

Visioning the Future of NSF EPSCoR Committee

In May 2021, the National Science Foundation (NSF) issued a *Dear Colleague Letter* announcing “a year-long visioning activity to guide the future of NSF’s Established Program to Stimulate Competitive Research (EPSCoR), led by an external committee of national experts.” NSF recently announced the selection of **Kelly A. Rusch** Ph.D., PE, BCEE (Executive Director – ND EPSCoR and Professor – Department of Construction, Civil, and Environmental Engineering at North Dakota State University) to serve on the Committee. She will be one of 19 national experts, selected out of 70 nominations, to steer this visioning exercise that will involve stakeholders from across the United States and gather data to better understand the historic and current impacts of NSF EPSCoR programming.

The Committee’s work and its engagements with the broader EPSCoR stakeholder community will be organized around two major motivating questions: 1) What does the available evidence tell us about the effectiveness of NSF EPSCoR’s current investment strategies, both individually and collectively, in advancing scalable, jurisdiction-wide solutions and best practices to achieve the program’s goals? 2) Based on the answers to the above, are there novel strategies or changes to the current strategies that would enable NSF EPSCoR and its jurisdictional partners to achieve its mission more effectively?”

In making its Committee appointments, NSF EPSCoR drew broadly from the program’s community of investigators, jurisdictional offices, and institutional research leadership, as well as others with expertise in building academic research capacity, advancing STEM inclusivity, and improving STEM workforce development.

All those who were selected to serve as members are listed on the [NSF Committee on the Future of NSF EPSCoR announcement page](#).

As the Executive Director of [ND EPSCoR](#), Secretary of the [EPSCoR/Institutional Development Award \(IDeA\) Foundation Board of Directors](#), and a past chair of the NSF EPSCoR Project Directors Council Executive Committee, Kelly is well versed in the challenges facing EPSCoR jurisdictions and in the opportunities that are generated by federal investments in [EPSCoR, EPSCoR-like, and Institutional Development Award \(IDeA\)](#) programs.

As the Committee’s work progresses, there will be several opportunities for the public to provide input, culminating in a virtual community workshop to occur later in 2021. ND EPSCoR stakeholders can stay apprised of the committee’s activity by monitoring [The Future of NSF EPSCoR visioning activity website](#), which is stated to be updated frequently to provide a shared informational resources and planning and action items, including details about upcoming listening sessions and virtual community workshops.

The Committee will operate as a subcommittee to NSF’s Committee on Equal Opportunities in Science and Engineering (CEOSE). The Committee will identify new opportunities for increased success and impact and submit a report of findings to NSF CEOSE for review.

Please join me in congratulating Kelly.

Jean Ostrom-Blonigen, Ph.D., CPA
ND EPSCoR Project Administrator



Sitting Bull College starts new NSF-TCUP research center

The National Science Foundation (NSF) Tribal Colleges and Universities Program (TCUP) approved a \$3.5 million, five year proposal to start a research center at Sitting Bull College (SBC). The Native American Prairie Ecosystems Research Center (PERC) at SBC will engage faculty in advanced research.

PERC will offer SBC students robust research training and mentoring opportunities. Both undergraduate and graduate students working within the center will have the opportunity to conduct independent research or research covered under the research of a faculty mentor.

"A major challenge faculty face at TCUs [tribal colleges/universities] is the ability to create time for quality research that can withstand publishing critique. TCUs, by their very nature, are highly student-focused institutions where the vast majority of faculty teach about 12 to 15 credits per semester. That obviously does not leave them with much time to conduct research. ND-EPSCOR, in its TCU Needs Survey, identified this issue recently as something to address in their partnership efforts with TCUs," said **Mafany Ndiva Mongoh**, Ag/Science Instructor and Nurturing American Tribal Undergraduate Research and Education (NATURE) coordinator at SBC.

Because STEM needs can change from year to year, the ND EPSCoR State Office periodically asks each institution to update its list of STEM needs. The prioritization of STEM needs described by faculty and administrators can be found in the recently updated Partnerships to Build STEM Capacity in North Dakota document, available [here](#).

