ND EPSCoR — Established Program to Stimulate Competitive Research

Gratitude

The stress and accelerated pace of the end of the semester can leave us without time to connect with one another and reflect on the good things in life. The pressure of this time of year can make moments of gratitude seem fleeting, yet the busy times are when we most need to experience this emotion.

The semester break is a natural time to engage in reflection and positively affirm ourselves and the people in our lives. The short, dark days of winter feel lighter and brighter when we take each opportunity to reflect on our daily lives with feelings of gratitude and good will towards friends, family, and colleagues.

As we focus on all of the good happening around us, we feel more optimistic and energetic. Both are welcome feelings to have before spring semester begins.

With the end of 2021, here at the ND EPSCoR State Office, we are grateful for our many partnerships around the state. We wish to celebrate all of our shared achievements and share a few highlights.

2021 was another great year for the Students in Technology Transfer And Research (STTAR) program. The ND EPSCoR State Office partnered with 12 ND-based companies this summer that sponsored 23 post-secondary students. The ND EPSCoR State Office cost-shares the student salaries for the internships, which run for a minimum of eight weeks each summer. We are grateful for these partnerships which allow students majoring in science, technology, engineering, and mathematics (STEM) disciplines to use their academic training and experiences to address real-life science and technology-based problems faced by ND companies.

We are grateful for everyone involved in the preparation and delivery of our Nurturing American Tribal Undergraduate Research and Education (NATURE) programming. Without the dedication of the faculty and staff involved, we could not offer these extensive statewide STEM educational activities.

As we reach the halfway point of year two of ND-ACES (New Discoveries in the Advanced Interface of Computation, Engineering, and Science), ND EPSCoR's most recent NSF RII Track-1 five-year cooperative agreement, we are grateful to the project's faculty, staff and students who have been so successful in their endeavors. You can read more about the October ND-ACES External Advisory Board meeting in our November issue.

After missing a year of in-person visits to our participating institutions in 2020 due to the COVID-19 pandemic, this year we were able to return to those much missed events. We are truly grateful to have had the opportunity to visit many of our participants in-person in 2021, the most recent of which was our visit to United Tribes Technical College in early December. You can read more about that visit on page 2 of this issue. Our visits to Turtle Mountain Community College and Cankdeska Cikana Community College are detailed in our November issue, the visit to Sitting Bull College is featured in our October Issue, and our visits to Minot State University, Valley City State University, Dickinson State University, and Mayville State University were featured in our September issue.

There is much to be thankful for this year and we look forward to another great year ahead. I encourage you to take a few minutes today to think about what you are grateful for. Kindness and gratitude are timeless gifts that we can give to each other this season and all year long. I hope that you are, and will continue to be, well.

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

Supporting the STEM pathway across the state

The ND EPSCoR State Office staff recently traveled to United Tribes Technical College (UTTC). During this visit, we met with faculty and staff members.

The Science and Technology building at United Tribes Technical College.

While visiting with faculty members at UTTC, we heard about the impact the ND EPSCoR State Office STEM Requests for Proposals (RFP), which are funding opportunities that become open throughout the year to fund STEM activities at ND EPSCoR-participating institutions.

Ram Hona (UTTC), an instructor in the Environmental Science Department was awarded funds to purchase x-ray diffraction equipment through the ND EPSCoR State Office 2021 STEM Research and Education RFP. Learn more about the impact of receiving an ND EPSCoR State Office award from Hona in the video thumbnail, linked below.

Through the ND EPSCoR State Office 2020 STEM RFP opportunity, **Gurjot Dhaliwal** (UTTC), Interim Director and Research Faculty within the Intertribal Research and Resource Center, was awarded funds to purchase a

Heat Flow Meter (pictured left) for research, training, and STEM outreach activities. Watch Dhaliwal as he explains how students will benefit from the new equipment in the video thumbnail, linked below.

Both of these pieces of equipment will significantly enrich the research, teaching, and training within both departments at UTTC.

As we finish another semester, we reflect on the impact and the many collective achievements of all of our participating campuses and thank them for their hospitality during our 2021 campus visits. We look forward to seeing you again in 2022.

NATURE program Sunday Academies

The NATURE Sunday Academy program for the 2021-2022 school year began in October. The Sunday Academy Program is designed to generate interest in STEM among American Indian students. Once a month during the academic year, middle and high school students are brought together on a Sunday to explore practical day-to-day problems involving STEM in an informal and friendly atmosphere, requiring them to think, analyze, and seek solutions.

