



Microbiology and Cell Science Student Explores Antarctic Lake with National Team

On Dec. 2, 2018, **Christina Davis**, a microbiology and cell science Ph.D. candidate, joined a team of 37 scientists and staff funded by the National Science Foundation to explore Mercer Subglacial Lake in Antarctica for the first time. The project, known as Subglacial Antarctic Lakes Scientific Access (SALSA), aims to discover what lies beneath the Antarctic Ice Sheet.

“Working on a large team with so many experts was a little intimidating at first, but that faded quickly,” Davis said. “We were working, eating and living together 24/7 for almost two months. Inside jokes were formed and great science conversations were had. All of us come from different disciplines so it was fascinating to learn about what everyone else is doing and how it relates to the answers we’re trying to discover.”

The SALSA project has implications for understanding past and present life under the ice, the movement of water, and how ice sheet dynamics affect global sea level rise. Davis is conducting research for her dissertation while working with her mentor **Brent Christner**, a UF Institute of Food and Agricultural Sciences (UF/IFAS) microbiology and cell science associate professor. Christner specializes in the study of microorganisms inhabiting environments on Earth that are typically below the freezing point of water.

The SALSA scientific team flew by ski-equipped airplane to a field camp in West Antarctica, approximately 600 miles from McMurdo Station, the large,

permanent facility near the Antarctic coast where the team initially arrived. Davis and Christner reached Antarctica during the Southern Hemisphere’s summer, when temperatures generally range between 10-20 degrees Fahrenheit and sunlight lasts 24 hours a day.

The field camp lies directly above Lake Mercer, a large freshwater subglacial lake twice the size of Manhattan Island and covered by 4,000 feet of ice. This body of water receives no sunlight and therefore cannot support the forms of plant and animal life associated with lakes on the surface, which rely on sunlight to sustain the microscopic, single-celled plants that form the first link in aquatic food chains.

In the SALSA project, researchers used a high-pressure stream of hot water to bore a two-foot-wide hole from the surface down to the subglacial lake. Team members then worked around the clock for eight days, collecting samples that contained microbes and could potentially harbor multi-celled organisms.

“Living in Antarctica was all unique. There was no darkness and endless white every way you looked at the field site,” Davis said. “When we were working, it was until the science work was done, so people were pulling shifts over 24 hours sometimes. After all of the hurrying, then we would have long periods of waiting. We’d play card games to pass the time and take walks down the runway. For Christmas, we had lots of downtime, so some of the

SALSA team made a Christmas song parody and sang it over a CB radio for others in Antarctica to hear.”

Davis was primarily interested in examining bacteria that derive life-sustaining carbon from methane, a greenhouse gas that is produced in lake-bottom and wetland sediments globally.

Davis analyzed some samples on-site and shipped others back to the UF main campus in Gainesville for further assessment. Ultimately, Davis hopes to find not only methane-consuming bacteria, but also genetic evidence that helps explain how these bacteria evolved to survive their environment. At this point, it is still too early to tell.

“I think this project picked me,” Davis said. “I like astrobiology, or life on other planets, and understanding how life can occur in extreme environments. I enjoy exploring how organisms can survive in these climates and what their metabolisms are.”

A native of Grimes, Iowa, Davis grew up in a family of scientists. Her mother, an entomologist, and her father, a biochemist, encouraged her to run science experiments at a young age. Double-majoring in microbiology and genetics at Iowa State University opened Davis’ eyes to the world of environmental microbiology.

Davis encourages young scientists to consider majors and careers that will allow them to visit intriguing places, such as Antarctica, and stimulate their enthusiasm for scientific discovery.



CALS Students Named to the NSF Graduate Research Fellowship Program

Creating high school science fair projects inspired **Ann Bernert** to pursue a career in science and share research discoveries with the public. Bernert will be able to pursue her research goal of discovering a novel gene to improve plant stress defense after receiving a prestigious National Science Foundation (NSF) graduate student research fellowship.

“Winning this award shows that you have a supportive community behind you. I’m grateful to the plant molecular and cellular biology program and to Dr. Gilles Basset who spent a lot of time working with me on the application,” Bernert said.

More than 12,000 students across the country applied for the fellowship. Seventeen of the 2,000 NSF fellowship recipients attend the University of Florida.