This funded proposal began during the planning of a new model at SBC. "Our STEM faculty are graduates from Research 1 institutions in the nation with training and skills representative of their respective alma maters, so research comes naturally to us. But including this in the workload was a daunting task. We set out to figure a model that will make this possible without creating an imbalance in the mission of SBC. This idea morphed into creating a center of research excellence at SBC that will fund research for faculty while covering the requirements for them to teach courses. NSF TCUP had recently developed a strand to foster such endeavors and we took advantage of this immense opportunity they offered," noted Ndiva Mongoh.

The Native American Prairie Ecosystems Research Center will offer students training and education in all components of the research process, from technical skill

to research writing skills. Students will also have a research mentoring plan that will help them enhance their research culture.

Each year, the ND EPSCoR State Office accepts competitive proposals to provide external peer reviews to large, interdisciplinary teams to help position them for even greater success in receiving federal awards. Sitting Bull College received one of these awards to enhance this proposal. "Through our partnership with the ND EPSCoR State Office, SBC was awarded a proposal planning grant that made it possible for the PI [principal investigator] to work with reviewers who had immense input in making the proposal topnotch. The ND EPSCoR State Office also identified and linked SBC with TIG [The Implementation Group] who worked with us on this proposal," explained Ndiva Mongoh.

Ndiva Mongoh noted the many strong partnerships that made this proposal a reality saying, "I acknowledge the contributions of my Co-PIs, Dr. Gary Halvorson and Dr. Francis Ndar Onduso, SBC VP of Operations Dr. Koreen Ressler, and all my colleagues and supervisors who had some input in making this award a reality. I also want to acknowledge the partnerships we have created across the state for the continued support of this research journey SBC is undertaking."

The Native American Prairie Ecosystems Research Center is a testament to the journey SBC has been on for the last 40 years. "It shows the steadfast progress the college has made from offering certificates, to AS degrees, to BS/BA degrees, to graduate degrees, and now recognizing that this level of academia should also include research. The center puts SBC at the forefront of TCU research in the STEM field. We are proud to have successfully started the first accredited STEM MS program at a TCU in the nation. This will be another milestone for SBC," said Ndiva Mongoh.

Hanson returns to TMCC

Scott Hanson (pictured right), the ND EPSCoR Tribal Colleges/Universities Liaison Manager, is the new Biology Instructor at Turtle Mountain Community College (TMCC). Before working at ND EPSCoR, he was a Science Instructor at TMCC for 19 years. In his new role, Hanson will be part of a team that will develop a



B.S. degree program in Biology. Following the development of the program, Hanson will teach biology courses at TMCC.

Hanson has worked at ND EPSCoR since May of 2015 and will be greatly missed. He looks forward to this new opportunity. "I want to develop a program that is based upon the Turtle Mountain culture and is responsive to the needs of the Turtle Mountain community," said Hanson. "I will miss the great people I worked with, visiting all the various campuses, and the in-person university summer camp."

Meet the ND-ACES Faculty and Student Researchers video series

ND EPSCoR thanks ND-ACES Center for Cellular Biointerfaces in Science and Engineering (CCBSE) and PROMoting Sustainable Partnerships in Education and Research (PROSPER) faculty and students for allowing our cameras to capture their research and outreach efforts. Visit our [YouTube channel](#) to watch more of our participants talk with ND EPSCoR about teaching, research, and STEM outreach.

In the videos (linked below), meet one of the CCBSE Leads, UND Chester Fritz Distinguished Professor **Colin K. Combs**. Combs co-leads the CCBSE with NDSU University Distinguished Professor **Kalpana S. Katti**. In the first video, Combs discusses the importance of the ND-ACES research and outreach efforts.



