

A sense of normalcy

This month marks one year since the first COVID-19 case was identified in North Dakota. The past 12 months brought forth new challenges, but we are moving into a sense of normalcy this spring. With vaccines available and COVID-19 infection rates dropping, a sense of optimism is in the air about slowly returning to normal. We look forward to summer, hopeful that an end to the pandemic is in sight.

This past year provided an opportunity to develop new ways to research, educate, and conduct outreach. The ND EPSCoR State Office and its participating institutions confronted these new challenges with dedication, motivation, and energy. The difficulty of the past year of the pandemic heightened our persistence as we solved new problems to move forward with the important work of North Dakota's INSPIRE-ND (Innovative and Strategic Program Initiatives for Research and Education-North Dakota) and ND-ACES (New Discoveries in the Advanced Interface of Computation, Engineering, and Science) NSF Track-1 cooperative agreements.

With the next phase on the horizon, we look forward to returning to some of our usual ways of teaching, researching, and conducting outreach. During the pandemic, faculty, staff, and students at ND EPSCoR-participating institutions made changes to ensure that their work continued to be impactful by applying new skills and expertise to develop creative and cooperative solutions to the problems they encountered.

We leveraged individual expertise to benefit the entire team, allowing each Track-1 cooperative agreement to progress despite the many COVID-19 disruptions that all of our participating institutions have endured over the past year. From this, we are frequently reminded of the advantages of a Team Science approach.

This past year exposed us to new ways of researching, teaching, and learning. These new insights

guide us to incorporate some of the innovative solutions we have uncovered as permanent components of our programming. This is especially true of those new modalities which have broadened our virtual reach and increased engagement beyond what was possible via in-person-only formats.

This semester is a time to celebrate the success of the past year. Next month, faculty and students will share their research at our annual state conference. Things will be slightly different this year; our typically in-person meeting will be a virtual experience because of the pandemic. This variation from our traditional format to an online space allows for an assortment of concurrent sessions and unique ways for attendees to engage with faculty and student researchers.

This conference is a celebration of research and outreach. The ND EPSCoR State Conference is a yearly event that brings together faculty, students, and the community to celebrate the STEM endeavors taking place within our participating institutions. This year's occasion will feature both student and faculty live sessions and asynchronous presentations.

Please join us for the virtual 2021 ND EPSCoR Annual Conference on Wednesday, April 14, 2021. Visit our [state conference information page](#) for details. We also invite you to engage with student and faculty poster authors in the weeks leading up to the conference via our virtual platform. Look for this communication from us by email later this month.

I encourage you to connect with us virtually and celebrate each of these successes at our annual conference event. I hope that you are, and will continue to be, well.

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



ND EPSCoR ND-ACES Science Café series begins



The ND EPSCoR ND-ACES Science Café series kicked-off last month with a virtual presentation moderated by **Zoltan Majdik** (NDSU) and featuring **Archana Dhasarathy** (UND) and **Sarah Sletten** (UND). Science Cafés are open to everyone and are an opportunity for scientists and the public to discuss current work and interesting scientific issues. The first Science Café highlighted the ND-ACES Center for Cellular Biointerfaces in Science and Engineering (CCBSE) Cellular Systems at Materials Interface Pillar and the Education and Workforce Development PROMoting Sustainable Partnerships in Science and Engineering (PROSPER) element. The presenters explained critical topics related to current issues in public health.

Dhasarathy, an associate professor in biomedical sciences, studies how DNA, RNA, and protein interact to change and regulate gene expression, which is the underlying cause of both normal and disease states. She is the UND Lead for the ND-ACES Cellular Systems at Materials Interface Pillar.

Sletten, also an associate professor in biomedical sciences, studies active learning, flipped classrooms, and problem-based learning, and has and runs programs for Girls in STEM and K-12 STEM Teacher Professional Development. She teaches undergraduate microbiology and immunology courses to biology, nursing, engineering, and pre-health majors. She serves as a Lead for the Education and Workforce Development PROSPER element of ND-ACES.

Typically, Science Cafés are presented in-person at a local establishment, such as a restaurant. Due to the COVID-19 pandemic, this first ND-ACES Science Café was presented in a virtual format. "I really love sharing my love and excitement for science with people. Having given Science Café talks in the past, it was different this time around to not have food and drink to entice people to come and listen. However, the engagement

was evident through audience responses and questions," said Sletten.

