

December 21, 2022

From the Interim Executive Director

With all the "busyness" (hubbub / hullabaloo / chaos / craziness) that comes with the end of the year, I would like to take a moment to reflect on the last few months and what the future holds.

Over the last three months, it has been my pleasure to work with an amazing group of caring and dedicated professionals.

My heartfelt thanks go out to:

- ND EPSCoR's Kathy Wahlberg and Lance Beachem, who have good naturedly answered the hundreds of questions I have posed over the last few months;
- Becky Hellman-Tangen, Jonathan Brunner, and Kim Beauchamp, who graciously accepted temporary assignments to help cover staff shortages; and
- All the faculty and staff participating in ND EPSCoR for their understanding and patience with the inevitable hiccups as the office has been transitioning to new leadership.



After the New Year, we will be busy preparing the annual progress update for the National Science Foundation (the federal sponsor for the ND-ACES award) and our Annual Conference on March 29 (watch for additional information about the Annual Conference soon).

As winter settles over the region, I hope everyone stays safe and warm. I wish you all happy holidays and all the best as we head into an exciting new year!

Jolynne

Building Research Capacity at PUIs



One of the many goals for ND-ACES is to build research capacity in North Dakota. One researcher on the team—Khwaja Hossain, professor of Biology and chair of the Division of Science, Math & Agribusiness at Mayville State University—has spent his career building capacity in multiple ways. He has increased the research capabilities of his university, helped students explore and discover lifelong career opportunities, and expanded the usefulness of agricultural products that are produced in the state.

Much of Hossain's research the past few decades has focused on finding uses for wheat bran—the part of the wheat that is often discarded when the wheat is milled for flour or other food uses. "My goal," he said, "is to develop uses for agricultural byproducts in ways that help humans and benefit our environment." Over the years, he has researched wheat bran as an industrial resource to reduce carbon emissions, as an ingredient in thermoplastics, and most recently as a polymer component in materials that can be used in cancer research.

Because of his research focus, MSU has added new research equipment to their

labs, so students can learn on equipment very similar to what they might use when pursuing advanced degrees at other research institutions. “We weren’t able to do cell cultures before at MSU, but with the new equipment,” he noted, “it has expanded our research capabilities.”

Students benefit from Hossain’s commitment to building connections. “I collaborate with NDSU and UND on many projects,” he said. This year, he has one graduate student from UND and two from NDSU. Two are working on research, while the third is helping as a teaching assistant with an undergraduate Biology class. “The students develop many life skills: working as a team, supervising other students, training in lab techniques and equipment, and building research skills.” In addition, Hossain is an enthusiastic advocate for helping students connect with other collaborators through conferences and presentations. One student is even showcasing her research at a cancer biology conference in Hawaii.

As a member of the ND-ACES management team, Hossain has an active role in the statewide research efforts for developing new types of materials or scaffolds for cancer research. Both breast and prostate cancers often metastasize to bone, where cancer cells can grow and proliferate. The research currently underway is searching for materials that mimic internal tissue to the cancer cells. Using a polymer that incorporates wheat bran in the material, Hossain’s research studies how the cancer cells interact with the tissue-like material. “We have found a couple different scaffolds that appear to be working to culture and grow cells,” he noted. “Now we’re sending those materials out to UND and NDSU for further testing.” Once materials have been identified that will mimic the human body’s responses to the various cancers, it will allow researchers more options for treatment.

From expanding research capabilities in a primarily undergraduate institution, to enhancing research and career opportunities for students, to exploring better uses for agricultural byproducts, Hossain has been a significant contributor to building capacity in North Dakota.

University Technology and Innovation Alliance Brings Together Regional Institutions

The Mountains and Plains University Innovation Alliance is a result of a partnership led by North Dakota University System (NDUS) Chancellor Mark Hagerott and Montana Commissioner of Higher Education Clayton Christian. The Alliance will consist of 11 colleges and universities from a five-state region (North Dakota, South Dakota, Montana, Wyoming, and Idaho) and will leverage existing research, education, and training programs.

“This is a paradigm shift for research and especially innovations related to digital technology,” said Hagerott. “It will help diversify the region and economy by achieving scale in a way that the individual states might not achieve acting alone.”