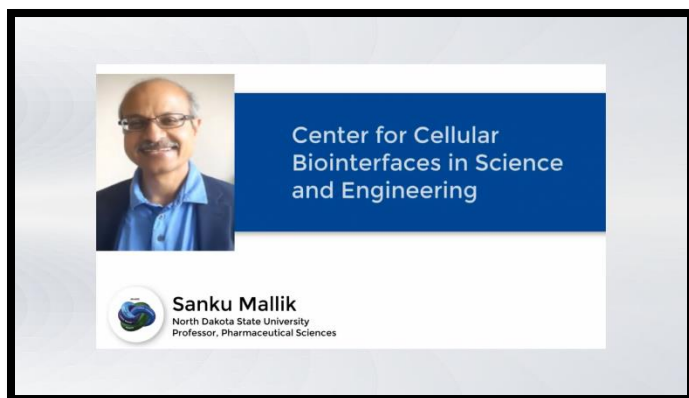
In the second video, Combs provides a brief overview of the ND-ACES NSF EPSCoR Track-1 Cooperative Agreement. Learn more on the [ND-ACES webpage](#) and the [CCBSE webpage](#). The Center for Cellular Biointerfaces in Science and Engineering is supported by the NSF ND-ACES cooperative agreement.



ND EPSCoR is grateful to ND-ACES CCBSE researchers, like Combs, for allowing our cameras to tour their interesting STEM spaces this summer. In the first 360° video (linked in the picture below), take a virtual tour of Combs' lab at UND. The video provides the 360° experience of being in a university lab environment. The 360° video tours allow the viewer to look around the research lab in any direction, creating an immersive virtual experience. Combs' lab is located in the School of Medicine at UND, where Combs is a department chair and professor in the Department of Biomedical Sciences.



Meet **Sanku Mallik**, a professor in the Pharmaceutical Sciences Department at NDSU and the NDSU Lead of the ND-ACES Materials Design at Biointerfaces Pillar. You can read more about how researcher within the Materials Design Pillar are increasing knowledge of biomaterial scaffolds in our [August 2020 issue of News & Notes](#). Watch Mallik's Meet the Reseracher video linked on the next page. In it, Mallik discusses ND-ACES research and outreach activities happening within his pillar of inquiry.



In the 360° video (linked in the picture above), take a virtual tour of Mallik's pharmaceutical sciences lab at NDSU with ND-ACES student researcher, **Jacob Schreffler** (NDSU). Schreffler provides the 360° experience of being in Mallik's lab. The 360° video tours allow the viewer to look around the research lab in any direction, creating a unique experience for the viewer.

In our next two videos, meet the ND-ACES PROSPER Education and Workforce Development (EWD) Leads. The EWD team supports faculty professional development, student training, and K-12 student bioscience, engineering, and computational exposure.



As one of the leads of the EWD element of PROSPER, **Sarah Sletten** is developing the Research Training Groups, you can read more about the [RTGs on page 6 of this issue](#). Sletten is an associate professor in the Biomedical Sciences Department at UND. In her video, Sletten discusses the activities of PROSPER EWD.



Rachel Navarro leads the EWD element of PROSPER in conjunction with Sletten. Navarro is a professor of Counseling Psychology and the Associate Dean for Research and Faculty Development in the College of Education & Human Development at UND. You can learn more about Navarro's research and outreach activities in the above linked video.

The EWD element of PROSPER also includes faculty, staff, and students from the high performance computing centers at NDSU and UND. Additionally, these centers provide support for the ND-ACES Computation, Machine Learning, and Predictive Modeling Pillar.

Aaron Bergstrom is the Advanced Cyberinfrastructure Manager at the Artificial Intelligence/Virtual Reality (AI/VR) Lab at UND and **Khang Hoang** is the Research Computing Facilitator at the Center for Computationally Assisted Science and Technology (CCAST) at NDSU.

Meet Bergstrom in the video linked on the next page. In the video, Bergstrom demonstrates the motion capture system, available in the activity space within the UND AI/VR lab.



You can also tour the AI/VR Lab at UND via 360° video linked below. You can virtually visit CCAST in the [June issue of News & Notes](#).



Meet **Zakaria El Mrabet** (UND) and **Jingyan Fu** (NDSU) in their videos linked below. El Mrabet and Fu are the 2020 ND EPSCoR ND-ACES Graduate Student Cyberinfrastructure (CI) Assistantship awardees. Fu is a graduate student at NDSU in the Electrical and Computer Engineering Department where her advisor is Danling Wang. As a CI Assistantship awardee, Fu provides consulting support for researchers working using CCAST resources. You can learn more about Fu in her video linked below.