If you missed our first ND EPSCoR ND ACES Science Café, you can watch the recording on the [live sessions page of the Science Café Symposium website](#).

Meet the Student: new video series

Students across North Dakota participate in ND EPSCoR State Office events, programs, outreach, and research. The ND EPSCoR State Office encompasses programs that reach across the state, seeking to fulfill our mission of increasing North Dakota's competitiveness for merit-based grants supporting STEM research. In addition to research efforts, the ND EPSCoR State Office supports efforts to broaden the STEM pathway to increase the STEM workforce in the state.

The ND EPSCoR State Office thanks **Khwaja Hossain** (Mayville State) and **Julia Zhao** (UND), both ND EPSCoR RII Track-1 ND-ACES researchers, for allowing our cameras to capture the impact of their research and outreach on their students. You can learn more about the Materials Design at Biointerfaces Pillar, of which Zhao is the UND Lead and Hossain is a researcher, in our [August 2020 issue of News & Notes](#). You can also learn more about Hossain's work within the Center for Sustainable Materials Science (CSMS) RII Track-1 INSPIRE-ND cooperative agreement in our [September 2018 issue of News & Notes](#).

Hossain's biology lab at Mayville State has both student researchers and a research technician. An undergraduate research experience can make all the difference to a student and help them reach their academic and career goals.

Meet **Trevor Gravseth** (Mayville State), one of Hossain's students, in the video linked below.

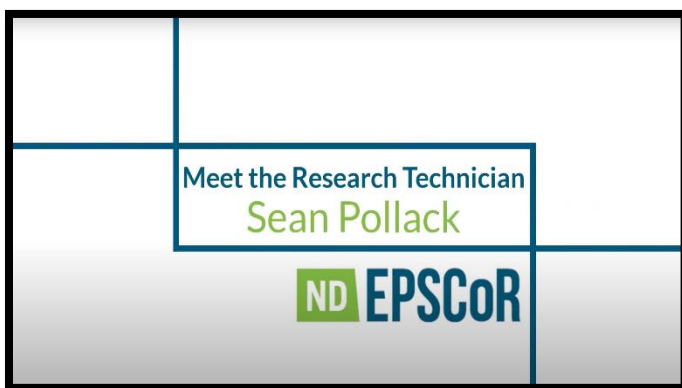


Gravseth, an undergraduate student majoring in biology and secondary education, is an INSPIRE-ND

CSMS student researcher in Hossain's lab at Mayville State University.

In the video linked below, **Sean Pollack** (Mayville State), a former biology student and current research technician, discusses the importance of research experiences for undergraduate students and reflects on the positive impacts of working closely with peers and faculty members in the lab.

Pollack is working in Dr. Hossain's lab on ND-ACES, providing technical support within the Materials Design at Biointerfaces Pillar. Pollack was also an undergraduate student working within the CSMS from September of 2017 until his graduation in May of 2020. He continues to work on the INSPIRE-ND cooperative agreement in his new role as a Research Technician.



In the video linked below, meet **Wen Sun** (UND), a graduate student in Julia Zhao's chemistry lab and an outreach participant for the ND EPSCoR State Office sponsored the Nurturing American Tribal Undergraduate Research and Education (NATURE) program. At the TCUs, the NATURE program is also funded by the National Science Foundation EPSCoR Track-1 ND-ACES Cooperative Agreement OIA #1946202.



You can find more information about how the ND EPSCoR State Office seeks to help improve STEM education and to build a pathway for students in North Dakota who are interested in pursuing careers in STEM disciplines on our [Education page](#). [Subscribe to our channel on YouTube](#) as we continue to feature the voices of ND-ACES and INSPIRE-ND students across North Dakota.

Budget revisions

By **Janelle Smith**, ND EPSCoR Business Manager (right)



It's hard to believe the spring semester is nearly half over! As our thoughts turn to spring, we are also planning the end of several awards. INSPIRE-ND is closing at the end of June. ND-ACES is also wrapping up the first award year in June and transitioning to Year 2 in July. The ND EPSCoR State Office STEM awards end in May, and the 2020-2021 fiscal year ends in June.

