



Established Program to  
Stimulate Competitive Research

## *News & Notes*

November 30, 2022

### From the Interim Executive Director

Hello everyone,

I can't believe that two months have passed since I started with ND EPSCoR. It has been an incredibly busy time, diving into the administration of a large, federal grant that involves ten institutions of higher education across the state.

I hope you enjoy the updated format of the ND EPSCoR newsletter which has been designed to be mobile friendly.

In addition to the new format, we will be including articles highlighting different aspects of the ND-ACES projects and partners to give you an idea of how ND-ACES impacts faculty and students across the state. This month Dr. van Gijssel 's work using research to empower undergraduate students is being highlighted. Keep watching for more articles that feature the research, outreach, and accomplishments of the faculty, staff, and students associated with ND EPSCoR.

As part of the relaunch of the newsletter, we 'd appreciate your opinion on the new format and article types. If you would like to provide feedback, please fill out this [quick survey](#).

Thank you for everything you do to make ND EPSCoR a success!

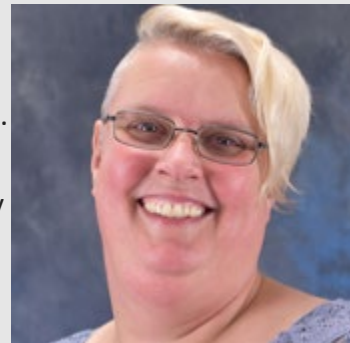


**Jolynne Tschetter, Ph.D.**  
Interim Executive Director

## Nothing is Impossible

**ND-ACES Profile: Hilde van Gijssel**

Research is the obvious focus for the ND-ACES project, but one professor is also well-known for her emphasis on developing students in the process of advancing research. Hilde van Gijssel, professor of science and also the ND-ACES principal investigator for Valley City State University (VCSU) is constantly in search of creative ways to empower students to be their best.



"I had a student in my office last spring, and he was ready to quit," van Gijssel recalled. "We broke down the issues he was facing and talked it through. He worked hard to finish the year. This September, he got a letter and literally ran across campus to my office to tell me he'd gotten accepted to vet school. He *ran*! That's when you know you did something right."

Van Gijssel sets up teams of students to work on projects, a process she started a few years ago with great success. Students start with basic lab tasks, learning techniques and safety procedures, as well as the "soft skills" of time management, collaboration, the need for precision and learning to understand the "why" behind the procedure. As they learn these skills, it builds confidence and a greater appreciation for classroom theory, she explained.

Van Gijssel's and her students' research focuses on helping develop predictive models with breast and prostate cancers as part of the Center for Cellular Biointerfaces in Science and Engineering (CCBSE). "Many times, these two cancers will metastasize to the bone, where treatment is much more difficult," she said. "Our research tests cell reactions on polymer-based scaffolding (specialized

materials) that mimic bone. We want to create a model that mimics cell-bone interactions outside of the body so we can find new treatments for the cancer.”

Through the lab research, students learn about cell types and how they react. For example, epithelial cells are normal cells that are connected to surrounding cells. To become cancer cells and move to another area of the body or metastasize, van Gijssel explained, the cancer cells lose the epithelial characteristics and become more mesenchymal-like and lose the ability to stick. The VCSU team is studying this process of transition from epithelial to mesenchymal cells, focusing on a family of proteins called cadherins to test different scaffoldings that can be used as growing surfaces for the cancer cells. Students also test compounds to see if an increase in E-cadherin expression can increase the adherence of cells to each other and possibly change metastasized cells back to more epithelial-like cells, she said. Changing the cells could potentially make them more amenable to treatment and inhibit the ability of the cells to move to other areas of the body.

“The research we’re doing is an important part of the ND-ACES effort,” van Gijssel said, “but to me, it’s all about the students. If they have an interest, they can join the team. We have had freshmen to seniors involved in research. When a student comes to me with an idea, my usual reaction is “let’s figure this out so you can do it.” The results of the research are interesting to van Gijssel, but it’s the students’ growth in confidence and self-discovery that energizes her daily work. “I dream big,” she said. “I start from the viewpoint that nothing is impossible until proven otherwise.” The results from her students indicate they enthusiastically agree.

## **NDSU named lead institution for \$14 million NSF I-Corps Hub**

NDSU has been awarded a \$14 million grant over five years from the National Science Foundation (NSF) to establish a multi-institutional Great Plains Innovation Corps (I-Corps) Hub.



The I-Corps program brings together multiple institutions of higher education within a distinct geographical region to collaborate and deliver a standardized curriculum that teaches a process to explore the commercialization of technologies and ideas. Each Hub facilitates interactions with stakeholders in the entrepreneurial and innovation ecosystem, creating a regional network of trusted partners working together to create and enhance the capacity for innovation.

The Great Plains Hub will serve the states of North Dakota, South Dakota, Wyoming, and Nebraska. This is an all-EPSCoR state Hub and will create opportunities for ND EPSCoR constituencies and beyond.

The program's two-month training is experiential and immersive and helps prepare scientists to extend their focus beyond the university laboratory and accelerate the economic and societal benefits of NSF-funded research projects.

[READ MORE >>](#)

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## **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.

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**Job closes December 22, 2022**

## STEM at Home

Have you ever wondered how a lava lamp works or how to make your own snow?

ND EPSCoR's STEM at Home videos are easy projects that can be done with elementary school aged children [demonstrating science and engineering principles](#).

If you are in the Bismarck area, [Gateway to Science](#) has partnered with ND EPSCoR to provide kits for two STEM at home videos each month through December, 2022.

## National EPSCoR Conference

The National EPSCoR Conference in Portland, ME was held earlier this month. It was an opportunity to interact with and learn with people in other EPSCoR jurisdictions, NSF, and other federal funding agencies. Nine individuals from North Dakota attended the event.

Three graduate students presented their research:

- Nick Bittner (UND, under Aaron Bergstrom): "Creation of a Hyperplane Device for Horizontal Cellular Migration Assays"

- Shrinwanti Ghosh (NDSU, under Jiha Kim) : “3D In Vitro Model of Patient-derived Breast Tumor”
- Nelofar Nargis (UND, under Colin Combs) : “Drug Toxicity Studies of a 2D vs 3D Culture Model of a TNBC Cell Line”

In addition, Khwaja Hossain, professor of biology at Mayville State University was a speaker with six others in a panel session entitled “Building Research Capacity at PUIs.” The panel showcased how faculty at smaller colleges (Historically Black Colleges and Universities, Tribal Colleges and Universities, Minority Serving Institutions, and Community Colleges) have been able to conduct independent research or incorporate research into their classes despite the challenges of teaching and mentoring expectations and constrained financial support.

The conference also included a report out on the visioning for “The Future of EPSCoR,” delivered by Kelly A. Rusch, professor of civil, construction and environmental engineering at NDSU and previous ND EPSCoR executive director.

### Upcoming Events

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

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

Contact Us



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*Acknowledgement*

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