Sunday academy sessions are held at each of the participating tribal colleges. Professors travel to share their research across the state, and the sessions are hosted by the Tribal College/University (TCU) NATURE

Coordinator at each site. Activities usually begin at 10 or 11:00 am and last up to four hours, including lunch. Cultural relevance and hands-on activities are emphasized in all topic areas.

Last month, **Lu Liu** (pictured below), an Assistant Professor in the Computer Science Department at NDSU and ND-ACES Computation, Machine Learning, and Predictive Modeling pillar researcher, travelled to Nueta Hidatsa Sahnish College to deliver his Bioinformatics: Through the Lens of COVID-19 activity and was previously at Cankdeska Cikana Community College in October.

Lu Liu outside Cankdeska Cikana Community College before presenting his first Sunday Academy activity of the year.

"The students enjoyed their first experience of hacking with Ubuntu, in which they run commands like hackers do. They also enjoyed playing a modified jigsaw puzzle, in which all edge pieces were removed. The puzzle simulates how scientists assemble a reference genome piece by piece," said Liu.

Through this activity, students are learning the basics of bioinformatics by generating a COVID-19 virus genome through computer commands. "They are developing the skills of running Linux commands, downloading data, and installing bioinformatics tools," added Liu.

When asked what he enjoyed most about being a NATURE Sunday Academy faculty participant, Liu said it was the interactions with students. "When one student said that I am a good teacher, I felt great. I appreciate the help I received from our organizers, staff, and tribal coordinators. Without your help, I couldn't be able to make it." For information about NATURE Sunday Academy, contact ND EPSCoR or visit our NATURE Sunday Academy page.

The STEM at Home video series continues

The ND EPSCoR State Office is bringing fun STEM projects to families at home via our YouTube channel. STEM at Home features simple and exciting STEM projects for young students to help teach important critical thinking skills and potentially spark a lifetime interest in STEM.

Our full collection of STEM project videos and shopping lists is available here. Watch our newest winter-themed video in our STEM at Home series, linked below.

Get the full shopping list for the new Let's Make Oobleck activity here.

Subscribe to our YouTube channel and visit our STEM activities page for shopping lists. You can also visit our STEM Education Portal and NATURE Sunday Academy pages for more activities and lesson plans that strengthen the STEM pathway for students across ND.

CIRCLES Alliance survey and interview opportunities

In October 2020, the ND EPSCoR State Office joined five other EPSCoR states (Idaho, Montana, 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 the COVID pandemic continuing, the Alliance has decided to continue 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 through virtual interviews over Zoom 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 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. Additionally, ND EPSCoR is conducting individual virtual interviews. If you would prefer to participate in an individual interview, please contact ND EPSCoR at ndepscor@ndus.edu, or call 701-231-8400.

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 as the COVID pandemic has brought some new challenges into focus. Learn more about the North Dakota CIRCLES effort here.

Welcome the new Tribal Partnerships Manager

Please join us in welcoming the ND EPSCoR State Office's new Tribal Partnerships Manager, **Raymond Burns** (pictured left). As a result of the vacancy created when Scott Hanson left the ND EPSCoR State Office, the position was revamped to incorporate the State Office's work with the tribal communities across the state; most recently under the six state NSF-funded Cultivating Indigenous

Research Communities for Leadership in Education and STEM (CIRCLES) Alliance.

Burns comes to the ND EPSCoR State Office with over 30 years of experience in higher education with almost 20 years of that experience with Tribal Colleges and Universities. He is an enrolled member of the Lac Courte Oreilles Band of Lake Superior Chippewa in northwest Wisconsin, but actually grew up in Wahpeton, North Dakota as his parents worked at the boarding school there (Circles of Nations). Burns has worked at the Lac Courte Oreilles Ojibwa Community College, Northwest Indian College, Leech Lake Tribal College, and Red Lake Nation College and has held several positions within the American Indian Higher Education Consortium (AIHEC; the Tribal College and University umbrella organization). He has worked hard to gain educational experience, and share his knowledge of the culture and wisdom of Native peoples and cultures.

One of his responsibilities will include serving as the Broadening Participation co-lead on the ND-ACES cooperative agreement. Burns will also serve as the statewide coordinator for the State Office's Nurturing American Tribal Undergraduate Research and Education (NATURE) program, as a researcher on the NSF CIRCLES award, and as the liaison to K-12 teachers in tribal and rural communities, tribal elders, and other indigenous STEM knowledge holders across the state. In addition, Burns will participate in and lead efforts for the State Office on proposals focused on Indigenous STEM.

Burns officially begins his position on January 3, 2022.

