

An in-person celebration of research

The spring semester is an exciting time at ND EPSCoR; it is when faculty and students prepare to share their research at our annual state conference. Last year, due to the COVID-19 pandemic, our conference was a virtual experience. This year, we are happy to be returning to an in-person event and look forward to seeing everyone in-person once again at the Alerus Center in Grand Forks, ND, on Wednesday April 6, 2022.

Last year's adaptation to an online space allowed for unique ways for attendees to engage with faculty and student researchers. This year, we will be bringing back the popular virtual spin on the traditional poster session on the Symposium platform. Having the scientific posters available in a virtual format allowed for greater engagement from stakeholders. The virtual format also provided a wider audience for sharing the wonderful work and research going on across the state and was the highest rated component of last year's virtual event, according to attendees.

Virtual posters will be accessible beginning on Wednesday, March 23, 2022 on Symposium. Each poster will have its own dedicated webpage and message board to allow conference attendees to engage in in-depth conversations with researchers and students ahead of the in-person conference event. We are excited to offer this feature again to maintain the broader connections and more meaningful engagement with a wide and varied audience achieved last year.

The ND EPSCoR Conference brings together faculty, students, and the community to celebrate the STEM endeavors taking place within ND EPSCoR's participating institutions. This year's event will feature live sessions by students and faculty during the in-person conference at the Alerus Center in Grand Forks and asynchronous virtual poster presentations representing STEM research throughout ND.

The conference is a celebration of research and

outreach and we hope you will register to view the virtual posters authored by students and faculty across the state and plan to join us at the Alerus Center.

This year's session topics will include NSF RII Track-1 presentations for ND-ACES (New Discoveries in the Advanced Interface of Engineering and Science), a STEM-based Indigenous Knowledge panel, and a panel on Industry Partnerships.

The goal this year is to celebrate the collaborative research of the Center for Cellular Biointerfaces in Science and Engineering (CCBSE) within ND-ACES, ND EPSCoR's most recent NSF cooperative agreement, now in its second year. Speakers will describe the impact of their research and extensive outreach efforts and highlight the importance of this statewide cooperative effort on the state's economy and STEM workforce development.

This event is a showcase for EPSCoR-funded participants to talk about their work and provides many opportunities for conversations and insights. STEM students from ND EPSCoR-participating institutions, not in ND-ACES roles, are also invited to present virtual posters on their research efforts.

The research conducted through the NSF RII Track-1 is just one avenue of ND EPSCoR's programming, which illustrates the critical collaborative work done across the state at each of the participating campuses.

Please join us for the in-person for the 2022 ND EPSCoR Annual Conference at the Alerus Center in Grand Forks on April 6, 2022. Visit [our state conference information page](#) for details. I hope that you are, and will continue to be, well.

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



NATURE Sunday Academy offers all sites "The Spectacular Cell" activity

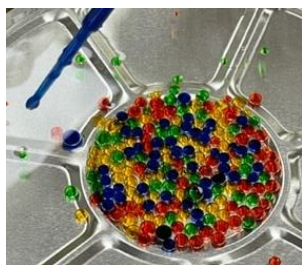
The Nurturing American Tribal Undergraduate Research and Education (NATURE) Sunday Academy program for the 2021-2022 school year began in October and will continue through April. The Sunday Academy Program generates interest in STEM among American Indian students. Once a month during the academic year, middle and high school students are brought together to explore practical day-to-day problems involving STEM requiring them to analyze the problem, and seek potential solutions.

Sunday Academy sessions are held at each of the participating Tribal Colleges/Universities (TCUs) and are hosted by TCU STEM faculty, who serve as the 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. Sessions are developed and delivered by TCU, NDSU, and UND faculty.

This month, Sitting Bull College, Cankdeska Cikana Community College, and Turtle Mountain Community College all participated in "The Spectacular Cell" activity. Nueta Hidatsa Sahnish College will offer "The Spectacular Cell" at a later date.

Lori Gourneau (CCCC, TMCC) developed the activity for all sites. Gourneau has partnered with NATURE Coordinator, Brent Voels, this year to host Sunday Academy sessions at CCCC. As is true with all Sunday Academy activities, embedded within "The Spectacular Cell" was a cultural connection that included the specific cultural norms of the local tribe and a specific cultural link to the Medicine Wheel.