El Mrabet is a graduate student at UND in the department of Electrical Engineering and Computer Science where his advisor is Prakash Ranganathan. As an ND-ACES CI Assistantship Awardee, El Mrabet has been assisting with the integration of the AI 400 platform into the HPC (High Performance Computing) Center and helping users migrate toward this new platform. You can learn more about El Mrabet in his video linked above. As a part of the CI Assistantship, El Mrabet and Fu created cyberinfrastructure outreach materials for the public. View their three educational outreach videos linked below and learn more about [NDSU's Center for Computationally Assisted Science and Technology \(CCAST\)](#) and [UND's Computational Research Center \(CRC\)](#).





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 Dickinson State University 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](#).

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 [STEM Education page](#). [Subscribe to our channel on YouTube](#) as we continue to feature ND-ACES student and faculty researchers at participating institutions across North Dakota.

Research Training Groups (RTGs) merge mentoring and micro credentialing

By **Andrea Doyon & Georgia Paul**, ND-ACES EWD student researchers (both UND)

What do you get when you combine the support of a student mentorship program with the excitement of earning badges? Research Training Groups, or RTGs as they are referred to in ND-ACES! RTGs are directed at helping retain ND-ACES students and promote their success as future STEM researchers. Students across all CCBSE research labs are included in the RTGs and mentor-mentee pairs are made based on area of research and student status; senior graduate students mentor junior graduate students, who, in-turn mentor undergraduates all within similar research areas. Throughout the year, students are also invited to

engage in a variety of activities, including a weekly journal club and various social events.



Example of a digital badge that will be issued to a student after presenting at a regional meeting.

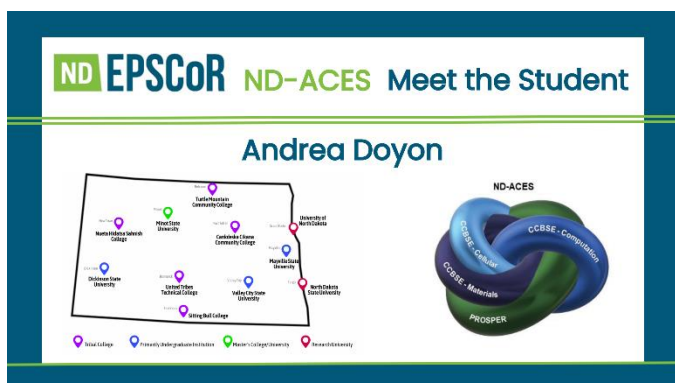
To encourage and exhibit professional growth, digital badges will be awarded to students as they meet research milestones and share their work. A digital badge is an online verification of a specific skill, accomplishment, or competency (see the example, pictured left). Through these badges, mentors—both faculty and student— can verify the

skills and competencies that students are developing. Students will be able to display these badges to future employers or other institutions of higher education as a means of demonstrating their knowledge and skills. Badges can also be shared on social media sites like LinkedIn and Twitter. Each badge a student earns will fall into one of three categories—Publications, Presentations, or Participation—and will include information about when the badge was issued, what it took to get that badge, and links to sources that may be relevant to the badge.

Our hope is that students might realize they share common interests with other beginning researchers. RTGs provides an opportunity for professional development and collaboration across STEM fields. This exciting mentorship model will aide students in career planning and learning the importance of fostering relationships as developing scientists while earning badges to demonstrate progress along the way. We are thrilled to see how RTGs will propel student research and create more opportunities for future collaboration!

Learn more about Paul and Doyon in the videos below. Paul and Doyon are student researchers working with PROSPER's EWD Lead, **Sarah Sletten**.





"I believe this experience has brought to light my strengths and weaknesses. This experience has also shown me how computer science is applied to other fields of research, which is great because that is exactly what I was looking for," said Wells.

When asked what benefits they feel students get from participating in the dREU, Le said, "It is a great experience. Students can acquire skills that are not traditionally taught in a classroom. The dREU students can learn how to work in groups, share resources, and develop their own action plans." Hossain added that students are "learning research methodology" and information on "preparing and delivering talks on research."

