

*Providing leadership and coordination to broaden and diversify North Dakota's science, technology, engineering, and mathematics (STEM) workforce pathway and growing statewide STEM research and competitiveness at participating institutions of higher education.*

January 2024

## Equipment at Minot State University supports workforce development for North Dakota



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Put another way, it takes 1,000 thous to make one inch.

It's a big deal, perhaps a game-changer, in this case, for Earth scientists like Dr. John Webster, a Geosciences researcher and professor at Minot State University.

Webster received almost \$33,000 from ND EPSCoR's STEM Research and Education program in 2022 to purchase a new precision thin-section machine that cuts stones thin enough for him and his students to discern mineral and chemical composition. ND

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The Buehler PetroThin, as it's called, is a thin section machine with a PetroBond thin section fixture that ensures parallelism of cutting and grinding procedures.

The technology that creates thin sections isn't new, but it's essential to the work Webster performs as both a researcher and a lecturer. Thin-section study using a petrographic microscope is the standard technique for detailed study of rocks and minerals. It helps researchers describe rocks in great detail, including their mineral composition to better understand how they formed.

"It allows us to characterize rocks in new ways and interpret how rocks were formed," Webster said. "It really is a fundamental, really important approach to studying geological materials. Even if we have good hand lenses (magnifiers), it's difficult to identify minerals and see the textures. With thin slices like this, it really is how we characterize rocks and understand what they're made of in terms of minerals."

[Read more](#)

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# Congratulations!!

## 3 Minute Thesis

The Three Minute Thesis (3MT) is an academic competition that challenges graduate students to effectively communicate their research to a non-specialist audience in just three minutes. Originating from the University of Queensland, Australia, in 2008, the competition has since gained popularity worldwide and is now held in universities and institutions across numerous countries.

In the 3MT competition, participants must condense their complex research projects into a concise, engaging, and understandable presentation that captivates the audience's attention. The challenge lies in effectively conveying the significance of their research, its methods, and its potential impact within the strict time limit.

3MT competitions are held each year at the University of North Dakota and North Dakota State University. This year, [UND's competition](#) was held on January 31 with 22 graduate students participating and [NDSU's competition](#) was held on February 15 with 38 graduate students participating.

The winners of the UND 3MT competition were:

- 1st place: Temitayo Ikuerowo, PhD Student, Energy Engineering, for "The Future of EVs is LESS COBALT!"
- 2nd place: Kaden Bollinger, Master's Student, Forensic Psychology, for "Effects of Feedback on Eyewitness Accuracy."
- 3rd place: Sarah Daman, Master's Student, Biology, for "Predicting Disease Spread in Deer."

The champion of the NDSU 3MT competition was:

- Marcel Roy Domalanta, a doctoral student in coatings and polymeric materials at NDSU

NDSU also awarded four Center for Entrepreneurship and Family Business Innovation Commendations to:

- Mahek Sadiq, a doctoral student in biomedical engineering,
- Preetham Ravi, a doctoral student in materials and nanotechnology,
- Kyle Boutin, a doctoral student in environmental and conservation sciences, and
- Amirreza Daghighi, a doctoral student in biomedical engineering.

Sadiq and Ravi are both supported, in part, by the NSF EPSCoR RII Track-1: ND-ACES project (OIA #1946202).

Congratulations to all the students that participated and their advisors!



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## ND STEM Highlights

[Robots, students and \(fake\) Blake Shelton take over UND Memorial Union](#): Middle, high school students take part in VEX Robotics Competition, hosted by College of Engineering & Mines.

[Not Hollywood but reality, and with neutrinos](#): David DeMuth, a physicist at Valley City State University and an adjunct professor at UND, is a long-collaborating member of DUNE and invited UND Professors of Physics and Astrophysics Tim Young and Wayne Barkhouse to participate. They will assist in computational research by using UND's and VCSU's computers for data analysis.

[Dickinson State Elevates Science Education with Innovative Programs and Community Outreach](#): Dickinson State science programs are off to a hot start this spring semester, reaffirming a commitment to providing students and the community with cutting-edge, hands-on education in science, technology, engineering, and mathematics (STEM).

[Researchers at NDSU find that resetting approach to youth sports could have positive lifelong impact](#): Research from NDSU published in Routledge Sport Studies shows that when it comes to youth sports, promoting overall physical, mental and social wellness plays a pivotal role.