Student participants were introduced to the foundational concepts of cellular biology as they learned what a cell is and what it does. The first activity was an interactive game show to test their knowledge. The students then created their own cell out of a dozen different edible materials, showing the parts of both plant and animal cells. In the third



activity, the students investigated hydrophilic vs. hydrophobic materials using oil and water (pictured above, right) and finally the students created a magnetic slime (pictured left).

The theme of the Sunday Academy was how small cells work together to create a larger whole. "It was a beautiful day and students choose to spend the day expanding their knowledge about cells," noted **Raymond Burns**, ND EPSCoR Tribal Partnership Manger, who joined Sitting Bull for their activities this month.



NATURE Sunday Academy participants at Sitting Bull College create the parts of a cell using edible materials.



Students gather at Sitting Bull College, one of three sites offering "The Spectacular Cell" Sunday Academy on Sunday, February 6, 2022.

At Sitting Bull College, 16 secondary students attended this month's Sunday Academy. "The students were really enjoying the activity, you could especially tell that the students enjoyed the hands-on components and liked sharing and discussing with their peers," said Burns.

The NATURE Sunday Academy program offers advanced science and technology demonstrations, like this one, to students monthly during the academic year. The dedication by faculty and staff to deliver this programming on a Sunday is one of the most impressive parts of the over-two-decades old Sunday Academy program. Sunday Academy would not be the successful outreach program that it is without the dedicated NATURE site coordinators at each participating TCU.

By the end of the Sunday Academy, most of the edible cells were completely eaten. According to Burns, student engagement in the activity was incredible. “The students seemed to have a lot of fun and enjoyed experiencing a college setting,” said Burns. “The Spectacular Cell” activity was completed by three sites which instructed a total of 30 secondary students.



*Sitting Bull College NATURE Site Coordinator, **Mafany Ndiva Mongoh**, helps students with the activities.*

For information about NATURE Sunday Academy, contact Raymond Burns, the ND EPSCoR State Office Tribal Partnerships Manager, by [email](#) or calling 701-231-8606. You can also visit our [NATURE Sunday Academy page](#) for additional information.

2022 STTAR business applications open

The Students in Technology Transfer And Research (STTAR) program, an ND EPSCoR State Office-sponsored, state-funded program, offers ND-based businesses the opportunity to cost-share student internship salaries during the summer of 2022. The application window for 2022 is open through February 25th. Through the program, ND companies and organizations hire great students who use their academic training and expertise to help find solutions to technical challenges while sharing the salary costs with the ND EPSCoR State Office. ND EPSCoR State Office cost-sharing provides \$7.50 per hour toward the student’s summer salary.

The STTAR program provides an opportunity to gain valuable work experience. Funding is limited for 2022, and applications are accepted on a first-come, first-served basis. The qualifying criteria include:

- The business must be a ND company or have a ND-based office;

- The work/project must have a science, technology, engineering, or math (STEM) focus for the internship; and
- The internship must be a minimum of eight weeks and a maximum of 12 weeks.

The ND EPSCoR contribution for the internship is up to \$3,600 per individual student. For more information or to obtain a business partner application, please visit [the STTAR program webpage](#) or [email ND EPSCoR](#).

The STEM at Home video series continues

The ND EPSCoR State Office brings 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 essential critical thinking skills and potentially spark a lifetime interest in STEM.

Our entire collection of STEM project videos and shopping lists is available [here](#). Also, watch our newest video in our STEM at Home series, Candy Lab, linked below.



Get the complete shopping list for the Candy Lab 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.

ND EPSCoR State Office-sponsored STEMzone with North Dakota's Gateway to Science

EPSCoR partner **North Dakota's Gateway to Science** (NDGTS) continues to deliver hands-on STEM programming throughout North Dakota. Gateway to Science on the Go was recently in Jamestown with its STEMzone program at Lincoln Elementary School.

STEMzone is a carnival-style event with STEM stations that allow students to engage in hands-on learning experiences in science, technology, engineering and math. The STEMzone in Jamestown included stations where students could work on circuits, do brain teasers, look at objects through microscopes, build structures, create and test air-powered vehicles, and more.