Both the dREU students from this summer have set high goals for themselves after graduation. "My goal after graduation is to find a career possibly in research or continuing my education with graduate school," said Knudsvig. Wells said, "My goal is to further my education in either cybersecurity or computer science in the future. I also want to bring my future skills back to my hometown in the Fort Berthold Reservation area so that it may benefit my people, either through working or teaching."

For information on the current dREU call that has been posted with deadline dates for the next academic year, view the [Request for Applications](#). Contact Shireen Alemadi, dREU Coordinator with any questions at shireen.alemadi@ndus.edu.

Learn more about Knudsvig and her experience in the dREU program by watching her Meet the Student video linked below. You can also learn more about Wells and his two-week research experience at NDSU with Le in the [July edition of News & Notes](#).



You can find more student profiles on the [ND EPSCoR YouTube channel](#) as we continue to highlight the stories of the people behind ND-ACES each month.

Summer dREU recap

By **Shireen Alemadi**, ND EPSCoR STEM Manager and dREU Coordinator (right)



This summer the second cohort of ND-ACES distributed Research Experience for Undergraduates (dREU) students took part in professional development and research. This cohort was made up of two students; one from Mayville State University and one from Nueta Hidatsa Sahnish College (NHSC). These students worked with ND-ACES researchers conducting the research projects listed below:

- **Madisen Knudsvig** advised by **Khwaja Hossain** and **Michael Kjelland** (all Mayville State University): Polymeric Scaffolding with Quinoa Leaf Arabinoxylan
- **Ethan Wells** (NHSC) advised by **Trung B. Le** (NDSU) and **Kerry Hartman** (NHSC): Scientific Visualizations for Biological Fluid Flows

As part of the dREU experience students met weekly with the dREU Coordinator and a variety of visiting presenters to gain knowledge on topics such as scientific communication, writing a resume, and creating an engaging presentation.

Get to know the 2021 STTAR participants

The ND EPSCoR State Office is wrapping up 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 final month features **ComDel Innovation** (Wahpeton), **Marvin** (Fargo), and **Mayo Construction** (Cavalier).



Q. Tell us about your company.

A. ComDel Innovation is a contract manufacturing company that began operations in December 2007 on a 30-acre manufacturing campus in Wahpeton, ND. ComDel Innovation has a team of 330 employees and 264,000 square feet of manufacturing, process development, and materials characterization space in two state-of-the-art buildings. The company provides integrated services relating to the full life cycle of the product. We offer design, fabrication of tools and manufacturing equipment, molding and assembly, product testing, labeling and packaging, distribution, and customer service support services.

The ComDel Innovation brand of the company services various medical, commercial, and aerospace customers under ISO standards 13485 and AS9100. The Heartland Precision brand provides threading, forming, and zinc plating manufacturing services for agricultural and commercial customers under NADCAP and AS9001 standards.

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

A. Being able to cost-share through STTAR is hugely impactful for us. The other benefit of STTAR is the fresh eyes to look at the operation and find better ways to conduct business based on their college studies, technology, experiences, and research.

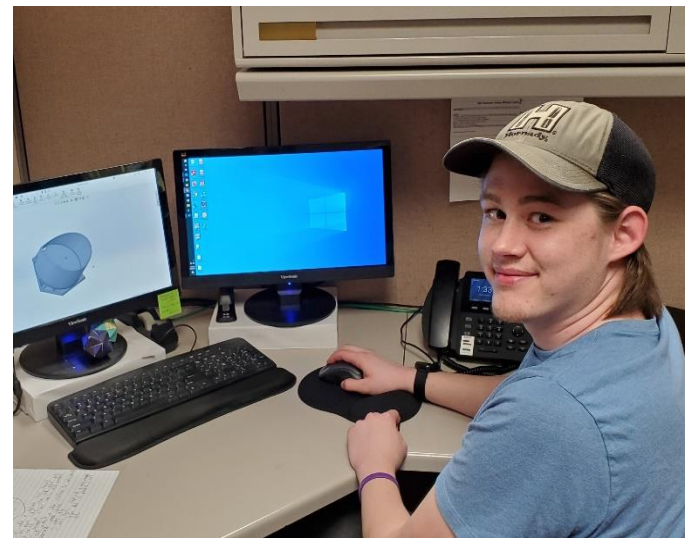
Students can gain experience in the systems that define, analyze, and apply solutions to projects that have real applications, not just case studies. They get to directly interact with customers, mentors, technology

and often work on products that are still in their early stages of development. These experiences can be beneficial when students return to school to help decide their future elective courses, decide on research opportunities or help focus on their desired field of work after graduation.

