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UF student preps for research trip to Antarctica

By Kevin Brockway

Posted Nov 30, 2018 at 6:55 PM

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A love for science already has taken University of Florida doctoral student Christina Davis around the world, from conferences in Germany to study abroad programs in Spain and Australia.

Next week, Davis will check her most unique continent off the list when she travels to Antarctica as part of a research team to study the Mercer Subglacial Lake.

Davis, a microbiology and cell science doctoral candidate in UF's College of Agricultural and Life Sciences, will be part of a team of 37 scientists funded by the National Science Foundation to discover what lies beneath the Antarctic Ice Sheet.

"I definitely hope to gain some good stories from it," Davis said. "I love being a world traveler and going everywhere and experiencing everything."

Davis is hopeful that her microbiology research will make an impact, and is looking forward to working with a team of scientists, drillers and military personnel. The project, known as the Subglacial Antarctic Lakes Scientific Access (SALSA) will include top scientists and students from UF, Montana State, USF, Ohio State and Nebraska.

"You'll want to interact with all of these people, because of the things that you can learn from them," Davis said.

How do you get to Antarctica? For Davis, the journey will begin Sunday with a flight from Jacksonville to Chicago. From Chicago, there's a 16-and-a-half hour flight to Auckland, New Zealand, in which Davis will cross the international timeline. From Auckland, there's a one-hour flight to Christchurch, New Zealand. The next four-hour flight will take Davis from Christchurch to McMurdo Station, a large permanent facility near the Antarctic coast where the

team will initially arrive. From McMurdo, there will be one more flight, traveling 600 miles by a ski-equipped airplane to the field camp above Lake Mercer.

Davis will travel with her mentor, Brent Christner, a UF associate professor in microbiology and cell science with the Institute of Food and Agricultural Sciences. Davis, Christner and the team of scientists will spend the next two months researching during Antarctica's summer season, in which temperatures range from 10 to 20 degrees and there's 24 hours of sunlight.

"It will be very crazy and hectic," Davis said. "It will get cold really fast, so we're gonna try to plug away as much as we can and Brent and I will be working together on stuff to make sure we can get it preserved and shipped back."

Despite the chilly temperatures, Davis said she will still need to apply sunscreen and pack ultraviolet light-resistant sunglasses to deal with the sun's intensity.

"It's kind of a hole in the ozone there, and so, having that 24/7, they are very cautious with us," Davis said.

Also on the list to pack for Davis are books, thermal socks, dry shampoo and Skippy peanut butter, a snack she can't do without. Before reaching the base camp, Davis will be outfitted with military-grade boots, snow pants, jackets, gloves, hats and scarves. She'll pack her own base-layer clothing, including long underwear and undershirts in materials that don't trap sweat.

"Cotton is a big kind of no-no because it will keep you cold," Davis said.

A native of Grimes, Iowa, Davis developed a love for science from her parents. Her mom is an entomologist and her father is a biochemist. As a hobby, Davis collected bugs and brought them into show-and-tell during elementary school.

"All the kids would be like, 'that's so gross,'" Davis said.

By high school, Davis worked in the same lab as her parents at DuPont Pioneer, learning about the microbiology behind crop production. After double-majoring in microbiology and genetics at Iowa State, Davis enrolled in grad school at UF. Davis said she was attracted to UF's astrobiology program.

“You are looking at the beginnings of like how life originated and how life might exist outside of planet earth,” Davis said. “Being close to the Kennedy Space Center, they have lots of microbiologists.”

When Christner helped secure the grant for the Antarctica project, he chose Davis from a select group of candidates.

“When this opportunity came, she had all the tools necessary to put her in place in the field,” Christner said.

The research in Antarctica will involve drilling through 1,100 meters of ice before removing water and sediment samples from beneath Mercer Lake. As a microbiologist, Davis will analyze some samples and ship others to UF. Specifically, Davis is interested in examining bacteria that derive life-sustaining carbon from methane, a greenhouse gas that is produced in lake-bottom and wetland sediments globally. There is a climate change element to Davis’ research, as methane and carbon both increase ocean temperatures. Methane, though, has a greater impact than carbon.

“If we can figure out organisms that are able to mitigate the release of the methane into the atmosphere, into the oceans, it’s definitely beneficial into helping reduce that impact,” Davis said.

Davis said she’s heard stories from other students who have researched in Antarctica about the scenery of the country.

“They saw whales and penguins,” Davis said. “It’s vast and open and they were in different parts of Antarctica, so they got a little bit different of a view. There’s different mountain ranges ... where we’ll be it’s pretty flat, so there won’t be too much exploring there, when we go in the deep field, but it’s definitely beautiful.”