[Read more>>](#)

Creativity in Career Path

Courage combined with creativity, institutional support, and an appreciation for small town life, provided a unique opportunity for Adrianna Sokolofsky, a Mandan native and 2022 Dickinson State University (DSU) Mathematics Education graduate.

As a Rural Student Teaching Experience (RSTE) recipient, sponsored by ND EPSCoR, Sokolofsky agreed to accept a 12-week internship, teaching Algebra 1 at Watford City High School. “North Dakota schools have a huge need for STEM teachers,” said Ryan Summers, Associate Professor of Science Education and Secondary Education

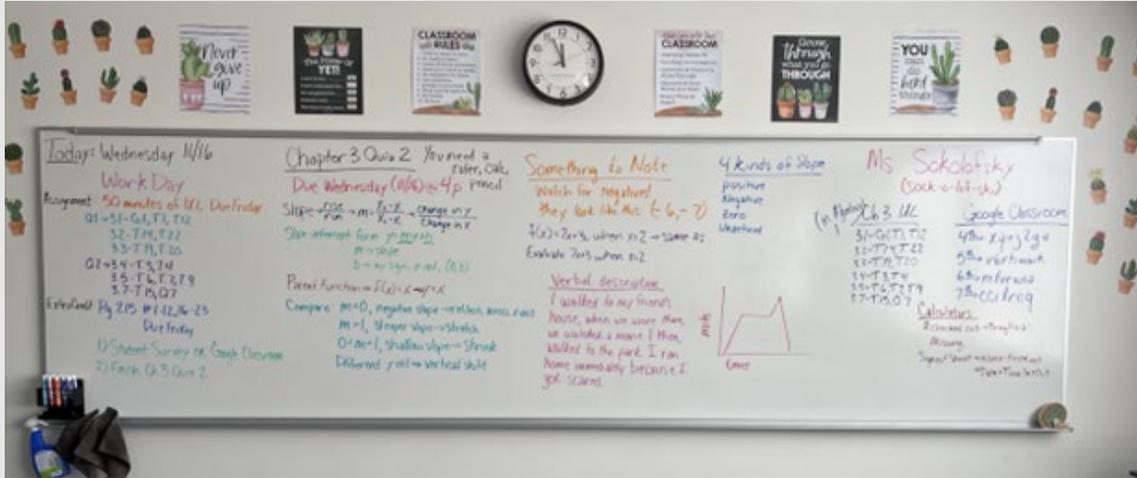
Program Coordinator at UND. “One of the benefits of the RSTE program is to help students gain the experience of teaching in a smaller school setting. In addition, they can reduce their school debt since they receive a stipend of up to \$10,000.”

When she applied to the RSTE, Sokolofsky said she wanted to help students become fluent in the foundations of algebraic thinking to help set them up for success in future math courses. She had the opportunity to develop those concepts in a unique student teaching experience. Although most student teachers work alongside an experienced teacher in the same classroom, Sokolofsky’s experience was arranged somewhat differently: her cooperating teacher was across the hall. Both Watford City and DSU agreed to support Sokolofsky in the unique role of teaching in her own classroom.

Summers coordinated weekly mentoring sessions with Sokolofsky, and recalled many conversations that focused on making the transition from student to teacher, and developing proficient classroom management skills. “It’s always a challenge for new teachers,” Summers said, “so the mentoring sessions gave her a chance to vent, and to explore some ways to handle new situations.”



Eager to help her students, Sokolofsky created opportunities for students to practice mathematical skills. For example, when studying the concepts around slope, she developed a scavenger hunt to help the students learn. “It was so entertaining watching them work through the scavenger hunt,” she said. “They were so engaged. I think it helped get them closer to mastering slope.”



With an eye to helping her students succeed in future careers, Sokolofsky put a lot of energy into classroom assessments this fall. She talked about assessment issues with other department teachers and in the weekly RSTE mentoring sessions. “It’s essential to give students feedback about their learning progress,” she noted. It’s also an important component for helping students tackle higher math classes or prepare for standardized tests, such as the ACT tests, which may be used for college entrance, she noted.