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

A. Students are working on a variety of projects and getting an introduction to a suite of software packages to help with planning, design, data analysis, documentation, and record-keeping. Due to ComDel wide range of products, students are exposed to a variety of processes, customers, regulatory requirements, and qualifications.

Jakob Sailer (NDSU): For documentation purposes, Jakob is creating procedures for product qualification. The process includes the integration of a robot into the production steps for operations and troubleshooting during the molding process.



Jakob Sailer (NDSU) is a Mechanical Engineering major working at ComDel Innovation this summer.

In design, he is creating a test fixture to verify the transparency of a molded part. Jakob used a similar program, Creo, for his college coursework and is applying his knowledge using an application called SolidWorks. Once designed, Jakob will be 3D printing the fixture for mock-up, troubleshooting, and testing before sending the final fixture design out to be fabricated.

For data analysis, Jakob is using a statistical software package. After gathering his data points via product inspection, the gathered data is run through a variety of models to evaluate the effectiveness and reliability of a measurement process, called a Gage R

and R. This study is used to evaluate the device's ability to detect variations produced by the manufacturing process.

Alexander Muchow (NDSU): Alex is working on creating documentation for the assembly of a medical device. These activities include mistake-proofing various assembly processes and tooling, taking photos, and writing the steps in a clear, easy-to-follow, and effective manner. He is also reviewing existing procedures and processes to verify that they are still up to date with current manufacturing practices. He will work with the 3D modeling software to document customer modifications to existing designs and, mock-up various test fixtures and jigs.



Alexander Muchow, a Mechanical Engineering major at NDSU, is a current STTAR intern at ComDel Innovation.

He is also performing analysis on process data to determine the machine settings that should be used to optimize performance and quality for the part and assisting with the setup and qualification of a second machine for additional capacity to meet future customer needs.

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

A. The STTAR program has been utilized at ComDel for several years. ComDel has hired past STTAR interns for full-time employees. Most recently, Brook Anderson, a 2020 intern, joined our growing staff after her May graduation from UND in Chemical Engineering.



Q. Tell us about your company.

A. Marvin is a family-owned and -operated window and door manufacturer headquartered in Warroad, MN where the company was founded in 1912. Our primary manufacturing facility is still located in Warroad with additional locations throughout the United States. We build windows and doors designed for how people live and work by imagining new ways to develop healthier and happier spaces.



As a STTAR intern at Marvin, Jackson Somsen works on developing new projects.

Marvin has one manufacturing facility in Fargo and two in West Fargo as well as a Research and Development (R&D) team split between Warroad and Fargo. Our R&D team develops and supports Marvin window and door products across all locations.

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

A. The Marvin R&D internship program is structured in a way that encourages interns to work alongside our engineers and designers on various projects. Through this immersive program structure, interns learn what is expected of engineers and what it takes to be successful in the engineering profession. Marvin interns produce tangible output and measurable results which benefits our company in addition to providing them with a rewarding and educational experience. Our internship program has helped develop many full-time engineers

who have eventually joined Marvin full-time after graduation.



STTAR intern Zach Kuhn designs, develops, and tests new products at Marvin.

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

A. Marvin interns are part of project teams working on developing new and exciting projects for our window collections. They are involved in the designing, developing, and testing of new products while managing project timelines. Marvin has two STTAR interns this summer, **Jackson Somsen** and **Zach Kuhn** (both NDSU).

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

A. Marvin has had the privilege of partnering with the ND EPSCoR State Office STTAR program on and off over the years to provide immersive internship experiences to students. One of the primary reasons Marvin continues to work with STTAR is for capacity support. By increasing our capacity for interns, we provide them with a great hands-on learning experience and benefit from the additional team members for testing products in development.



Q. Tell us about your company.

A. Mayo Construction Company is an employee-owned and operated contractor that specializes in asphalt paving and restoration.