[Celebrating 50 Years of Exploring the Universe](#): As the VCSU Planetarium celebrates the facility's 50th anniversary, faculty, staff and students reflect on how the unique space has changed their perspective and equipped them to explore and understand the world.

[American Indian Higher Education Consortium \(AIHEC\) released the Sweetgrass Student Research Video Series](#): Videos from students and their mentors from United Tribes Technical College and

Cankdeska Cikana Community College can be viewed from the links below or the entire [Sweetgrass Research Video Series](#) may be viewed on YouTube.

- United Tribes Technical College
  - [Modifying Iron Concentration in Wheatgrass](#)  
S'Nya Sanchez and Dr. Ram Hona
  - [Bats of the Great Plains](#)  
Antoinette Chalmers, Kaitlyn Mills, and Dr. Mandy Guinn
- Cankdeska Cikana Community College
  - [Pollinator Microbiomes in Indian Country](#)  
Derik Bull and Dr. Brent Voels
  - [Mosquito Prevalence and Climate Change](#)  
Starla Littlewind and Dr. Brent Voels

## Meet the Researcher



**Marcus Fries**  
**Associate Professor of Mathematics**  
**Dickinson State University**

### **Member of the NSF EPSCoR Track-1: New Discoveries in the Advanced Interface of Computation, Engineering, and Science (ND-ACES)**

#### **What are your primary research and scholarly interests?**

My mathematical interests are algebraic geometry and representation theory, especially in the area of G-Algebras. My ND-ACES work focuses on selecting and applying machine learning algorithms to cancer.

#### **How does this tie into the work you are doing with ND-ACES?**

My mathematical research is heavily based in Linear algebra which is a major component of current machine learning algorithms. This is what draws me to work in machine learning and led to my work in ND-ACES.

#### **Where are you from, and where did you pursue your education?**

I grew up in Mott, ND and then went to NDSU to earn a BS in Mathematics. From there I went to Northeastern University in Boston and obtained a Ph.D. in Mathematics.

#### **What excites you about ND-ACES?**

I really enjoy that I get to see work in other areas: Cellular, Materials, Computation. We have data from the cellular team that we are going to use in our machine learning training to hopefully aid in cancer predictions.

**What motivates you?**

I'm always immensely curious (yes something of a canned answer). I enjoy playing and exploring. That is one thing I think schools get wrong, especially in their math programs. Sometimes it's not just about the answer but about the process.

**If you could time travel, where would you go?**

I would love to see the status of A.I. in 100 years. Also, where will we be in relation to space exploration.

**If you could have coffee / tea with anyone, who would it be?**

Many people would guess Einstein or Hawking but I would love to have coffee with Jacques Pepin. I'm an avid home cook and love his shows and books.

**What was your first job?**

My first actual job was as a waiter at a small nightclub outside of Mott, ND. I first got into teaching as an undergraduate at NDSU. My first academic appointment was at a small liberal arts college outside of Boston.

**What does your very best day include?**

Coffee, a nice walk, good lunch, reading, maybe a museum and dinner with good wine.

**What's your favorite quote?**

I like the John Von Neumann quote "Young man, in mathematics you don't understand things. You just get used to them." I think about this one a lot with research and it applies very well to machine learning. When you train a machine you don't get to see all of what is going on, but you do get used to it.

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## STEM Workshops, Webinars, and Events

**Quantum-Enabled Technologies - ERVA Visioning Event**

- March 19 - 20, 2024 @ University of Arizona (Tucson)  
[More information](#)

**NSF Directorate for Computer Information Science and Engineering (CISE) Webinar**

- CISE is hosting a webinar on their [Research Expansion Program](#), which targets CISE research in Minority-Serving Institutions
- March 14, at 2pm (ET)
- Register for the webinar and view more on the [event website](#).