With all of these "endings," it is important to remember that approved project scope, budgets, and justifications continue to determine how funds can be spent. For example, grant funds cannot be used to restock supplies or purchase items for research that will take place after the award end date; thus supplies purchased with award funding must be used within the award period and in a manner that benefits the award. The desire to avoid leaving funds on the table is not a valid justification for making an expenditure that is outside of the award scope or benefits a period outside of the award.

With that said, ND EPSCoR understands the need to rebalance funds as an award draws to a close, allowing for reallocations to categories that will be of most benefit to the award objectives. As an example, the need for supplies typically drops off at the end of an award, but additional publication funding may be required to disseminate research results. Additionally, student funding may need to be adjusted as the last bits of research are conducted. During the next several months, as we complete the last few months of ND-ACES' first year and INSPIRE-ND's final award year, it is of critical importance that the remaining funds are used in a way that provides maximum benefit to achieving the award objectives.

Partnership with Gateway to Science brings STEM workshops to classrooms

ND EPSCoR State Office and Gateway to Science, are working together to bring hands-on STEM workshops to K-12 classrooms. By mid-March, 534 students in 25 classrooms will have participated in a hands-on STEM workshop in their classroom. The activities include forensics tests and engineering design challenges in these workshops:

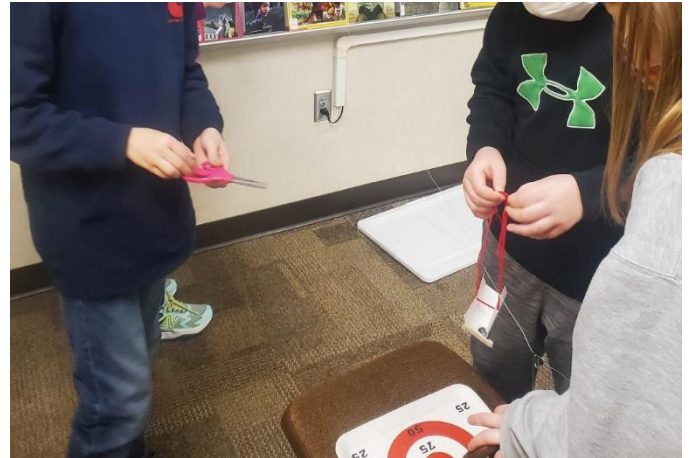
Forensics - Students worked as forensic investigators to analyze evidence left behind at a crime scene. They used forensic science and deductive reasoning techniques to evaluate fibers, smells, liquids, powders, fingerprints, and chromatography to determine the criminal's identity.



Bucket Towers - Students collaborated in groups to design a tower that was sturdy and strong. Each tower was put to the test - how many washers could be added before the tower collapsed? The students learned about 3D shapes, variables, and construction.



Marble Ziplines - Students worked together to build a container to carry a marble down a safe, yet fast, zipline. Students used their math and engineering design skills to safely deliver their marble passengers to the targeted landing zone.



“Most of our workshops have students doing the activities in small groups,” said **Janet Rosario**, Gateway to Science Programs Director. “This helps them learn how to collaborate with others and work as a team, which is something that is needed in school, in extracurricular activities, and later in life in a job.”

“We have workshop topics and activities for the youngest students all the way up to those in high school,” noted Rosario. “Some workshops deliver similar lessons and encourage the use of similar skills, but the tasks and expectations involved differ depending on the grade level of the students.”

An example of differing tasks and expectations is workshops that allow students to use the engineering design process: Design, Create, Test, Evaluate, and Redesign. Elementary students begin by designing and creating structures using toothpicks and gum drop candies that are then tested to withstand a simulated Earthquake. Upper elementary and middle school grades design and create structures using various materials (paper, straws, popsicle sticks, tape) that meet a specified height requirement or span a specific distance. The structure is then tested to hold a weight and withstand a simulated Earthquake. At the high school level, the structure design requirements become more specific, and the variable of cost is added. Supplies are assigned a price, and students must “purchase” their supplies to create a structure that meets all requirements at the lowest cost.