Congratulations to ND-ACES Fall 2021 graduates

Congratulations to the following ND-ACES student participants on their recent achievements. We wish you well in your future endeavors.

- **Jingyan Fu** (NDSU)
- **Andrew King** (VCSU)
- **Laurie Kok** (UND)

Thank you for your contribution to the ND-ACES ND EPSCoR Research Infrastructure Improvement (RII) Track-1 award.

Events and trainings

ND EPSCoR
2022 State Conference

Wednesday, April 6, 2022
Alerus Center in Grand Forks, ND

The 2022 ND EPSCoR Annual Conference will be on Wednesday, April 6, 2022 at the Alerus Center in Grand Forks, ND. The ND EPSCoR Conference is an annual event that brings together faculty, students, and the community to celebrate the STEM endeavors taking place within ND EPSCoR's participating institutions. Accommodation is available at the Canad Inn and surrounding hotels.

Register here. This registration link is for both virtual content access and in-person attendance. If attending in-person, please register by noon on Friday, March 18, 2022.

Submit a virtual poster here.

Poster submissions are welcome from students and faculty from our participating institutions. The deadline to submit a virtual poster via the poster submission link is noon on Friday, March 4, 2022.

View the virtual poster guidelines here.
View the agenda here.

Additional resources for poster authors and presenters are available on our templates and information page and our logo page.

Visit the ND EPSCoR State Conference information page often, more details to come as the event approaches.

Responsible Conduct of Research (RCR)

RCR training is available upon request to augment initial campus or Collaborative Institutional Training Initiative (CITI) RCR trainings. Please contact ND EPSCoR to schedule.

Announcing Position Openings

Business Manager

The ND EPSCoR State Office Business Manager will oversee and be responsible for all financial transactions.

The purpose of this position is to: lead the financial efforts of all ND EPSCoR ND-ACES and ND EPSCoR State Office projects and oversee the financial component requirements, including financial databases (PeopleSoft, Novelution, etc.) of the ND EPSCoR ND-ACES and ND EPSCoR State Office at all participating campuses.

See additional details about the Business Manager position and apply here. Open until filled. Contact the ND EPSCoR State Office with any questions about this opportunity.

STEM Grant Writer & Program Manager

The purpose of this position is to maximize the broader impact and effectiveness of all ND EPSCoR State Office programs through the performance of the following duties: 1) Lead, develop, maintain, and support ND EPSCoR Office STEM programs and initiatives for K-12 students, preservice teachers, teachers, and other K-12 STEM stakeholders across ND; and 2) Lead, develop, maintain, and support ND EPSCoR Office STEM programs and initiatives for postsecondary students (undergraduate and graduate), postdocs, early career faculty (ECF), and other postsecondary STEM stakeholders across ND.

See additional details about the STEM Grant Writer & Program Manager position and apply here. Open until filled. Contact the ND EPSCoR State Office with any questions about this opportunity.

Funding opportunities

Funding Opportunities come from three sources:
1. The National Science Foundation (NSF)-funded New Discoveries at the Advanced Interface of Computation, Engineering, and Science (ND-ACES) RII Track-1 cooperative agreement, which 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.
2. ND EPSCoR State Office
3. EPSCoR and EPSCoR-like federal funding agencies, which include: Department of Energy (DOE), National Aeronautics and Space Administration (NASA), National Institutes of Health (NIH), NSF, U.S. Department of Agriculture (USDA), and Department of Defense (DoD).

Building EPSCoR-State / DOE National Laboratory Partnerships

The U. S. Department of Energy's Established Program to Stimulate Competitive Research (EPSCoR) program announced its interest in receiving applications for building EPSCoR-State / DOE-National Laboratory Partnerships: **DE-FOA-0002624**

DOE has identified the following areas of priority interest: Clean Energy and Climate Research, including Energy Storage, Carbon Dioxide Removal, Hydrogen, Solar Energy Conversion, and Low-carbon Manufacturing (including polymer upcycling).

Research grant awards (typically single-investigator projects) are expected to be made for a period of two or three years at a funding level appropriate for the proposed scope. The funding range per award is expected to be between $150,000-$250,000 per year. Cost sharing is not required.