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

A. For our company, it is great to introduce students to our industry to spark their interest and hopefully develop long-term work relationships/networks. For the student it is a great way to get their feet wet in the asphalt paving industry and get great hands-on experience in their industry of choice.

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

A. STTAR intern **Michael Miller** (NDSU) will be working alongside our mechanics and serviceman fixing equipment.

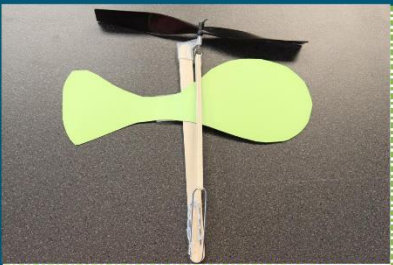
Q. Have you partnered with the ND EPSCoR State Office STTAR program before (if no, how did you hear about it)? What are the benefits of this partnership?

A. No, this is the first time. We are excited to learn more and see the value-add of this program.

ND EPSCoR brings STEM to families at home this summer

Throughout 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. Our full collection of STEM project videos and shopping lists is available [here](#).


Click on the videos linked below to watch our engineering edition mini-series, featuring: Let's Make a Helicopter, Let's Make a Zip Line, Let's Make a Car, and Let's Make a Boat. These videos feature **Austin Allard**, Pre-Engineering Instructor and ND EPSCoR NATURE Coordinator at Turtle Mountain Community College. Allard is also a researcher in the ND-ACES CCBSE Materials Design Pillar.



Engineering Edition
Featuring
Dr. Austin Allard
Let's make a helicopter

ND EPSCoR STEM Activities Series

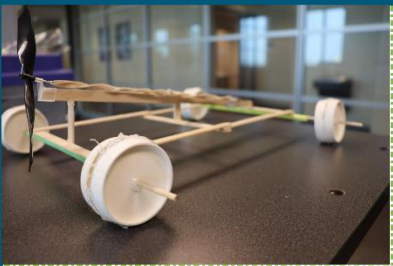
Get the full shopping list for this activity [here](#).



Engineering Edition
Featuring
Dr. Austin Allard
Let's make a zip line

ND EPSCoR STEM Activities Series


Get the full shopping list for this activity [here](#).



Engineering Edition
Featuring
Dr. Austin Allard
Let's make a car

ND EPSCoR STEM Activities Series

Get the full shopping list for this activity [here](#).



Engineering Edition
Featuring
Dr. Austin Allard
Let's make a boat

ND EPSCoR STEM Activities Series

Get the full shopping list for this activity [here](#).

Click on the photos below to watch the previous four videos in the series. [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.

	Fluffy Slime		Lava Lamp
	Strawberry DNA Extraction		Milk & Food Coloring

ND EPSCoR STEM Activities Series

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 contact [Shireen Alemadi](#), ND EPSCoR STEM Manager, or call 701-231-8264.

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-19 pandemic has brought some new challenges into focus. [Learn more about the North Dakota CIRCLES effort here](#). Visit the [CIRCLES Alliance website](#) to learn more.

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.

Activities of note

ND EPSCoR State Office Equipment Grant awardee repairs Oxycon Mobile Portable Indirect Calorimetry System

Kyle Hackney (NDSU), recipient of an ND EPSCoR State Office equipment award, repaired an Oxycon Mobile Portable Indirect Calorimetry System. According to Hackney, the measurement of oxygen utilization via indirect calorimetry during rest, physical activity, and exercise is a fundamental research tool in the field of exercise science.



Exercise Science and Nutrition PhD student Adam Bradley demonstrates how the Oxycon Mobile Portable Indirect Calorimetry System is used while performing resistance exercise.

The Oxycon Portable Metabolic System allows Hackney to explore energy expenditure (kilocalorie utilization) of various movements in the field setting or lab setting. For example, a person can wear the

portable unit when standing and again while performing resistance exercise. Additional testing can be performed in children, adults, elderly, and athletes in a variety of settings.