How did the K-12 teachers feel about hosting the workshops in their classrooms? Responses have been positive, with teachers noting they would recommend

the Gateway to Science classroom workshops to their peers. Comments include:

- The hands-on experience added value to my students' learning.
- We are currently working on engineering in class, and the activity was a great way to reinforce skills learned in class.
- Going over the engineering design process was helpful for my students to see the correlation between just building and actual engineering.

Learn more by visiting our [Gateway to Science partnership page](#).

Events and trainings

ND EPSCoR State Conference



Save the date for the ND EPSCoR Annual Conference on Wednesday, April 14, 2021. This conference will be a virtual event. **Pips Veazey, Ph.D.**, Project Director, Alaska EPSCoR, will give a keynote address on Team Science.

Also included in the conference will be synchronous presentations and panels. Topics include NSF RII Track-1 ND-ACES and INSPIRE-ND presentations, Team Science, STEM-based Indigenous Knowledge, and the ABCs of Patents and Commercialization.

Visit the [2021 ND EPSCoR Annual Conference web page](#) to [pre-register](#) for this event and view its full agenda. The conference website will be live for viewing of the asynchronous content later this month.

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.

ND Department of Public Instruction Weekly Email Blast

Each week ND DPI sends out an Email Blast with news, information, and other resources. If you would like to be added to the DPI Weekly Email Blast distribution list, you can contact Lisa Johnson, DPI Program Manager, at lisaajohnson@nd.gov

Activities of note

ND-ACES participants publish

Congratulations to the following **ND-ACES faculty and student participants** on their recent publication:

- Dissociation Mechanisms of G-actin Subunits Govern Deformation Response of Actin Filament
Jaswandkar, Sharad; Faisal, H M Nasrullah; Katti, Kalpana; and Katti, Dinesh. (January 2021, Biomacromolecules).

This publication's link can be found in the [National Science Foundation's \(NSF\) Public Access Repository \(PAR\)](#) or on [the ND EPSCoR website](#).

Former ND EPSCoR INSPIRE-ND student researcher wins excellence award

Zoriana Demchuk (NDSU), a former CSMS student researcher working with **Andriy Voronov** (NDSU), won the 2021 Industrial Oil Products Division Student Excellence Award. Demchuck graduated from NDSU with her PhD in Polymer Chemistry in December. The Industrial Oil Products Division Student Award recognizes graduate students presenting an outstanding paper within the Industrial Oil Products technical program at the AOCS Annual Meeting. Congratulations Zoriana!

Funding opportunities

Graduate Student Cyberinfrastructure Assistantship Program (UND only)

ND EPSCoR's ND-ACES Graduate Student CI Assistantship program is designed to (1) increase student understanding of advanced research computing in hardware and software as it applies to their discipline; (2) provide additional support to faculty in the Center for Cellular Biointerfaces in Science and Engineering (CCBSE); and (3) provide student/faculty CI training at all ND EPSCoR-participating institutions on potential CI uses/benefits.

Support will be available for one academic year (August 16, 2021 – May 15, 2022) for one-half (10 hours per week) of a full-time graduate student assistantship in the UND Computational Research Center (CRC). For these ND-ACES supported 10 hours per week, the student must work within the CRC, under the direction of the Center's staff. It is anticipated that one (1) Graduate Student CI Assistantship will be awarded at UND. The Dean of the UND Graduate School, the UND NSF RII Track-1 ND-ACES Co-PI, and the CRC Advanced CI Manager will serve as the review panel to evaluate the applications. For more information, see the [Request for Applications](#). Due to UND Office of Research and Sponsored Programs: 5:00 pm, April 8, 2021. Due to ND EPSCoR: Noon, April 15, 2021.

Graduate Student Cyberinfrastructure Assistantship Program (NDSU only)

ND EPSCoR's ND-ACES Graduate Student CI Assistantship program is designed to (1) increase student understanding of advanced research computing in hardware and software as it applies to their discipline; (2) provide additional support to faculty in the Center for Cellular Biointerfaces in Science and Engineering (CCBSE); and (3) provide student/faculty CI training at all ND EPSCoR-participating institutions on potential CI uses/benefits.