But Sokolofsky’s experience at Watford City has extended far beyond a 12-week internship. Watford City was looking to fill a math teaching position, and when Sokolofsky expressed an interest in staying on after her student teaching internship, they hired her as a full-time substitute for the remainder of the fall semester. Beginning January 2023, Sokolofsky will be employed on contract with the McKenzie County School District #1.

“It took a lot of coordination and effort by the Watford City School District, DSU, and Sokolofsky to get everything arranged for this unique opportunity to happen,” said

Summers. “But I think that it illustrates that school districts across North Dakota will find creative ways to fill their teaching positions. We were very pleased that the RSTE could play a role in helping both the school district and Sokolofsky find a mutually beneficial solution.”

Next month: more from Watford Public Schools and DSU on their collaborative efforts.

ND-ACES Fall 2022 Graduates

Congratulations to our ND-ACES fall 2022 graduates!

Graduate students

- Amirhadi Alesadi (NDSU, Computational Pillar)
- Sujata Birua (NDSU, Cellular Pillar)
- Davina Kasperski (NDSU, Computational Pillar)

Undergraduate students

- Lauren Prowse (UND, dREU student for Materials researcher)
- Adrianna Sokolofsky (Dickinson State, Rural Student Teaching Experience)

Thank you for your contributions to the ND-ACES RII Track-1 cooperative agreement.

Applications Now Open for STARR Program

North Dakota businesses may now apply to be part of the Students in Technology Transfer And Research (STTAR) program.



STARR provides opportunities for students (juniors through graduates) in science, technology, engineering, and mathematics disciplines to use their academic training and experience to address challenging science and technology-based problems faced by North Dakota companies.

The primary emphasis of STTAR is on research and development and ND EPSCoR cost-shares the student salary.

To participate, companies must demonstrate how students will make significant contributions to company performance or new product/process development using their STEM education and experience. Companies must provide at least a 1:1 cost-share, which would be a minimum salary of \$15/hour to the student.

To apply, first review the [Business Participation](#) information about eligibility, timelines, and other guidance and then complete the [Business Application Form](#) indicating how students will make a contribution to company performance, products, or processes.

With a limited number of sponsorships available, early application is encouraged.

Since 2012, the ND EPSCoR State Office has partnered with 42 ND-based companies to sponsor internships for 213 postsecondary students.

Complete information is available on the [STARR](#) page.

STEM at Home

Finding engaging STEM projects for elementary students that families can facilitate

is not always easy. ND EPSCoR is collecting and sharing simple and fun projects for young students to help teach important critical thinking skills and potentially spark a lifetime interest in STEM.

Over the month of January we will be featuring our new series STEM Activities at home with ND EPSCoR.

This program will introduce new STEM projects every month for children to do at home and focuses on engaging children in hands on learning about concepts like measuring, engineering, mathematics, and more.



All activities come with an activity shopping list document and a step by step project video. The projects can be found both on our [website](#) and [Youtube channel](#).

We're Hiring!

ND EPSCoR Director of Tribal Partnerships

The NDSU Office of Research and Creative Activity is hiring a Director of Tribal Partnerships to lead ND EPSCoR's strategic engagement opportunities, special projects, and other initiatives with the state's tribal nations and Tribal Colleges and Universities as part of statewide efforts to foster competitive research in North Dakota.

The Tribal Partnerships Director will serve as the primary contact for tribal research and STEM education partnerships in support of statewide efforts to build competitive research and STEM education capacity.

[READ MORE >>](#)

Job closes December 22, 2022

ND EPSCoR Project Administrator Update

The search committee is finishing their work and will present candidates for interview. Watch for more information soon.

Upcoming Events

- **ND EPSCoR 2023 State Conference**
Wednesday, March 29, 2023, at FargoDome, Fargo ND

New \$20 million program promotes capacity building to broaden participation in regional innovation ecosystems

The U.S. National Science Foundation announced Enabling Partnerships to Increase Innovation Capacity, or EPIIC, a new \$20 million program encouraging minority-serving institutions, two-year institutions, primarily undergraduate institutions, and other emerging research institutions to participate in regional innovation ecosystems. The program will provide training and networking support to help build more inclusive ecosystems.



EPIIC will provide up to \$400,000 over three years to develop the capacity and institutional knowledge needed to build new partnerships and secure future external funding, enabling awardees to tap into their regional innovation

ecosystems and potentially into an [NSF Regional Innovation Engine](#), or NSF Engine for short.