The fellowship program recognizes outstanding graduate students in S.T.E.M. disciplines who are pursuing degrees at U.S. institutions. Fellows benefit from a three-year annual stipend of \$34,000 along with a \$12,000 allowance for tuition and fees, opportunities for international research and professional development, and freedom to conduct their own research.

The following CALS students received an NSF fellowship:

- Ann Bernert, Ph.D. student studying plant molecular and cellular biology
- Jeannie Marie Klein-Gordon, Ph.D. student studying plant pathology
- Kimberly Joan Ledger, Ph.D. student studying wildlife ecology and conservation
- Julio C. Pachon, Ph.D. student studying soil and water sciences
- Clancy Short, master’s student studying entomology and nematology



CALS Student and Faculty Host Mosquito Workshop in Honduras

A desire to see the immediate health impacts of her research led **Casey Parker**, an entomology and nematology Ph.D. student, to deliver mosquito-borne illness trainings for public health officials, educators and citizens.

Parker planned and conducted a workshop at the Universidad Nacional Autónoma de Honduras (UNAH) in San Pedro Sula with **Barry Alto**, an associate professor in the UF/IFAS entomology and nematology department, who serves on Parker’s advisory committee. Both Parker and Alto are based out of the UF/IFAS Florida Medical Entomology Lab in Vero Beach, Florida.

“While we think it’s hot in Florida, Honduras is even hotter and has mosquitoes all year round due to the climate, and they don’t have half the resources we do,” Parker said.

Alto was approached by **Dunia Esmeralda Jeer Perdomo**, a UNAH faculty member, to develop workshop content and presentations to train faculty, staff and the public about the risks of mosquito-borne illness.

Parker and Alto covered topics including, mosquito-borne viruses, mosquito biology, trapping, rapid testing for viruses and control methods, among others. Nearly 50 chemists; public health officials; doctors; and undergraduate, engineering, nursing and medical students attended the workshop.

“We had such diverse attendees who all feel a personal responsibility to apply mosquito knowledge to the work that they do and communicate it to relevant populations to eliminate mosquito problems caused by mosquitoes,” Parker said.

The workshop allowed UF and UNAH faculty to begin collaborative multidisciplinary research that will identify risk factors for emerging diseases transmitted by mosquitoes.



UF Honors CALS Alumnus George Pickhardt with Distinguished Alumnus Award

Triple Gator George Pickhardt has built one of the largest pest control businesses in the Southeastern United States and remains heavily involved in volunteer activities both in service to the University of Florida and his local community. On May 4, Pickhardt was presented with the Distinguished Alumnus Award by UF at the spring student recognition ceremony for CALS.

The award is one of the highest honors bestowed upon a graduate of the university and recognizes recipients who have excelled in their chosen field or have performed outstanding service for the university.

“As a result of Mr. Pickhardt’s dedication and interaction with the University of Florida, his business has grown, his community has prospered and been beautified, the pest service industry in Florida has developed a high degree of professionalism and students in the College of Agricultural and Life Sciences have benefited,” said **Philip Koehler**, a professor in the UF/IFAS entomology and nematology department.

Pickhardt earned his bachelor’s degree in entomology in 1969, subsequently earning his master’s degree in 1971 with a focus on ornamental horticulture. He joined the family business, Arrow Environmental Services, and took over the leadership from his father in 1988. Later, Pickhardt earned a Master of Business Administration from UF in 2005.

Pickhardt restructured his company business model and formed Environmental Pest Service. Today, there are 85 companies and more than 500 employees which are part of EPS. In 2016 and 2017, EPS was recognized as a Gator100 company, a select group of the 100 fastest-growing, Gator-owned or Gator-led businesses in the world.

Roche Scholars Program Highlights Teaching Excellence in CALS



Jennifer Weeks, UF/IFAS entomology and nematology lecturer, had the desire to revise her Life Science for Educators course to incorporate a service-learning component. The CALS Roche Teaching Scholars program provided Weeks with the perfect training to accomplish this goal.

“We are fortunate in CALS that Dean **Elaine Turner** is committed to providing exciting professional development opportunities for faculty,” Weeks said. “I feel the Roche Teaching Scholars program has really allowed me to blossom and evolve as an educator.”

