q. During their internship what will the students be working on?

A. They are exposed to a wide variety of experiences involving civil engineering. Their days will vary, and experiences will likely include project observation, project management, and design.

STTAR intern for Interstate Engineering, Brayden Wahl (NDSCS), works in the field.

Q. Have you partnered with the ND EPSCoR STTAR program before (if no, how did you hear about it)? What are the benefits of this partnership?

A. Yes. Last year was the first year we were engaged with the program. It was a rewarding experience, and we are thrilled to participate for a second year.

MOBILE RECON SYSTEMS™
Unmanned Aerial Vehicles

Q. Tell us about your company.

A. Mobile Recon Systems is a designer and manufacturer of unmanned aircraft systems (UAS). With higher payloads and greater functional flexibility than our competitors, our UAS enable a broad array of uses for commercial and military applications.

Q. What are the benefits of having STTAR interns (to your company and the student)?

A. The benefit of having STTAR interns from a corporate standpoint is the financial assistance provided to support filling these summer roles. The benefit for the students is the hands-on experience gained by applying the knowledge they have learned from a textbook in school and applying it in the workplace setting.

STTAR intern Jack Vetsch (UND) works on a project at Mobile Recon Systems.

Q. During their internship what will the students be working on?

A. During their internships, our STTAR students, **Garrett Tjernagel** (UND) and **Jack Vetsch** (UND), will work on various projects: optimizing UAS flight control systems, redesigning the electronics layout to minimize interference, designing custom batteries, and designing and implementing a digital marketing campaign.

STTAR intern Garrett Tjernagel (UND) working at Mobile Recon Systems.

Q. Have you partnered with the ND EPSCoR STTAR program before (if no, how did you hear about it)? What are the benefits of this partnership?

A. No. We heard about the program through word of mouth from a business associate.

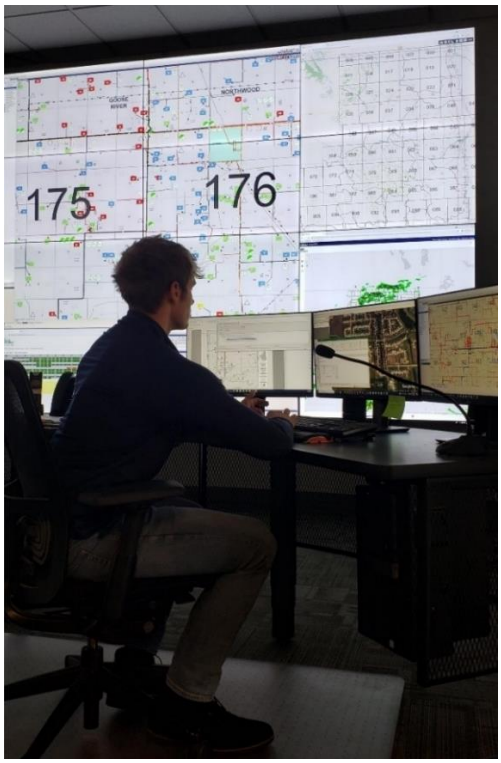
Q. Tell us about your company.

A. Nodak Electric Cooperative is a distribution electric provider whose mission is to safely provide reliable, competitively priced electric service for our member owners. Our members services range from a rural cattle waterer to some of the largest industries in the state of North Dakota.

STTAR intern Branson Elliott (UND) works for Nodak Electric Cooperative as a staking assistant in the field.

Q. What are the benefits of having STTAR interns (to your company and the student)?

A. Electricity has changed very little the last 100 years, but our processes change all the time. Our STTAR students have helped Nodak immensely over the years transitioning our GIS system from paper records to a much more useful digital system which allows us to locate, display, analyze and model more efficiently. The students get great hands-on experience both in the field and in the office and develop professional skills that they can carry on to a wide range of careers.



STTAR intern Tyler Workman (UND) working in Nodak Electic Cooperative's dispatch center.

Q. During their internship what will the students be working on?

A. We have two students working with us this year and while many of their responsibilities overlap, each one has its own focus. **Branson Elliot** (UND) is primarily a staking assistant out in the field. In this position, he helps a full-time engineer with the design, staking, measurement, and inspection of new and existing services. The collection is done with a Trimble Global Positioning System (GPS) that we pair with our Environmental Systems Research Institute (ESRI) based Geographic Information System (GIS) software in the office. From there Branson helps with the drafting of work orders and maintaining our system map so it reflects the new construction. Our other intern, **Tyler Workman** (UND), works in our dispatch center. When in

the office, he assists with the drafting and closing of work orders and developing material lists in support of staking sheet requirements and upholding National Electrical Safety Code (NESC). Tyler updates our digital records to keep our crews up to date and as safe and efficient as possible. He is also learning to call in locates and outages to become a critical asset to our lone dispatcher.