**NCURA 25th Research Administration Conferences**

- Financial Research Administration Conference (FRA): March 18 - 19, 2024
- Pre-Award Research Administration Conference (PRA): March 21 - 22, 2024
- [Learn more](#)

**Broader Impacts Workshop**

- Presentations by [ARIS \(Center for Advancing Research Impact in Society\)](#)
- April 17, 2024 @ Minot State University's Conference Center
- [More information](#)
- [Register](#)
- Sponsored by NSF EPSCoR Track-1: ND-ACES

**ND Science Olympiad**

- ND State Tournament at NDSU - April 20, 2024

- For more information, visit the [ND Science Olympiad webpage](#)
- Regional Events
  - Bismarck State College - Thursday, March 28, 2024
  - Dickinson State University - Thursday, March 14, 2024
  - Minot State University - Monday, March 4, 2024
  - Dakota College at Bottineau - Thursday, April 4, 2024
  - Valley City State University - Thursday, March 28, 2024

### **Creating Capacity and Connections across the Northern Plains**

- June 6-7, 2024 | June 6: Full day | June 7: Half day
- Hosted at Black Hills State University at Rapid City, 4300 Cheyenne Blvd, Box Elder, SD
- A regional capacity-building conference to enable geographically isolated research support professionals to exchange proven practices, share resources and opportunities, and chart a course for future collaboration.
- [More information and registration](#)

### **28th NSF EPSCoR National Conference**

- October 13 - 16, 2024
- [Learn more](#)

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## **Science and Technology: Public Perceptions, Awareness, and Information Sources**

From the National Science Foundation and the National Science Board:

Most Americans continue to think science benefits society, but rarely engage in scientific activities with professional scientists. People's familiarity with the process of science also corresponds to how they think about scientific institutions.

These and similar trends are in the [Science and Technology: Public Perceptions, Awareness, and Information Sources](#) report that the National Science Board published. The report is part of the 2024 congressionally mandated [Science and Engineering Indicators](#) analysis of the state of the U.S. science and engineering enterprise, prepared by the U.S. National Science Foundation's National Center for Science and Engineering Statistics under the National Science Board's guidance.

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## **2024 SBIR/STTR Road Tour: Great Lakes**

### **July 15 | East Lansing, Michigan**

Hosted by BBC Entrepreneurial Training & Consulting's Michigan Catalyst Advantage Network

### **July 16 | Indianapolis, Indiana**

Hosted by Indiana Economic Development Corporation

### **July 17 | Champaign-Urbana, Illinois**

Hosted by Research Park at the University of Illinois

### **July 18 | Madison, Wisconsin**

Hosted by the Center for Technology Commercialization



## Funding Opportunities\*

### Department of Health and Human Services

- [Cancer Tissue Engineering Collaborative: Enabling Biomimetic Tissue-Engineered Technologies for Cancer Research](#)
- Basic Research in Cancer Health Disparities ([R21](#), [R01](#))
- [Innovative Research in Cancer Nanotechnology](#)
- [Field Initiated Projects Program: Minority-Serving Institution \(MSI\) - Development](#)

### Department of Defense

- [Defense Sciences Office \(DSO\) Office-wide BAA \(DARPA\)](#)

### Department of Energy

- [Data Reduction for Science](#)
- [FY 2024 Research and Development for Next Generation Nuclear Physics Accelerator Facilities](#)
- [Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-003298. Clean Energy Technology Deployment on Tribal Lands - 2024](#)

### National Science Foundation

- [Enabling Partnerships to Increase Innovation Capacity](#)
- [Ideas Lab: Personalized Engineering Learning](#)
- [Algorithms for Threat Detection](#)
- [NSF 24-541: ACED: Accelerating Computing-Enabled Scientific Discovery](#)
- [NSF 24-539: Division of Molecular and Cellular Biosciences Core Programs](#)
- [NSF 24-548: Tribal Colleges and Universities Program Hub \(TCUP Hub\) and Topical Interest Groups \(TIGs\)](#)
- [NSF 24-540: Established Program to Stimulate Competitive Research \(EPSCoR\): Workshop Opportunities](#)

### United States Department of Agriculture

- [Agricultural Genome to Phenome Initiative](#)

*\*These funding opportunities may contain Limited Submission solicitations. Please follow your institutions guidelines and processes for Limited Submission solicitations.*

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## ND EPSCoR wants to hear your news

Given the opportunity to communicate with both the public and internally within our own program, the ND EPSCoR team invites you to provide content that can be used in stories, social media, press releases, and ND EPSCoR News and Notes.

Send us your news, events, accomplishments and most importantly, your BRIGHT SPOTS!

[Submit a Story Idea](#)

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



[Contact Us](#)

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