“We have observed a need for professional development of mid-career teaching faculty,” said **Grady Roberts**, director of the CALS Teaching Resource Center and professor in the UF/IFAS department of agricultural education and communication. “The goal of this program is to enhance the learning experience for CALS students by developing dynamic teaching faculty.”

The Roche Teaching Scholars program lasts a full calendar year and includes four active learning sessions. Participants assess who they are as teachers, identify unique characteristics that influence how they teach, learn course design strategies, attend the North American Colleges and Teachers of Agriculture annual conference to engage in the scholarship of teaching and learning, and learn about educational policy and administration.

“I think the more we understand about ourselves as learners and the diversity of other types of learners that exist along the continuum, the better able we are to incorporate a diversity of teaching styles into the classroom environment that appeal broadly and will help students feel engaged and succeed,” Weeks said.

The Roche Teaching Scholars program is made possible through funding provided by the Marion C. Roche and Virginia T. Roche Faculty Excellence Endowment. January began the second year of this program, which accepts six-to-eight faculty participants a year.



UF Forestry Students Volunteer to Remove Tree Damage After Hurricane Michael

After Hurricane Michael devastated the panhandle, CALS student **Ryan Krammes** began reaching out to friends to see how he could help their families in the aftermath.

Krammes learned his roommate’s family in Tallahassee and others had trees fall on their homes and in their yards. As president of the UF International Society of Arboriculture (ISA), Krammes assembled six additional students in the UF/IFAS school of forest resources and conservation to join him in helping Tallahassee residents.

“Tree damage can be financially exhausting,” Krammes said. “ISA at UF does not charge for any community services.”

For the last five years, Krammes has worked as a climbing arborist hired by contractors to cut and remove hazardous trees. The forest resources and conservation junior owns chainsaws, tree equipment and truck. After working in the tree industry for several years, Krammes knows he wants to work as a climbing arborist for a living.

“I really love trees and helping people,” Krammes said. “It’s always been a part of my life. I was a firefighter before the tree industry. It’s part of who I am; I help others.”

Krammes continues to aid the public as a wildfire firefighter.

“Service is a core value of our college,” said CALS Dean **Elaine Turner**. “It’s encouraging to see our students eager to help others in need and utilize their skills during this time of distress for our friends in the panhandle.”

CALS Connection is Online!

Read these CALS features at cals.ufl.edu/calsconnection.

- A CALS Alumnus’ Unconventional Road to Medical School
- CALS Stood Up and Hollered on Gator Nation Giving Day
- CALS Student Forms University of Florida’s First Saltwater Fishing Club

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VOL. 29||SUMMER 2019

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CALS Students Learn Policy Communication on Capitol Hill

Visiting Washington, D.C., for the first time, CALS student **Christine Krebs** experienced how real-life policies and science intersect. During March 2-6, Krebs and her 18 classmates met with various national agriculture agencies, departments and staff members of congressmen and women as part of a new spring course offering at UF.

The course, “Effectively Communicating Agricultural and Life Sciences Policy Issues” launched this spring, allowing CALS students the opportunity to learn about policy communications in the classroom and through direct interactions at the state and national levels. Students visited Tallahassee and Washington, D.C., to expand their knowledge on the policy process and the communication involved.

“A lot of our graduates are working in government, both in Tallahassee and in

D.C.,” said **Lisa Lundy**, associate professor in the UF/IFAS agricultural education and communication department. “One of our alumni who works in D.C. now, **Sarah Edison**, actually created the first draft of the class with an agenda that used the network and contacts she developed through her own experiences.”

The course provides students with a unique opportunity to see the daily routine of policymakers and understand what it is like to work in the legislature or for organizations involved in governmental affairs.

The class met weekly to discuss policy communication and expectations before spending a day in Tallahassee during mid-February. While at the state capitol, the students met the new commissioner of agriculture, lobbyists and agency leaders.

“I’ve had a growing realization about the need to have science communication in the policy world.” said Krebs, an agricultural education and communication master’s student.

The course has given Krebs, who holds a bachelor’s degree in wildlife ecology and conservation from CALS, an avenue to see how her expertise fits into the bigger picture.

NaviGATORing CALS

This new program provides high school juniors and seniors with the opportunity to experience what it’s like to be a student in CALS through a tour of facilities, classes and more!

Students can register for the next CALS tours on **Sept. 6 and 13** at cals.ufl.edu/navigatingcals.