Q. Have you partnered with the ND EPSCoR STTAR program before (if no, how did you hear about it)? What are the benefits of this partnership?

A. Nodak Electric Coop has partnered with the STTAR program on and off for many years. We have had dozens of students come through the program. In fact, we have four current engineers who were at one time a STTAR student. Being able to house a student in the summer and keep them on for multiple semesters throughout the school year really gives us the opportunity to develop the student into a full time-like role. If at the end of their tenure there is an opening at Nodak they are always first on the list for a new hire. When there is not an opening, we have had students go to places such as Polaris, Arctic Cat, 3M, and Texas Instruments. Wille these careers do not share a lot of similarities with a power coop, but the professional competence that the students gain at any STTAR internship is appreciated everywhere.

Q. Tell us about your company.

A. WCCO Belting is a family business that manufactures high-quality, custom rubber conveyor belting for agricultural machines and industrial equipment. Our Business Development team works with new and existing customers all over the world to design new products. Our Supply Chain, Operations, and Maintenance teams form the working gears that take the design and turn it into a belt. The team designs and sources raw materials, builds and maintains our equipment, and hones our processes to drive efficiency. We also have Finance, Human Resources, and IT professionals to drive our success. Our business is committed to employee engagement and empowerment, and has been named multiple times as one of the areas' Best Places to Work.

Q. What are the benefits of having STTAR interns (to your company and the student)?

A. Students, like **Gabriel Lothspeich** (NDSU), are working on real-world projects that support our team's strategic goals. It's a mutually beneficial relationship in how WCCO Belting receives students' time and attention over the summer, while the student gains experience in a business environment with project management and a team dynamic. Our intern supervisors are committed to creating a high value learning experience, and our leadership uses internships to build our talent pipeline and employer brand within local schools.

STTAR intern Gabriel Lothspeich (NDSU) works at WCCO Belting.

Q. During their internship what will the students be working on?

A. 1) Assisting in using physical testing to develop a theoretical model to estimate rubber flow. 2) Assisting in vault storage implementation by 3D modeling purchased parts. 3) Designing and producing equipment to display WCCO products at trade shows. In these projects, students will use: Design of experiments, SolidWorks, MS Office, along with prototype equipment partnered with calibrated measuring instruments. They will be responsible for collecting, recording, and communicating any recommendations to the team.

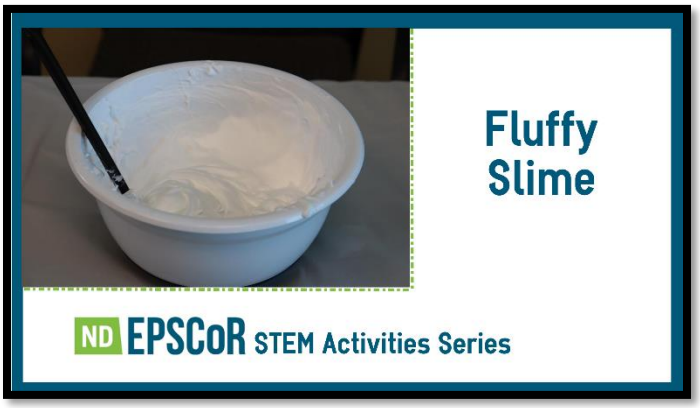
Q. Have you partnered with the ND EPSCoR STTAR program before (if no, how did you hear about it)? What are the benefits of this partnership?

A. We have partnered with ND ESPSCoR for many years.

ND EPSCoR brings STEM to families at home this summer

This summer, the ND EPSCoR State Office is bringing fun STEM projects to families at home via our YouTube channel. Finding engaging STEM projects for elementary students that families can facilitate is not always easy. Simple and fun STEM projects for young students help to teach important critical thinking skills and potentially spark a lifetime interest in STEM.

Click on the photo above to watch a new video in the series and create your own lava lamp. Click here to get a full shopping list of the supplies you'll need to complete the activities along with us.



Click on the photo above to watch another new video in the series and create your own fluffy slime. Click here to get a full shopping list of the supplies you'll need to complete the activities along with us. Subscribe to our YouTube channel for more STEM activities throughout the summer.

