



Established Program to  
Stimulate Competitive Research

(FOR IMMEDIATE RELEASE)

HEADLINE: COURAGE AND CONFIDENCE

OR... OPENING DOORS TO A WORLD OF POSSIBILITY

(FARGO, ND) It's been a long journey for the new Ph.D. grad student in Soil Microbial Ecology at Texas Tech. Billi Jean Petermann, from Dickinson, ND, recently accepted an assistantship to work on soil and microbial interaction, with a special emphasis on cotton.

Where did it start? Petermann credits several influences in her career, starting with her parents, who taught her the value of hard work, and that helping and caring for others needed to come first. "I was the fortunate one," she recalled. "I got to take the gifted classes, but often needed to help my younger brother (who had dyslexia) with his homework. In high school, I should, and could, have gotten better grades, but I was bored. I didn't think I needed to do all the homework—I knew the answers!"

Her love of animals and the soil was nurtured by living on the family ranch in eastern Montana during her high school years. "We had wonderful neighbors in Miles City who helped me start my own herd of registered Longhorns—they were my honorary grandparents," she said. "With 4-H and FFA, I was very busy, raising and showing longhorns all over Montana." The rule for the family was always that the animals came first, she recalled, getting up at 4:30 a.m. to feed and water before having breakfast and getting ready for school. The pattern repeated after school, with chores first, feeding the animals and then getting supper.

At graduation, she was eagerly awaiting her acceptance from her first-choice University of Nebraska, and she was elated until reading the part about how much money it was going to cost. "My parents were good at providing what we needed, but there wasn't a lot left over after taking care of the ranch. We didn't know about grants or student loans," she remembered, "so that dream didn't happen."

After high school, Petermann needed a job. “I sold my herd, except for my first heifer, and went to a one-year nursing program to get my LPN license,” she said. When she got out of school, she worked in Texas, Montana and North Dakota as a nurse for 15 years. After three kids, she had the opportunity to go back to school at Dawson Community College in Glendive, MT, and quickly ended up as a science tutor for all the sciences, and also worked for Tom Reeves in the chemistry lab. Wanting to help teach other nurses, she then looked for a nearby college to finish her bachelor’s degree, and started at Dickinson State University.

“My second semester at DSU, Dr. Erik Brevik (professor of Geology and Soils) offered me a chance to do some research, to earn some extra money,” she said. “I quickly fell in love with what I was doing—



there was always something new to learn.” That opportunity not only prevented boredom, but changed Petermann’s major and “opened the doors to a world I didn’t know was possible,” she enthused.

“Research is my passion,” she said. “As soon as you answer one question, there are 10 others. Any time a professor would say, ‘there’s not a lot of information about this’ I would write it down in my notebook. I have more research ideas than I’ll ever be able to study.”

(Petermann in the DSU lab)

### **Mentors**

“I don’t think he realizes the impact he makes,” Petermann began. “Dr. Erik Brevik is up on a pedestal for me, and the same goes for Dr. Josh Steffan. Without them, I don’t think I’d have pursued the graduate studies.” She credits both Dr. Brevik and his wife, Dr. Corinne Brevik, who was her first advisor, with helping give her the support, direction and guidance she needed.

(Petermann with Dr. Brevik at DSU graduation)



“Not only did they make an impact on me, but on my children,” she said. “My little 5-year-old? No one has the answers except for Dr. Brevik.”

As for Dr. Josh Steffan, she said that his gift to her was honesty. “When there were things I needed to hear, he would tell me,” she said. “It wasn’t always what you wanted to hear, but what you needed.”

Her third mentor is a new addition: her current advisor at Texas Tech, Dr. Lindsey Slaughter. “She took a chance on me, going straight from undergrad to a Ph.D. program, but she worked with others here to make it happen,” she said. “She’s like the three DSU professors wrapped into one. She’s amazing.”

### ***The Journey***

From those early mornings taking care of her herd, to attending nursing class, then trying out science education and finally graduating from Dickinson State University with a degree in Environmental Science with minors in Biology and Soils, it’s been a challenging and intriguing journey. In between Petermann has been helping to raise three amazing kids. “Only Will and I made the journey to Lubbock,” she said, “since the two older girls are with their dad, eight hours away. It took a lot of courage and confidence to make the transition to Lubbock alone.”

Petermann recognizes the impact of pursuing the dream on the kids as well. “It’s tough on the kids when mom’s writing a paper at the dance competition instead of watching every moment,” she said. “But I’ve tried to balance the family with my journey, and make them both a priority.”



(Petermann explaining her research at ND EPSCoR 2018 Annual Conference. L to R, Dr. Kelly Rusch, ND EPSCoR Executive Director; Petermann; NDSU Assistant Professor Dr. Britt Heidinger; and Dr. Timothy VanReken, NSF Program Director.)

One of the supporting elements for her journey was the funding of her research by ND EPSCoR through a distributed Research Experience for Undergraduates (REU). Funded through an NSF cooperative agreement, the REUs provided funds for undergraduates to stay in their home communities while conducting research, in collaboration with a professor. “I was able to present

posters at the EPSCoR annual conferences, and even had the nerve-wracking opportunity to do a poster presentation for the NSF on-site presentation,” she recalled. But the experience paid off in additional opportunities: other conference presentations, partnering with a USDA researcher to run texturing and pH analysis in the Dickinson lab, being a lab coordinator and role model for other students.

### ***What’s Ahead?***

For the next few years, Petermann will be focused on the soil and microbial interaction, especially with cotton and its microbiome. Cotton is a major crop for the Southern Texas High Plains region, and if stressors on the microbiome could be having an impact on the cotton, it would be important for the state, region and nation. Just as she learned at DSU, the soil health impacts what is grown and how it grows. She has a passion to provide better communication with farmers, to develop practices that support soil health and sustainability. She noted there is a need to work with others on comparison studies to assess different microbiomes. For example, does the cotton grown in southeast states have a different microbiome than those in the Southern Texas High Plains region due to changes in climate regime, semi-arid vs humid?

Petermann asserts that an exciting world is that of soil microbes. “If you keep your soil healthy, your crops are healthy and then humans are healthy, too,” she said. “It all fits together. What drives my research is that farmers put such time and effort into their work, that if I can help them with better information, that’s my goal. My dad’s family came from Germany. To them the land was important: it is a tie to ancestors and to future generations.”

“I wanted to make an impact on science but I didn’t realize it would also impact other people,” she modestly said. “When I come across a tough question, my first thought is still, ‘what would Erik or Josh do or say?’ They’re my guide, even when they’re not here.” The journey for Petermann continues, and she credits the time and experience at DSU, supported by ND EPSCoR, with helping position her to be a role model for others.

####

For more information, please contact:  
Joyce Eisenbraun, Communication Manager, ND EPSCoR  
701-231-8109 or [joyce.eisenbraun@ndus.edu](mailto:joyce.eisenbraun@ndus.edu)