“Having this piece of equipment is important, especially given COVID-19, as high intensity exercise was a risk of transmission given high ventilation in closed spaces. Now, we can move testing outside and students and faculty can explore energy expenditure and fuel utilization in a safer manner. This is a powerful tool in the field of exercise physiology in order to understand energy balance, especially given obesity and chronic diseases associated with obesity are accelerating given inactivity and food over consumption,” said Hackney.

The department can now proceed with several planned projects. This piece of equipment is also used in classes such as exercise physiology lab to demonstrate how the body uses oxygen during various activities or sports. “North Dakota EPSCoR is a fantastic funding source to not only repair equipment but jump start novel pilot projects and get students in North Dakota involved with highly impactful research that can increase their curiosity and push them further into science,” he added.

Congratulations to ND-ACES and INSPIRE-ND Summer 2021 graduates

Congratulations to the following ND-ACES and INSPIRE-ND student participants on their recent graduation:

Graduate Students

- **Sameera Algarni** (UND)
- **Audrey LaVallie** (UND)
- **Dayakar Naik** (NDSU)
- **Hizb Ullah Sajid** (NDSU)
- **Rahul Shahni** (UND)

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

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

Track-1 ND-ACES: 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

Track-1 ND-ACES: 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, September 16, 2021
- Full Year 2021 – 2022 Application Deadline: Noon, September 16, 2021
- Spring and Spring/Summer 2022 Application Deadline: Noon, December 1, 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

Track-1 ND-ACES: Rural Student Teaching Experience (RSTE) Program

The ND EPSCoR National Science Foundation (NSF)-funded RII Track-1 cooperative agreement New Discoveries in the Advanced Interface of Computation, Engineering, and Science (ND-ACES) Rural Student Teaching Experience (RSTE) program provides unique learning experiences for up to two teacher candidates. The goal of the RSTE program is to provide an exceptional learning experience for teacher candidates in a rural school and community while they complete the requirements of their undergraduate programs. Please see the [Request for Applications](#) for details. Application Deadline: Noon, September 17, 2021

ND EPSCoR State Office: STEM Research, Education, and Outreach

The ND EPSCoR State Office's mission is to support efforts of participating institutions of higher education across the state that result in increased STEM faculty capacity and competitiveness, a stronger STEM pathway that produces our next generation workforce, educators, and researchers, and, an informed citizenry that values the STEM ecosystem and economy.

Thus, the ND EPSCoR State Office is now accepting proposals to fund STEM activities at EPSCoR participating institutions: research universities (RUs, NDSU and UND), master's college/university (MCU, Minot State University), primarily undergraduate institutions (PUIs, Dickinson, Mayville, and Valley City State Universities), and the tribal colleges/universities (TCUs, Cankdeska Cikana Community College, Nueta Hidatsa Sahnish College, Sitting Bull College, Turtle

Mountain Community College, and United Tribes Technical College). Please see the [Request for Proposals](#) for details. Proposal Deadline: All Proposals Due to ND EPSCoR: Noon, September 21, 2021

NSF: Dear Colleague Letter: Towards as Equitable National Cyberinfrastructure

The National Science Foundation (NSF), through its Campus Cyberinfrastructure (CC*) program (NSF 21-528), invests in coordinated campus-level networking and cyberinfrastructure improvements, innovation, integration, and engineering for science and engineering applications and distributed research projects. The purpose of this Dear Colleague Letter (DCL) is to encourage proposal submissions to CC* for projects that will help overcome disparities in cyber-connectivity associated with geographic location, and thereby enable the populations based in these locales to become more nationally competitive in science, technology, engineering, and mathematics (STEM) research and education. This effort represents a partnership between NSF's Office of Advanced Cyberinfrastructure (OAC) and the Established Program to Stimulate Competitive Research (EPSCoR) within the Office of Integrative Activities (OIA). For more information, please see the full [Dear Colleague Letter](#).

This DCL does not constitute a new competition nor a new program. Rather, interested proposers should prepare and submit proposals in accordance with the instructions in the Campus Cyberinfrastructure (CC*) program solicitation (NSF 21-528) and the NSF Proposal and Award Policies and Procedures Guide (PAPPG).

Proposals responding to this DCL should be submitted to the October 11, 2021, deadline for CC* to be considered for funding.

DoD: 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 October 20, 2021 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 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

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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