"It is also really about career exploration to see what the skills they enjoy doing, and what jobs they can do," said Janet Rosario, Programs Director for North Dakota's Gateway to Science. "They learn 21st century skills, creativity, teamwork, collaboration and communication."

Rosario said STEM is in everything that people do, including the environment, health, and technology. She noted it is important for students to learn about STEM when they are young not only for their future careers but also to have the knowledge to make good decisions in the future. "It also gives them the confidence to do STEM," she said. "Not just kids, but some adults, are intimidated by science and math. But if they start out young they can gain that confidence to do those things, to do STEM. They can explore careers that they may not have thought that they can do."



A STEMzone participant investigates samples using a microscope.

The STEMzone program at Lincoln Elementary was made possible through the partnership between the ND EPSCoR State Office and NDGTS to deliver quality STEM programming throughout North Dakota.

The mission of North Dakota's Gateway to Science is to inspire the discovery of science through hands-on experiences. Gateway to Science fulfills its mission by operating an interactive exhibit gallery in Bismarck and by developing and delivering mobile educational outreach programs across the state through the Gateway to Science on the Go van.

A construction project on the Bismarck State College campus will greatly expand this valued resource to better serve the students and families in our state. Scheduled for completion in 2022, this new facility will feature interactive experiences that highlight STEM industries, careers, and skills in a gallery 5½ times the size of its current space.

The facility will also feature an education wing including a laboratory classroom, two additional classrooms, and outdoor learning areas. The expanded space means expanded programs offered by NDGTS - including camps, afterschool clubs, workshops, and public events - will reach more children and families. The new center will also serve as the headquarters for Gateway to Science on the Go.

Learn more by visiting our [Partnership with North Dakota's Gateway to Science page](#).

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](#).

News of note

Colleen Fitzgerald, Mark Hoffmann, and Mukund Sibi named Fellows of American Association for the Advancement of Science

Congratulations to ND EPSCoR State Steering Committee Member **Colleen Fitzgerald** (NDSU), ND-ACES Computation, Machine Learning, and Predictive Modeling Pillar Co-Lead **Mark Hoffmann** (UND), and INSPIRE-ND Center for Sustainable Materials Science Co-Lead **Mukund Sibi** (NDSU), on being named Fellows of the American Association for the Advancement of Science (AAAS). Fitzgerald was honored for her contributions to linguistics and language sciences. Hoffmann and Sibi were honored for their contributions to chemistry. Congratulations on this lifetime honor!

Congratulations to ND-ACES graduates

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

- **Haneesh Jasuja** (NDSU)
- **H. M. Nasrullah Faisal** (NDSU)

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

Events and trainings



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.

ND EPSCoR Annual Conference Virtual Poster Submission Information Sessions

Have questions or want more information about virtual posters? Attend one of our four ND EPSCoR Virtual Poster Submission Information Sessions. These informational sessions are optional, identical, offered via Zoom, and no registration is required to attend. Or view the asynchronous recording of this information on our [conference information page](#).

- Information Session #3 – Friday, February 18, 2022, 11:00 am – 11:45 am
<https://ndsuzoom.us/j/98247242280>
- Information Session #4 – Friday, February 25, 2022, 1:00 pm – 1:45 pm
<https://ndsuzoom.us/j/96378379914>

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.

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).

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

ND NASA EPSCoR SFO CAN

In response to the FY [2022 NASA Notice of Funding Opportunity \(NOFO\) EPSCoR Suborbital Flight Opportunity \(SFO\) Announcement Number: NNH22ZHA002C](#), 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.

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

Pre-proposals are due Noon, 2/22/2022.

EPSCoR Research Infrastructure Improvement Program: Bridging EPSCoR Communities (RII-BEC)

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. Jurisdictions are eligible to participate in the NSF EPSCoR Research Infrastructure Improvement (RII) Program based on their level of total NSF support over their most recent five years. Through this program, NSF facilitates the establishment of partnerships among academic institutions and organizations in governmental, non-profit, and commercial or industrial sectors 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 details, [see the program solicitation](#). Please be aware that some campuses may have internal guidelines related to this RFP.

Proposals are due April 4, 2022

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 programming identified within the newsletter and state match funding for ND-ACES

Acknowledgement

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.

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