CIRCLES Alliance survey and interview opportunities

The ND EPSCoR State Office has joined with five other EPSCoR states (Idaho, Montana [prime institution], New Mexico, South Dakota, and Wyoming) in a National Science Foundation-funded collaborative research project that forms an Alliance to connect with tribal community members within those states to gain a better understanding of each community's definition and perspective of STEM (science, technology, engineering, and mathematics). Initially, Alliance members planned to visit each tribal community, but with COVID-19 continuing, the Alliance decided to make virtual connections. Using a common set of questions across the six-state CIRCLES (Cultivating Indigenous Research Communities for Leadership in Education and STEM) Alliance, participants' input is being gathered over Zoom interviews or through an online survey with tribal community stakeholders to gain their perspective on how indigenous based STEM education is currently being incorporated or might be incorporated in the future, to support/enhance student STEM learning. To participate in an interview or survey, you must be 18 years or older.

The ND EPSCoR State Office has created a link to a 90-second video that describes these efforts. The anonymous online survey is available at this link. If you would prefer to participate in an individual interview, please email Scott Hanson, ND EPSCoR Tribal Colleges/Universities Liaison Manager, or call 701-231-8606.

This effort aims to foster better connections with tribal communities and support STEM educational programming. Working toward that goal, the ND EPSCoR State Office humbly requests your assistance in completing this survey or contacting us to set up a virtual interview. The CIRCLES Alliance believes this is a particularly poignant time to reflect on observations regarding indigenous based STEM education the COVID-19 pandemic has brought some new challenges into focus. Learn more about the North Dakota CIRCLES effort here.

Events and trainings

Responsible Conduct of Research (RCR)

RCR training with STEM Manager **Shireen Alemadi** is available upon request to augment initial campus or Collaborative Institutional Training Initiative (CITI) RCR trainings. Please contact Shireen Alemadi to schedule.

Creating Connections Workshop by the Alan Alda Center for Communicating Science

The ND EPSCoR State Office is once again sponsoring a *Creating Connections* workshop by the Alan Alda Center for Communicating Science at 2:00 pm CT on September 28, 2021. You must register for the online workshop. Click here to register.

Creating Connections is a two-hour live, online workshop. The Alda Method is a unique approach to science communication training that combines improvisational theatre-based techniques with message design strategies, including analogies and narrative. This immersive method emphasizes two-way communication to build trust and invite others to share in the wonder and joy of science. The process incorporates research and best practices from science communication, journalism, ethics, and other relevant fields.

If you have already attended Creating Connections and are interested in the next workshop in the series, *The Essentials*, email Shireen Alemadi to register or learn more information. *The Essentials* workshop will be offered at 2:00 pm CT on October 26, 2021.

Funding opportunities

The National Science Foundation (NSF)-funded New Discoveries at the Advanced interface of Computation, Engineering, and Science (ND-ACES) cooperative agreement consists of two broad components: 1) Center for Cellular Biointerfaces in Science and Engineering (CCBSE), which consists of three research pillars: materials design, cellular systems, and computational approaches and 2) PROmoting Sustainable Partnerships in Education and Research (PROSPER), which consists of four connected project elements: education and workforce development, broadening participation, partnerships and collaborations, and communication and dissemination.

Doctoral STEM Teaching Assistantship NDSU/UND ONLY

Under ND-ACES, the Doctoral STEM Teaching Assistantship program is designed to: 1) increase NDSU/UND doctoral students' understanding of and experience in undergraduate STEM teaching and 2) provide course release time to the Tribal College/University (TCU), Primarily Undergraduate Institution (PUI), and Master's College/University (MCU) faculty/instructors/CCBSE researchers so that they are able to spend additional time conducting their research. The Doctoral STEM Teaching Assistantship Program is a semester-long teaching placement (during Spring 2022 or Fall 2022) that will take place at a CCBSE-participating TCU, PUI, or MCU. Under the direction of the faculty/instructor/CCBSE researcher on those campuses, doctoral students will teach one course determined collaboratively between the doctoral student, the TCU/PUI/MCU faculty/instructor, and the institution. For more information, see the Request for Applications. Please be aware of the following application deadlines:

- Spring 2022 Award Dates: January 1 – May 15, 2022 / Application Due: September 30, 2021
- Fall 2022 Award Dates: August 1 – December 15, 2022 / Application Due: February 28, 2022

Track-1 ND-ACES: Early Career Faculty Support

Funds are available as part of the NSF EPSCoR RII Track-1 New Discoveries in the Advanced interface of Computation, Engineering, and Science (ND-ACES) cooperative agreement to support participating early career faculty (ECF) from any of the 10 ND-ACES institutions. Funds can be used for additional graduate students and domestic travel to assist in fast tracking research and outreach efforts within the ND-ACES Center for Cellular Biointerfaces in Science and Engineering (CCBSE) and/or PROmoting Sustainable Partnerships in Education and Research (PROSPER).