Support will be available for one academic year (August 16, 2021 – May 15, 2022) for one-half (10 hours per week) of a full-time graduate student assistantship in the NDSU Center for Computationally Assisted Science and Technology (CCAST). For these ND-ACES supported 10 hours per week, the student must work within the CCAST, under the direction of the Center's staff. It is anticipated that one (1) Graduate Student CI Assistantship will be awarded at NDSU. The CCAST Executive Director, the CCAST Research Facilitator, and the ND EPSCoR STEM Manager will serve as the review panel to evaluate the applications. For more information, see the [Request for Applications](#). Due to ND EPSCoR: 5:00 pm, April 8, 2021.

EXTENDED: Doctoral STEM Teaching Assistantship ND-ACES (NDSU/UND only)

ND EPSCoR ND-ACES Doctoral STEM Teaching Assistantship program is designed to increase NDSU/UND doctoral students' understanding of and experience in STEM teaching and research involving undergraduate students. These semester-long placements (Fall 2021 or Spring 2022) at a Tribal College/University (TCU), Primarily Undergraduate Institution (PUI), or Master's College/University (MCU)

in North Dakota involve teaching and research duties under the direction of faculty research participants in ND EPSCoR's National Science Foundation (NSF)-funded New Discoveries at the Advanced Interface of Computation, Engineering, and Science (ND-ACES) project in the areas of materials design, cellular systems, or computational approaches. [Click here](#) for more information about ND EPSCoR's ND-ACES project. [Click here](#) for a list of ND-ACES faculty researchers at the TCUs, PUIs, and MCU. For more information, see the [Request For Applications](#). This Call is open until filled.

Distributed Research Experience for Undergraduates (dREU)

This ND EPSCoR ND-ACES program gives undergraduate students – from the nine 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) – 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](#). Open until filled.

NSF Track-4 Research Fellows Solicitation NSF 21-557

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. EPSCoR jurisdictions that are eligible for RII competitions are listed in the RII Eligibility table, [which can be found here](#). This program provides support to further develop the individual research potential of Principal Investigators (PIs) through extended collaborative visits to the nation's premier private, governmental, or academic research centers of their choice. See [Program Solicitation](#) for details. Due April 26, 2021. Please check with your campus sponsored programs office, as institutional deadlines may be earlier.

NSF Track-4-FAST Solicitation NSF 21-557 (For PUI and TCU campuses only)

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. EPSCoR jurisdictions that are eligible for RII competitions are listed in the RII Eligibility table, [which can be found here](#). Under the [same solicitation](#), NSF is offering a second program that provides opportunities for PIs from specific institutions of higher education with high enrollments of trainees

from underrepresented populations in STEM (See Section "IV. Eligibility Information" for more details). The aim of this opportunity is to further develop their individual research potential through extended collaborative visits to National Aeronautics and Space Administration (NASA) research facilities located at NASA Centers throughout the United States. See [Program Solicitation](#) for details. Also, due April 26, 2021. Please check with your campus sponsored programs office, as institutional deadlines may be earlier.

NASA is sponsoring several informational webinars related to the joint NSF/NASA RII Track-4-FAST program. Please see the attached flyer with the dates, times, and registration links. Many of you may already have seen this invitation from your state directors. Please disseminate widely within your jurisdictions. NSF will also be hosting office hours and posting a recorded webinar to address any questions. See the [FAST outreach schedule](#) for details.

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](#)

Welcome new Administrative Coordinator

Please join the ND EPSCoR State Office in welcoming **Kayla Dewey** (right), Administrative Coordinator. Originally from Moorhead, Kayla previously worked in the Construction Management and Engineering Department at North Dakota State University as the Assistant to the Chair.



In her new role, Kayla will be supporting the ND EPSCoR State Office and assisting faculty, students, and staff at our participating institutions with their inquiries. If you are interested in connecting with Kayla, please reach out to her at kayla.dewey@ndus.edu or 701-231- 8400.

Participating campus acronyms

- 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

ND-ACES acronyms

- ND-ACES – New Discoveries in the Advanced Interface of Computation, Engineering, and Science
- CCBSE – Center for Cellular Biointerfaces in Science and Engineering
- PROSPER – PROmoting Sustainable Partnerships in Education and Research

Stay in touch

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- Prior newsletters, http://bit.ly/EPSCoR_Newsletters
- 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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