Interested applicants should submit pre-applications which are due by 4pm CT on Thursday, January 15, 2022. *Please look to your campus for specific pre-application deadlines.*

ND NASA EPSCoR CAN – Request for Pre-Proposals

In response to the [NASA Notice of Funding Opportunity (NOFO) EPSCoR Research Announcement Number: NNH22ZHA005C](#), the [North Dakota NASA EPSCoR](#) (Established Program to Stimulate Competitive Research) is soliciting pre-proposals from faculty at [affiliate institutions](#) specifically designed to promote and expand NASA research in North Dakota. Following preliminary proposal selection by ND NASA EPSCoR, the selected pre-proposal team will work directly with the ND NASA EPSCoR office to submit a full proposal to NASA via NSPIRES.

Pre-proposals are due Noon, 12/17/2021.

The full RFP, online submission form, and budget sheet can be found in the [RFP announcement on the ND NASA EPSCoR website](#).

NSF EPSCoR Research Infrastructure Improvement Program: Track-2 Focused EPSCoR Collaborations

The Established Program to Stimulate Competitive Research (EPSCoR) is designed to fulfill the mandate of the National Science Foundation (NSF) to promote scientific progress nationwide. A jurisdiction eligibility is based on a jurisdiction's recent five-year history of total funds awarded by NSF relative to the Foundation's total research budget for that same period. The current table of eligible jurisdictions is available on the NSF EPSCoR website (see RII [eligibility](#)).

Through this program, NSF establishes partnerships with government, higher education, and industry that are designed to effect sustainable improvements in a jurisdiction's research infrastructure, Research and Development (R&D) capacity, and hence, its R&D competitiveness. For more information, read the [full solicitation](#). ***Please be aware that some campuses may have internal guidelines related to this RFP.***

Letter of intent required – due December 20, 2021
Full proposal – due January 31, 2022

Track-1 ND-ACES: 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 deadline:

- Fall 2022 Award Dates: August 1 – December 15, 2022 / Application Due: February 28, 2022

Undergraduate Research Assistantship (URA) Program

This program gives 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).

The URA is a six-month award that is renewable for up to one additional year. URA awardees will conduct up to 18 months of research under the direction of a ND-ACES CCBSE researcher. For more information, see the [Request for Applications](#).

Application Deadline: Open until funds are exhausted

Distributed Research Experience for Undergraduates (dREU)

Under this program undergraduate students – from the nine ND EPSCoR ND-ACES RII Track-1 participating campuses - three Primarily Undergraduate Institutions (PUIs), one Master's College/University (MCU), three Tribal Colleges/Universities (TCUs) located in ND, or the two Research Universities (RUs) – are required to work in the ND-ACES Center for Cellular Biointerfaces in Science and Engineering (CCBSE) alongside NSF Track-1 faculty researchers on their CCBSE cutting-edge research projects in materials design, cellular systems, or computational approaches. Women, minorities underrepresented in STEM, persons with disabilities, first generation college students, economically disadvantaged or rural populations are strongly encouraged to apply. For more information, see the Request for Applications.

Application Deadline: Open until funds are exhausted

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 (DSU), 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) who participate in the ND-ACES ECF mentoring program.

Department of Defense EPSCoR Capacity Building

The DEPSCoR Capacity Building competition objectives are to jumpstart capability development in the State/Territory through increased human, technical, and management resource and to achieve excellence in a DoD-relevant research area through funding to support equipment, education, research, and other relevant activities.

Grants awarded under this program are intended to support the strategic objectives of IHEs (either individually or in partnership with others) in DEPSCoR States/Territories to achieve basic research excellence in areas of high relevance to the DoD. Proposals will vary depending on technical field and geographic region. View the grant opportunity details here. Slides from Summer 2021 info sessions are available here.
- Due February 22, 2022

Department of Defense EPSCoR Research Collaborations

The DEPSCoR competition intends to encourage collaborations on basic research projects of interest to the Department. The program is structured to form a 2-person team between 1) a researcher who has never served as a principal investigator (PI) on a prior DoD-funded award and 2) an investigator who will provide mentorship and has served as a PI on a DoD-funded research award actively between 1 October 2014 and 30 September 2021. View the grant opportunity details here. Slides from Summer 2021 info sessions are available here.
- Due February 22, 2022

Department of Defense: 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 in Spring of 2022 in Vermillion, SD. For more information, please see: DEPSCoR Regional DoD Day

NSF: EPSCoR Workshop Opportunities

EPSCoR is designed to fulfill NSF's mandate to promote scientific progress nationwide, and NSF EPSCoR continually 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)
- 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

ND EPSCoR State Office Programming:
- CIRCLES - Cultivating Indigenous Research Communities for Leadership in Education and STEM
- NATURE – Nurturing American Tribal Undergraduate Research and Education
- STTAR – Students in Technology Transfer and Research

Acknowledgement

Stay in touch

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