"NSF strives to inspire broad networks of partners to work together to train the next generation of skilled American workers," said NSF Director Sethuraman Panchanathan. "This program will build capacity for innovation partnerships across the country and create opportunities for more inclusive participation in entrepreneurship, startups and other commercialization activities that are vital to the U.S. research and innovation enterprise."

The NSF Engines program seeks to grow inclusive innovation ecosystems nationwide. The program recognizes that many institutions, including minority-serving institutions, small academic institutions, and two-year institutions, stand to benefit from additional focused support for the infrastructure and resources needed to grow external partnerships and tap into innovation ecosystems, including engaging with NSF Engines.

Through EPIIC, institutions will participate in interactive virtual and in-person events to form cohorts and collaboratively develop impactful approaches to improve the institutions' capacity to engage in cross-sector partnerships. Participating institutions will develop strategies to advance efforts in workforce development, use-inspired research and development, and the translation of research results to practice in emerging technology areas such as advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, quantum information science, and semiconductors and microelectronics.

To learn more, read the EPIIC [funding opportunity](#) or join an [introductory webinar](#) on January 13, 2022, at 3:00 p.m. E.T.

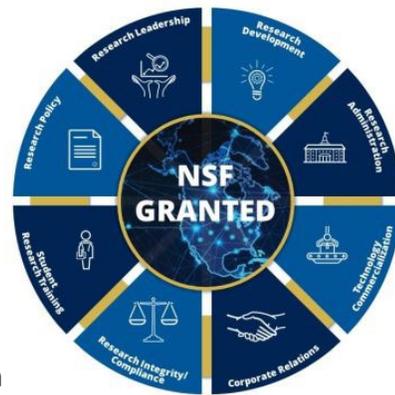
Introducing NSF GRANTED

For Fiscal Year 2023, the U.S. National Science Foundation is developing a new initiative: Growing Research Access for Nationally Transformative Equity and Diversity.

GRANTED focuses on addressing systemic barriers within the nation’s research enterprise by improving research support and service capacity at emerging, developing and underserved research institutions.

GRANTED is a whole-of-NSF approach that will transform NSF and the science and engineering community to develop the collective knowledge, skills, talents and desire to serve within the nation’s science and engineering enterprise.

Principal investigators from emerging and developing research institutions — including R2, R3, minority-serving and primarily undergraduate institutions and community colleges — often lack the support to help develop meritorious ideas, contact federal program staff, keep updated on federal funding priorities, and assist in the pragmatics of grant submission and award management. This puts talented PIs at these institutions at a disadvantage and prevents the nation from benefiting from numerous impactful scientific advances and the advancement of STEM talent.



There are many individuals across the nation with specialized skills and knowledge to build grant-writing capacity at emerging research institutions. They are usually not principal investigators on grants. Instead, they are often staff — almost exclusively employed at the nation’s R1 institutions — with the know-how to help investigators develop competitive ideas and ensure that progress is made on funded projects. Empowering these individuals to play a role in building research capacity at emerging and developing research institutions will bridge gaps and broaden participation within existing networks of research service professionals across the nation.

[LEARN MORE>>](#)

DOE EPSCoR: Implementation Grants – Limited Submission Program

On December 14, the Department of Energy (DOE) announced a new solicitation for the **Established Program to Stimulate Competitive Research (EPSCoR) Implementation Grants program** [[DE-FOA-0002913](#)]. Grants awarded under this program are intended to improve research capability through the support of a group of scientists and engineers, including graduate students and post-doctoral fellows, working on a common scientific theme in one or more than one EPSCoR jurisdiction. These awards are not appropriate mechanisms to provide support for individual faculty science and technology research projects.

The applications are sought for research in key science and technology areas related to DOE missions, which can be found on Page 3 of the solicitation. Typical award size is expected to be \$2-3 million for a two year period.

IMPORTANT: Limited submission grant programs are those that indicate a limit on the number of proposals that may be submitted by an institution for a particular deadline and applicant institutions are limited to no more than one pre-application.

Have questions, ideas, or suggestions for News and Notes?

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Acknowledgement

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