- Applications for ND-ACES-related graduate students and travel will be accepted from ND-ACES assistant professor participants at North Dakota State University (NDSU) and the University of North Dakota (UND).
- Applications for ND-ACES-related travel will be accepted from ND-ACES faculty/instructor participants at Cankdeska Cikana Community College (CCCC), Dickinson State University (DSC), Mayville State University (MaSU), Minot State University (MiSU), Nueta Hidatsa Sahnish College (NHSC), Sitting Bull College (SBC), Turtle Mountain Community College (TMCC), and Valley City State University (VCSU).

Undergraduate Research Assistantship (URA) Program

Under ND-ACES, this program gives up to three current junior and senior undergraduate students pursuing a B.S. STEM degree at a four-year institution (or a two-year institution granting B.S. STEM degrees) an opportunity to perform research within the National Science Foundation (NSF)-funded New Discoveries in the Advanced Interface of Computation, Engineering, and Science (ND-ACES) Center for Cellular Biointerfaces in Science and Engineering (CCBSE). For more

information, see the Request for Applications.
Application Deadline: Noon, September 16, 2021

Distributed Research Experience for Undergraduates (dREU)

This ND-ACES program gives undergraduate students – from the nine participating CCBSE campuses the opportunity to work in the CCBSE alongside NSF Track-1 faculty researchers on their cutting-edge research projects. For more information, see the Request for Applications.
Please be aware of the following application deadlines:

- Academic Year 2021 Application Deadline: Noon, July 29, 2021
- Full Year 2021 – 2022 Application Deadline: Noon, July 29, 2021

Track-1 ND-ACES: Emerging Areas/Seed Award Request for Applications

This ND-ACES program provides emerging areas seed awards of up to $25,000 to researchers from the NSF EPSCoR RII Track-1 New Discoveries in the Advanced Interface of Computation, Engineering, and Science (ND-ACES) participating institutions in areas of emerging high impact and transformative research related to the Center for Cellular Biointerfaces in Science and Engineering (CCBSE). Information on the CCBSE can be found on the ND EPSCoR website.

Applications must be made by a researcher from any of the 10 ND-ACES participating institutions who is not currently associated with the 2020-2025 ND-ACES cooperative agreement or who did not receive a 2021 ND-ACES emerging seed award. Please see the Request For Applications for details. Application Deadline: Noon, September 1, 2021

DEPSCoR Regional DoD Day

The Department of Defense (DoD) has asked the University of South Dakota to host a regional DEPSCoR DoD Day, where DoD program managers will provide

information about the DEPSCoR program and general information about working with the DoD. The regional DEPSCoR Day will be held on a date to be determined in Vermillion, SD. For more information, please see: DEPSCoR Regional DoD Day

EPSCoR Workshop Opportunities

EPSCoR is designed to fulfill NSF's mandate to promote scientific progress nationwide, and NSF EPSCoR welcomes proposals for workshops in Solicitation NSF 19-588. These workshops focus on multi-jurisdictional efforts of regional to national importance related to EPSCoR's goals and NSF's mission. For more information, please see the RFP: EPSCoR Workshop Opportunities

Acronyms

Participating Institutions:

- Master's College/University (MCU)
  - Minot State – Minot State University
- Primarily Undergraduate Institutions (PUIs)
  - DSU – Dickinson State University
  - Mayville State – Mayville State University
  - VCSU – Valley City State University
- Research Universities (RUs)
  - NDSU – North Dakota State University
  - UND – University of North Dakota
- Tribal Colleges/Universities (TCUs)
  - CCCC – Cankdeska Cikana Community College
  - NHSC – Nueta Hidatsa Sahnish College
  - SBC – Sitting Bull College
  - TMCC – Turtle Mountain Community College
  - UTTC – United Tribes Technical College

Funding:

- National Science Foundation (NSF) EPSCoR Research Infrastructure Improvement (RII) Track-1 Collaborative Agreements
  - ND-ACES – New Discoveries in the Advanced Interface of Computation, Engineering, and Science (NSF OIA #1946202) and
  - INSPIRE-ND – Innovative and Strategic Program Initiatives for Research and Education-North Dakota (NSF OIA #1355466)
- NSF Collaborative Research
  - CIRCLES Alliance - Cultivating Indigenous Research Communities for Leadership in Education and STEM Alliance (NSF OIA #2038196)
- ND EPSCoR State Office
  - STEM programing identified within the newsletter and state match funding for ND-ACES and INSPIRE-ND

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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.

Stay in touch

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- Submit stories to: https://bit.ly/epscorsubmitnews
- To be added to the newsletter mailing list, please email ndepscor@ndus.edu, subject line: newsletter.